

JULY CURRENT AFFAIRS

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ECONOMIC DEVELOPMENT

Seven-Point Strategy to Mobilise Private Capital for Sustainable Development proposed by Finance Minister Nirmala Sitharaman

Context

- **Event:** 4th International Conference on Financing for Development (FFD4)
- **Organised by:** United Nations
- **Location:** Seville, Spain
- **Purpose:** To promote sustainable development financing, especially in emerging and developing economies.

Seven-Point Strategy to Mobilise Private Capital

1. **Strengthen Domestic Financial Markets**
 - Enhance the capacity of **banks** and **capital markets**.
 - Focus on financing **infrastructure, industry, and climate-aligned projects**.
2. **Address Perceived Risk through Institutional Reforms**
 - Establish **independent regulators**.
 - Ensure **transparent bidding** and regulatory processes.
 - Improve the **ease of doing business** to attract private capital.
3. **Create Scale in Investment Opportunities**
 - Develop a pipeline of **well-prepared, de-risked, and investment-ready** projects.
 - Ensure consistency and scalability in sectors like **clean energy, transport, and urban infrastructure**.
4. **Scale Up Blended Finance**
 - Combine **public and concessional finance** with private capital to reduce risk.
 - Use innovative instruments such as:
 - **Sovereign green bonds**
 - **Impact investment funds**
 - **Risk-sharing guarantees**

5. **Leverage Multilateral Development Banks (MDBs) and Development Finance Institutions (DFIs)**

- Mobilize capital and provide risk mitigation.
- Strengthen technical support for project preparation and financing.

6. **Reform International Credit Rating Methodologies**

- Push for credit rating systems that **accurately reflect long-term resilience** and economic fundamentals of **Emerging Markets and Developing Economies (EMDEs)**.

7. **Unlock Capital at the Grassroots Level**

- Increase access to finance for **Micro, Small and Medium Enterprises (MSMEs)**.
- Promote inclusive finance for **women-led businesses** and **rural entrepreneurs**.

Significance of Private Capital in Sustainable Development

- **Catalytic Role:**
 - Drives **productivity, innovation, and economic demand**.
 - Unlocks resources for sectors that require large-scale investment.
- **Bridging the Finance Gap:**
 - According to **UNCTAD**, there is a **US\$2.5 trillion annual investment gap** in key areas like:
 - **Education**
 - **Healthcare**
 - **Climate action**
- **Promoting Inclusion:**
 - Expands **access to finance** for underserved segments.
 - Supports **gender equality, MSME growth, and rural development**.

Conclusion

The Seven-Point Strategy lays out a comprehensive roadmap for attracting private capital into sustainable development sectors. By addressing structural bottlenecks and leveraging innovative financing tools, India aims to play a leadership role in shaping global sustainable finance solutions—while ensuring equitable, inclusive growth at home.

UNCTAD – A World of Debt Report 2025

Released by: United Nations Conference on Trade and Development (UNCTAD)

Focus: Alarming rise in **global public debt** and its **disproportionate impact on developing countries**

Key Highlights: Global Public Debt (GPD) Trends

- **Record Global Debt:** Global Public Debt reached **\$102 trillion** in **2024** — the highest ever recorded.
 - **Debt-to-GDP Concern:** If current trends continue, **global debt could reach 100% of GDP** by the end of the decade.
 - **Disproportionate Growth in Developing Countries:**
 - Developing countries hold **less than one-third (\$31 trillion)** of global public debt.
 - Yet their debt has **grown twice as fast** as that of developed countries since 2010.
 - **Regional Distribution Among Developing Countries:**
 - **Asia and Oceania:** 24% of global public debt
 - **Latin America & Caribbean:** 5%
 - **Africa:** 2%
 - **High Borrowing Costs:**
 - Developing countries face **interest rates 2–4 times higher** than those for the U.S.
 - **61 developing countries** spend **10% or more of government revenues** on **interest payments** alone.
- #### **Impact of Rising Debt**
- **Financing Constraints:**
 - Shrinking fiscal space limits investment in **education, healthcare, infrastructure, and climate action**.
 - **Aid flows are declining**, worsening development challenges.
 - **Widening Development Financing Gap:**
 - Public debt vulnerabilities are undermining long-term growth and Sustainable Development Goals (SDGs).

Recommendations by the UN Secretary-General's Expert Group on Public Debt

1. Multilateral Reforms

- **Crisis Response:**
 - Institutionalise **debt service pauses** during global shocks.
- **G20 Common Framework:**
 - Reform and make more inclusive and accessible.
- **SDR Re-channelling:**
 - Channel Special Drawing Rights (SDRs) through IMF's **Resilience and Sustainability Trust (RST)**.

2. International Cooperation

- Create a **shared information and technical assistance hub**.
- Support adoption of **innovative financial instruments** (e.g., debt-for-climate swaps, sustainability-linked bonds).

3. National-Level Reforms

- Build **institutional capacity** to:
 - Manage **liquidity and currency mismatches**
 - Improve quality of **public investment pipelines**
 - Strengthen the effectiveness of **debt-for-development swaps**

Conclusion

The report serves as a global warning: the current debt trajectory is unsustainable, particularly for developing economies. Without urgent reforms, high debt and borrowing costs will further widen inequality and undermine global development goals. **UNCTAD calls for coordinated multilateral action, structural reforms, and innovative financing mechanisms** to build a more resilient, equitable, and sustainable global financial system.

Agriculture Output Report: Fruits Surge While Cereals Decline in India

Overview

The Ministry of Statistics and Programme Implementation (MoSPI), through its National Statistics Office (NSO), has released the latest **"Statistical Report on Value of Output from Agriculture and Allied Sectors (2011-12 to 2023-24)"**. This comprehensive report tracks production values across crops, livestock, forestry, fishing, and aquaculture.

Key Trends and Findings

1. Shifting Agricultural Patterns

India's agricultural landscape is witnessing a clear transition:

- Farmers are increasingly moving away from traditional staples (like cereals) toward **high-value crops** such as **fruits, vegetables, spices, and meat**.
- This shift reflects **changing food habits**, consumer demand, and evolving dietary preferences.

2. Strong Growth in Agricultural Output

- **Gross Value Added (GVA)** of agriculture and allied sectors at **current prices** grew by **225%**, rising from ₹1,502 thousand crore in 2011-12 to ₹4,878 thousand crore in 2023-24.
- **Gross Value of Output (GVO)** at **constant (2011-12) prices** increased by **54.6%**, from ₹1,908 thousand crore to ₹2,949 thousand crore—signifying real growth.

3. High-Value Crops See Sharp Output Increases

Significant growth in the GVO of certain fruits and vegetables between 2011-12 and 2023-24:

- **Strawberries:**
 - Constant prices: Up **40x** to ₹55.4 crore
 - Current prices: Up **80x** to ₹103.27 crore
- **Parwal (Parmal):** Up **17x** to ₹789 crore
- **Pumpkin:** Up **10x** to ₹2,449 crore
- **Pomegranate:** GVO increased **4x** to ₹9,231 crore
- **Mushrooms:** Rose **3.5x** to ₹1,704 crore

4. Shifts in Output Composition

- **Meat Production:**
 - Share in total agri GVO rose from **5% to 7.5%**
 - GVO increased by **131%**
- **Cereals:**
 - Share in GVO dropped from **17.6% to 14.5%**
 - Reflects declining emphasis on staple grains

5. Rise of Spices

- Improved processing techniques and rising demand boosted spice production.
- **Dry ginger** GVO alone surged **285%** to ₹11,004 crore.

Consumption Trends and Income Effects

1. Changing Dietary Patterns

- Despite rising output, **fruit consumption** remains modest:

- **Rural MPCE share:** From 2.25% to 2.66%
- **Urban MPCE share:** Slight drop from 2.64% to 2.61%
- However, access to fruits has improved dramatically:
 - **Rural households consuming fruits:** Rose from 63.8% (2011–12) to **90.3% (2022–23)**
 - Especially notable among **poorest 20% income group**

2. Decline in Cereal Consumption

- As incomes rise and diets diversify:
 - **Urban MPCE on cereals:** Fell from 6.61% to **3.74%**
 - **Rural MPCE on cereals:** Dropped from 10.69% to **4.97%**
 - Mirrors the drop in cereals' share in output

3. Engel's Law in Action

- Consistent with **Engel's Law**, the proportion of income spent on food declines as income grows:
 - **Rural MPCE on food:** Down from 52.9% to **47.04%**
 - **Urban MPCE on food:** Dropped from 42.62% to **39.68%**

Drivers Behind the Shift

- **Technological advancements** in cultivation and processing
- **Changing consumer preferences** for diverse and nutritious diets
- **Government policies** focusing on nutrition security and agri-export promotion
- **Expanding market access** for high-value agri-products

Conclusion

India's agricultural sector is undergoing a significant transformation. Farmers are moving toward high-value crops and livestock in response to changing consumption patterns and income growth. While cereal production is declining in relative terms, output of fruits, vegetables, spices, and meat is rising sharply—indicating a more diversified and market-driven agricultural economy.

Employment Linked Incentive (ELI) Scheme: India's Strategic Push for Jobs in Manufacturing

Introduction: A Bold Step Toward Employment-Centric Growth

On **1st July 2025**, the **Union Cabinet**, led by **Prime Minister Narendra Modi**, approved the **Employment Linked Incentive (ELI) Scheme**, allocating **₹99,446 crore** to drive **job creation**, especially in the **manufacturing sector**, and integrate **first-time employees** into the formal economy.

The ELI scheme is a central part of the **₹2 lakh crore employment and skilling package** announced in the **2024–25 Union Budget**, aiming to benefit **over 4.1 crore youth** through direct job incentives, skill development, and expanded social security.

Objectives and Rationale

The ELI Scheme addresses long-standing labour market challenges:

- **Low formalisation** of the workforce
- **Stagnant job growth** in the manufacturing sector
- **Limited incentives** for youth entering formal employment

By incentivizing both **employers and first-time employees**, the scheme is designed to make **hiring more attractive** and **employment more sustainable**.

Scope and Duration

- Applicable to **jobs created between August 1, 2025, and July 31, 2027**
- Target: **3.5 crore total jobs**
- Composed of two parts:
 - **Part A:** Incentives for **first-time employees**
 - **Part B:** Incentives for **employers generating new jobs**

Part A: Supporting First-Time Employees

- **Eligibility:** Employees registering with **EPFO** for the first time; monthly salary up to **₹1 lakh**
- **Incentive Structure:**
 - One month's EPF wage (capped at **₹15,000**) in **two instalments**:
 - After **6 months** of continuous employment
 - After **12 months**, plus completion of a **financial literacy programme**
 - A portion of the benefit will be held in a **savings or deposit account** to encourage long-term planning
- **Projected Beneficiaries:** **1.92 crore** workers

- **Objective:** Support formal workforce entry and build **financial resilience**

Part B: Incentivizing Employers

- **Eligibility:** Employers creating and retaining new jobs for **at least 6 months**
- **Incentives per New Employee per Month:**
 - ₹1,000 (Salary ≤ ₹10,000)
 - ₹2,000 (₹10,001 – ₹20,000)
 - ₹3,000 (₹20,001 – ₹1 lakh)
- **Minimum Hiring Requirements:**
 - At least **2 new employees** for firms with <50 workers
 - At least **5 new employees** for firms with ≥50 workers
- **Incentive Duration:**
 - **2 years** for most sectors
 - **Up to 4 years** for **manufacturing**
- **Projected Impact:** Support the creation of **2.60 crore new jobs**

Implementation & Disbursement Mechanism

- **Direct Benefit Transfer (DBT)** ensures transparency:
 - **Employees:** Paid via **Aadhaar Bridge Payment System (ABPS)**
 - **Employers:** Paid via **PAN-linked business accounts**
- Compliance and continuity are central:
 - Incentives are **conditional on retention**, discouraging misuse
 - Systems are in place for **monitoring and verification**

Wider Implications for Labour and Industry

Beyond financial incentives, the scheme aims to:

- Drive **labour market formalisation** through EPFO inclusion
- Promote **financial literacy and inclusion**
- Enable smoother entry for youth into formal employment
- Encourage **resilient hiring practices** post-pandemic

Reception and Criticism

- **Industry Response:** Largely positive; seen as a “milestone” by firms like **EY India** for supporting inclusive job growth.
- **Trade Union Concerns:** Groups like **CITU** argue the scheme may **benefit employers disproportionately** without strong accountability or worker protections.

Conclusion

The **ELI Scheme** marks a significant policy shift toward **incentive-driven, outcome-focused employment generation**. By balancing employer participation with worker protection and skilling, the scheme is positioned to create a **more formal, inclusive, and future-ready workforce**, especially in manufacturing—a critical pillar for India’s economic transformation into **Viksit Bharat**.

Bond Yield and Bonds Explained

What is a Bond?

- A bond is a loan made by an investor to a borrower for a fixed period in exchange for regular interest payments.
- The period from bond issuance to repayment is called the **term to maturity**.
- Borrowers use bond proceeds for projects like expansion, debt refinancing, or welfare activities.

What is Bond Yield?

- Bond yield is the annual return an investor expects from holding the bond until maturity.
- It depends partly on **coupon payments**, which are periodic interest payments to bondholders.
- At maturity, bondholders receive the **face value** of the bond.
- Bonds can be bought or sold at:
 - **Par value** (face value)
 - **Discount** (less than face value)
 - **Premium** (more than face value)
- The **market price** of the bond affects the bond yield.

Bond Yield Formula:

Bond Yield = Coupon Amount/Price

Bond Yield vs. Bond Price:

- Bond prices and yields move in **opposite directions** in the secondary market.
- Bonds pay fixed interest over their term, but market interest rates fluctuate.
- When market interest rates **fall**:
 - New bonds offer lower interest payments.
 - Existing bonds with higher coupons become more valuable, so their price **increases**.
 - Higher bond price results in a **lower yield** than the coupon rate.
- When market interest rates **rise**:
 - New bonds pay more interest.

- Existing bonds' prices **fall** to match lower coupon rates.
- Lower bond price results in a **higher yield** than the coupon rate.

Current Context:

Bank of Baroda Research expects yields on India's benchmark 10-year bonds to stay soft in July, implying relatively lower bond yields.

Certificate of Deposits (CDs)

Public sector banks have significantly increased their issuance of Certificates of Deposit (CDs), rising from 6% in 2022 to 69% in 2024.

What is a Certificate of Deposit?

A CD is a negotiable money market instrument issued in electronic form, representing funds deposited with a bank or eligible financial institution for a fixed period. CDs are sold at a price lower than their face value.

Issuers:

Scheduled commercial banks (except Regional Rural Banks and Local Area Banks) and selected All-India Financial Institutions authorized by the Reserve Bank of India (RBI) can issue CDs to raise short-term funds.

Recipients:

CDs can be bought by individuals, corporations, companies (including banks), trusts, funds, associations, and Non-Resident Indians (NRIs), although NRIs can only invest on a non-repatriable basis.

Regulatory Framework:

The issuance and regulation of CDs fall under the jurisdiction of the RBI.

Spain and Brazil Call for Global Tax on the Super-Rich to Tackle Inequality

At the UN's 4th International Conference on Financing for Development, held in Seville, Spain and Brazil jointly proposed a bold initiative to increase tax contributions from **High-Net-Worth Individuals (HNIs)** globally. The proposal is part of the **Seville Platform for Action**, which promotes voluntary efforts to fast-track the achievement of the **Sustainable Development Goals (SDGs)**.

Core Proposals:

- Effective Global Taxation of the Super-Rich**
 - Enforce higher and more equitable taxes on billionaires and

ultra-wealthy individuals to reduce global inequality.

- This addresses the disparity where the **richest 1% continue to amass enormous wealth** while contributing very little in taxes.

2. Creation of a Global Wealth Registry

- Establish an international database tracking **real ownership of assets and wealth**, ensuring greater transparency and accountability.
- This aims to prevent tax evasion and illicit financial flows by revealing the **beneficial owners** behind complex financial structures.

Why This Is Needed:

- Extreme Wealth Inequality:** The top 1% own more than the bottom 95% of the global population combined.
- Tax Disparity:** Billionaires pay just around 0.3% in effective tax, even though their wealth has ballooned by \$33.9 trillion since 2015.
- SDG Financing Gap:** The annual cost of achieving SDGs (~\$4 trillion) is far less than the \$6.5 trillion gained by billionaires in recent years.
- Public vs Private Wealth:** Between 1995 and 2023, private global wealth rose by \$342 trillion—eight times more than the growth in public wealth.

Related Global and National Initiatives:

Global:

- Seville Platform for Action** – Encourages coordinated voluntary action for SDGs.
- G20 2024 Agreement** – Pushed for a shared international tax agenda for the wealthy.
- Ongoing UN Tax Convention Negotiations** – Aimed at building a fairer global tax system.

India:

- Employment Generation:** MGNREGA, DDU-GKY support rural and youth employment.
- Social Security Programs:** Schemes like Atal Pension Yojana and Pradhan Mantri Jeevan Jyoti Bima Yojana provide financial protection.

- **Financial Inclusion:** Initiatives such as **Jan Dhan Yojana** and **MUDRA Yojana** ensure access to banking and credit for marginalized groups.

Conclusion:

The Spain-Brazil initiative signals growing international momentum for **progressive taxation and global wealth transparency**. By ensuring the ultra-rich contribute fairly, such measures aim to reduce inequality, strengthen public finances, and bridge the **funding gap for sustainable development**. If backed globally, it could reshape the architecture of international tax justice.

Volume Weighted Average Price (VWAP)

- SEBI has mandated issuing a Common Contract Note with a single Volume Weighted Average Price to simplify trading for institutional investors and market participants.
- VWAP represents the average price of a stock weighted by the total trading volume over a specific period.
- It helps investors compare the current stock price to a benchmark to decide when to buy or sell.
- VWAP also aids investors in determining their trading strategy (active or passive) and timing their trades.
- VWAP is calculated daily, from market open to close, using intraday data.
- **Formula:**

$$\text{VWAP} = \frac{\text{Typical Price} \times \text{Volume}}{\text{Cumulative Volume}}$$
 - Typical Price = average of the high, low, and closing prices of the stock for that period.
- The VWAP is plotted as a line on charts and behaves similarly to a moving average.
- When the price is above VWAP, the market is considered to be in an uptrend; below VWAP indicates a downtrend.

Pros:

- Used in algorithmic trading to find the best price aligned with market volume.
- Helps ensure high liquidity, lower transaction costs, and better execution.
- Particularly useful when trading large volumes to avoid artificially inflating stock prices.

Cons:

- VWAP is a cumulative indicator relying on many data points, which can cause lag similar to moving averages.
- Because of lag, most traders use short timeframes like one-minute or five-minute intervals.

Transition Bonds

- **Approval:**
The International Financial Services Authority (IFSCA) approved a framework for issuing and listing transition bonds under the IFSCA (Listing) Regulations, 2024.
- **What are Transition Bonds?**
They are a sub-category of **green debt securities** as defined by SEBI regulations.
 - **Green Debt Security:** Debt issued to raise funds for projects/assets like clean transportation, sustainable waste management, etc.
- **Objective:**
 - To enable **hard-to-abate sectors** such as steel and cement to raise capital for gradual decarbonisation.
 - To **prevent greenwashing** through mandatory transparency, disclosures, and third-party validation, thereby ensuring investor confidence.

Standing Deposit Facility (SDF) and Marginal Standing Facility (MSF)

- **Reserve Bank of India update:** RBI has revised the timings for SDF and MSF operations.

About Standing Deposit Facility (SDF)

- Banks can place their surplus funds with the RBI overnight.
- SDF absorbs liquidity from commercial banks.
- This facility does **not require any collateral** from banks.

About Marginal Standing Facility (MSF)

- MSF allows banks to borrow from RBI in emergencies when inter-bank liquidity is scarce.
- Borrowing is done by **pledging government securities** as collateral.

Fourth International Financing for Development Conference (FfD4)

- **Context:**
The FfD4 conference is currently taking place in Seville, Spain, focusing on reforming the global financial system.
- **What is FfD4?**
A United Nations-led global forum aimed at addressing gaps in sustainable development financing and reforming global economic governance.
- **Host:**
Held in Seville, Spain, in 2025 under the United Nations Department of Economic and Social Affairs (UNDESA).
- **Objective:**
Align development finance with climate goals, restore trust between developed and developing nations, and build fair financial systems.
- **Key Features:**
 - Multi-stakeholder participation including governments, multilateral institutions, civil society, and think tanks.
 - Reform agenda focusing on restructuring Multilateral Development Banks (MDBs) and tackling systemic issues like debt, taxation, and accountability.
 - Integration with climate agendas to prepare coordinated actions for COP30.
- **Ongoing Seville Commitment & Road to COP30 (Belem):**
 - Emphasis on scaling climate finance to \$1.3 trillion by 2035 via the "Baku to Belem" roadmap.
 - Transition from negotiation to implementation with a focus on delivering real-world results.
 - Inclusion of civil society groups like indigenous peoples, women, and youth in future COP events.
 - Innovative finance proposals such as taxing private jets and financial flows to fund climate action without increasing debt.
 - Strong equity focus calling out the richest 1% for 50% of emissions and demanding accountability.

Significance for India and the Global South:

- Strengthens demands for climate justice and fair financing.
- Encourages South-South cooperation and amplifies voices of emerging economies.
- Supports India's G20 agenda to reform global financial institutions and promote climate finance beyond loans.

NITI Aayog Unveils Strategy to Boost Chemical Exports to \$80 Billion by 2030

Targeting Export-Led Growth:

To address limited domestic demand and unlock the full potential of India's chemical sector, NITI Aayog has outlined a comprehensive roadmap to nearly **double chemical exports from \$44 billion to \$80 billion by 2030**. The strategy emphasizes export-led growth to drive expansion and global competitiveness. Titled: "Chemical Industry: Powering India's Participation in Global Value Chains."

Key Recommendations Include:

- Establishing and expanding **production clusters** to achieve economies of scale
- **Upgrading port infrastructure** to streamline logistics and chemical storage
- Introducing a **sales-linked incentive (SLI) scheme** to localize production and incentivize exports of key chemical categories

Current Landscape of India's Chemical Industry

- **Global Position:** India ranks **6th globally** and **3rd in Asia** in chemical production
- **Contribution to Economy:** Accounts for **7% of India's GDP**
- **Export Ranking:** 14th in global chemical exports (excluding pharmaceuticals)
- In **FY23**, chemical and petrochemical exports totaled **\$23.8 billion**
- In **2023**, the sector had a **\$31 billion trade deficit** and just **3.5% participation** in global value chains—compared to **China's 23%**

The domestic market was valued at **\$220 billion in 2023**, with ambitions to grow to **\$1 trillion by 2040**. However, experts stress that **export expansion is crucial**, as domestic demand alone won't meet this target.

Geographic Concentration and Industry Segments

- Key manufacturing hubs: **Maharashtra, Gujarat, West Bengal, and Tamil Nadu**
- The industry spans **80,000+ commercial products** across:
 - Bulk chemicals
 - Agrochemicals
 - Specialty chemicals
 - Polymers
 - Petrochemicals
 - Fertilizers

India's Global Standing in Niche Segments

- **4th largest agrochemical producer**
- **3rd largest polymer consumer**
- A **major exporter of dyes and colourants**, accounting for:
 - **16–18% of global dyestuff output**
 - **~15% of the global colourant market**

Government Support and Policy Initiatives

PCPIR Policy (2020–2035)

- Aims to promote Petroleum, Chemicals, and Petrochemicals Investment Regions (PCPIRs)
- Investment targets:
 - \$142 billion by 2025
 - \$213 billion by 2030
 - \$284 billion by 2035

Chemical Promotion and Development Scheme (CPDS)

- Supports industry growth through:
 - Research and innovation awards
 - Market studies and surveys
 - Creation and sharing of knowledge resources

Deregulation and Infrastructure Push

- Most chemical manufacturing is **de-licensed** (excluding hazardous substances)
- Promotion of **plastic parks** and industrial corridors to enhance capacity and employment

Strategic Shift Toward Specialty Chemicals

NITI Aayog recommends a transition from **bulk to specialty chemicals**—which are in high global demand. With the right policies, this shift could:

- **Increase exports by \$35–40 billion**
- **Double India's global value chain (GVC) share to 5–6% by 2030**

Sales-Linked Incentives as Opex Support

A proposed **sales-linked incentive (SLI)** scheme would offer **operational subsidies** to:

- Expand production in strategic sectors like:
 - Agrochemical intermediates
 - Pharma and battery chemicals
 - Dyes, pigments, and petrochemicals
- **Reduce dependency on key import sources**

Addressing Supply Chain Bottlenecks

The roadmap calls for:

- **Identifying critical supply chain vulnerabilities**, taking cues from China's 2018 industrial strategy
- Strategically allocating subsidies to fill these gaps

Revamping Existing Chemical Hubs and Port Infrastructure

- **Dahej, Paradeep, and Vizag PCPIRs** need urgent reforms due to issues with infrastructure, funding, and regulation
- Proposal to set up a **dedicated Chemical Committee** to resolve port-related logistics bottlenecks
- Plan to develop **eight high-potential chemical clusters**, strategically linked to **14 major and 12 minor ports** to enhance connectivity and reduce logistics costs

RBI's New Policy on Pre-Payment Charges

Context:

- RBI has prohibited lenders from charging pre-payment fees on floating-rate loans taken by individuals and Micro and Small Enterprises (MSEs), effective from 1 January 2026.

Pre-Payment Mechanism:

- Pre-payment means repaying a loan partially or fully before the scheduled time.
- It can reduce the interest amount or loan tenure.

How it Works:

- Loan agreements state if pre-payment is allowed, any charges, lock-in periods, and payment limits.
- Types:
 - **Part-prepayment:** Paying a lump sum along with EMIs to reduce the principal.
 - **Full prepayment (foreclosure):** Paying off the entire loan early.

- Benefits: Lowers interest burden and shortens EMI or tenure.

New RBI Decision:

- No pre-payment penalties on floating-rate loans for individuals (non-business) and MSEs.
- Applies to new or renewed loans from 1 January 2026.
- Covers both partial and full pre-payments without penalty, no lock-in period, no restriction on source of funds.

Reason for Policy:

- RBI found inconsistent and unclear pre-payment charges by lenders.
- Borrowers, especially MSEs, faced difficulties closing loans early, leading to financial strain.
- The move supports credit mobility and promotes competition among lenders.

Significance:

- Reduces hurdles for MSEs, aiding economic growth and employment.
- Supports Atmanirbhar Bharat and startup ecosystems by increasing financial freedom.
- Protects consumers from hidden fees and enforces clear disclosure of pre-payment terms in loan documents.
- Encourages financial inclusion for first-time borrowers, rural users, and women entrepreneurs.
- Harmonizes rules for loans up to ₹50 lakh across banks, NBFCs, cooperative banks, and regional rural banks.

Surveillance Pricing (Personalized/Dynamic Pricing)

Context: New York State was sued by the National Retail Federation over surveillance pricing practices.

What is Surveillance Pricing?

- Business practice of adjusting prices for products or services based on data collected about individuals.
- Data can include browsing history, purchase patterns, location, and more.
- Enables personalized or dynamic pricing tailored to consumer behavior and profiles

Impact of US Remittance Tax on India: Minimal Volume Decline but Increased Costs**Overview of the New US Remittance Tax**

The United States has introduced a 1% tax on specific outbound remittances as part of the One Big Beautiful Bill Act (OBBA), effective from January 1, 2026. This move has raised concerns in countries like India that are heavily reliant on remittance income from their diaspora. While the tax is not expected to significantly reduce the volume of money sent to India, it could increase the cost of these transfers.

Details and Exemptions

Initially proposed at 5%, the tax rate was lowered to 1% after bipartisan discussions. Several key exemptions soften its scope:

- The tax applies only to physical transfer methods like cash, money orders, and cashier's checks.
- Transfers made via bank accounts or US-issued debit/credit cards are exempt.
- Transactions under \$15 are not taxed.
- US citizens sending money abroad are excluded from the tax.

These provisions are expected to shield a large segment of Indian-origin senders who primarily use digital and formal banking channels.

Potential Impact on India's Remittance Landscape

According to estimates from the Center for Global Development, India might see a decline of just under \$500 million in formal remittance inflows, with only Mexico expected to experience a larger loss. Despite this, the figure is small compared to the \$124.31 billion India received in remittances in FY2024-25. However, the tax highlights growing regulatory hurdles to cross-border fund flows.

In 2023-24, remittances from the US made up nearly 27.7% of India's total inflows—about \$32 billion. Even though cash-based transfers form a minor share, any disruption could affect rural households that depend on these funds.

Timing and Distribution Effects

Experts suggest that the immediate effects will be concentrated in the first three quarters of FY2025-26, as senders may expedite their transfers to avoid the tax. Nonetheless, the 1% rate is relatively modest, meaning that the long-term impact will likely manifest more in increased transaction fees rather than a drop in remittance volume.

Trends in India's Remittance Inflows

India's remittances have been on an upward trajectory:

- FY2024-25 net remittances: \$124.31 billion (16% increase)
- Gross inflows: \$132.07 billion (14% rise)
- Share from the US increased from 22.9% in 2016-17 to 27.7% in 2023-24

These inflows were crucial in FY2024-25, offsetting the entire trade deficit of \$98.39 billion and leaving a \$26 billion surplus, underlining their macroeconomic relevance.

Rising Costs of Sending Money

Even prior to this tax, cross-border remittances to India incurred notable transaction fees. According to World Bank data, the average cost to send \$200 to India in Q4 2024 was 5.3%, below the global average of 6.6%. The new tax could elevate these costs, particularly for non-bank or multi-intermediary channels. Additional charges and delays due to correspondent banking networks remain a concern, emphasizing the need for innovation in remittance systems.

India's Efforts to Improve Cross-Border Payment Systems

India has taken proactive steps to make international money transfers more efficient:

- **UPI-PayNow Integration:** Enables real-time transfers between India and Singapore.
- **RBI's Participation in Project Nexus (BIS):** Aims to develop faster, cheaper, and more transparent cross-border payment solutions.

These initiatives are expected to cushion the impact of external policy changes and make formal remittance channels more accessible for Indians abroad.

Status of Youth in Agrifood Systems Report – FAO

Context

The Food and Agriculture Organization (FAO) has released the "Status of Youth in Agrifood Systems" report, emphasizing that empowering youth in agriculture can significantly contribute to **economic growth**, address **youth unemployment**, and enhance **global food security**. The report estimates that improved youth engagement could add up to **1.4% to global GDP**, equivalent to approximately **\$1.5 trillion**, nearly half of which would stem from the agrifood sector.

Key Findings

1. Declining Youth Employment in Agrifood Systems

- The proportion of working youth (aged 15–24) engaged in **agrifood systems** has decreased from **54% in 2005** to **44%**, despite agriculture being a primary livelihood in **low-income economies**.
- This decline reflects both **rural-to-urban migration** and the increasing shift of young people away from farming due to a lack of opportunities.

2. Sharp Rise in NEET Youth

- Over **20% of global youth** are currently **Not in Employment, Education, or Training (NEET)**.
- **Young women** are disproportionately affected, being **twice as likely** to be NEET compared to men, underlining a severe gender disparity.

3. Significant Economic Potential

- **Addressing youth NEET status**, particularly in the **20–24 age group**, could increase **global GDP by 1.4%**.
- Of this projected gain, about **45% could be achieved by strengthening youth participation in agrifood systems**, showing the sector's latent economic capacity.

4. Rural-Urban Divide Widening

- Currently, **54% of global youth live in urban areas**, leaving rural youth underrepresented.
- Only **5% of the workforce in modern, industrial agrifood systems** consists of rural youth, raising concerns about **future labour shortages** in agriculture and food processing.

5. Climate Vulnerability

- Approximately **395 million rural youth** reside in areas highly vulnerable to **climate change**, facing risks from **declining agricultural productivity**, **water stress**, and **extreme weather events**.
- Their limited adaptive capacity makes them especially susceptible to **livelihood loss** and **forced migration**.

6. Growing Food Insecurity

- **Global food insecurity among youth** has risen from **16.7% in 2014** to **24.4% by 2023**.
- The increase is more acute in **Sub-Saharan Africa, South Asia, and conflict-**

affected regions, underscoring the need for **urgent food and income support**.

FAO's Key Recommendations

1. Inquire More

- **Close Data Gaps:** Improve data collection and analysis on **youth participation** in agrifood systems across regions and age groups.
- **Evidence-Based Policies:** Use accurate and disaggregated data to develop **targeted, youth-inclusive policies** and programs.

2. Include More

- **Youth Representation:** Promote **youth inclusion** in decision-making bodies and policy forums at **local, national, and global levels**.
- **Urban and Rural Youth Voice:** Ensure both **urban and rural youth** have **equal say** in shaping agrifood system reforms.

3. Invest More

- **Decent Job Creation:** Develop opportunities for **on-farm and off-farm employment**, especially in **value-added agrifood chains**.
- **Modernize Agrifood Systems:** Channel investments into **infrastructure, technology, value chain development, and sustainable practices**.
- **Resource Accessibility:** Improve youth access to:
 - **Land ownership and leasing**
 - **Affordable credit**
 - **Training and capacity building**
 - **Market access**
 - **Digital platforms and tools**

Enable Orderly Migration: Develop legal and safe **migration pathways** linked to agricultural jobs to reduce **irregular migration** and protect migrant youth workers.

India's Strategic Drive to Boost Pulses Cultivation Amid Rising Imports

In light of increasing domestic demand and a sharp surge in pulse imports, the Department of Consumer Affairs—part of the Ministry of Consumer Affairs, Food and Public Distribution—has launched a focused initiative to promote pulses cultivation, particularly **arhar (tur)** and **urad**, during the **Kharif 2025** season. This effort forms a core part of the government's broader strategy to enhance food security and curb reliance on imports.

Key Measures and Government-Led Initiatives

1. Expansion of Pulses Cultivation Programme

- **Objective:** Encourage large-scale farming of arhar and urad through **seed distribution campaigns**.
- **Execution:** Handled by the **National Cooperative Consumers' Federation of India Ltd. (NCCF)**.
- **Scale-Up:** Building on a successful pilot in two Jharkhand districts, the initiative now spans **12 districts across 7 states**, including:
 - **Jharkhand:** Palamu, Latehar, Garhwa
 - **Uttar Pradesh:** Mirzapur, Lalitpur
 - **Bihar:** Gaya, Jehanabad
 - **Karnataka:** Vijayapura
 - **North-East:** Manipur and Tripura (districts unspecified)
- **Selection Criteria:** Focus on **rainfed areas** and districts containing **Aspirational Blocks**, as identified by NITI Aayog.

2. Financial Backing and Assured Procurement

- **Budget Allocation:** ₹1 crore dedicated to distributing quality seeds.
- **MSP Support:** The government has guaranteed 100% procurement at **Minimum Support Prices** if market rates drop below MSP:
 - **Arhar:** ₹8,000/quintal
 - **Urad:** ₹7,800/quintal

India's Pulses Sector: Trends and Challenges Nutritional Significance and Production Profile

- Pulses contain **20–25% protein**, critical for India's carb-heavy diet.
- India is the **world's leading pulses producer**, cultivating varieties like tur, urad, moong, masur, and gram.
- **Production Growth:** From **163.23 lakh tonnes (2015–16)** to **244.93 lakh tonnes (2023–24)**.
- **Key Producing States:** Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh, Karnataka, Tamil Nadu, Kerala, West Bengal, among others.

Trade Snapshot (in lakh tonnes):

- **2021–22:** Imports – 26.99 | Exports – 3.87

- **2022-23:** Imports – 24.96 | Exports – 7.62
- **2023-24:** Imports jumped to **47.38 lakh tonnes** (~\$5 billion), while exports declined to **5.94 lakh tonnes** (\$686.9 million)

This doubling of imports in 2023-24 underscores growing dependency risks.

- **Top Export Destinations:** Bangladesh, China, UAE, USA, Sri Lanka
- **Key Import Sources:** Canada, Australia, Myanmar, Mozambique, Tanzania

Policy Framework Supporting Pulses Cultivation

1. PM-AASHA (Pradhan Mantri Annadata Aay Sanrakshan Abhiyan)

- Under the **Price Support Scheme (PSS)**, the government procures pulses at MSP.
- **Procurement ceiling of 25% removed** for **Tur, Masoor, and Urad** during 2023-24 and 2024-25.

2. National Food Security Mission (NFSM)

- Covers **28 states and 2 union territories (J&K and Ladakh)**, aiming to increase foodgrain output, including pulses.

3. Crop Diversification Programme (CDP)

- Implemented in **Punjab, Haryana, and Western UP**, this scheme promotes the shift from water-intensive rice cultivation to pulses and oilseeds.

4. Rashtriya Krishi Vikas Yojana (RKVY)

- A flexible scheme allowing states to design tailored interventions, including those aimed at expanding pulse production.

This coordinated effort underscores the government's resolve to make India self-reliant in pulse production while protecting rural livelihoods and stabilizing market prices. The strategic blend of **financial support, infrastructure investment, and policy backing** is set to shape a more resilient pulses ecosystem in the years ahead.

PNGRB Approves Second Amendment to Natural Gas Pipeline Tariff Regulations, 2025

Objective:

- To create a more transparent, consumer-oriented, and investment-friendly natural gas infrastructure in India.
- Aligned with the vision of "One Nation, One Grid, One Tariff."

Key Reforms:

- **Streamlined Tariff Zones:** Reduction in Unified Tariff Zones from three to two, simplifying the transportation system.
- **Support for CNG & PNG (Domestic):** Unified Zonal Tariff of Zone 1 extended nationwide to Compressed Natural Gas (CNG) and Piped Natural Gas (PNG) domestic segments.
- **Efficient Fuel Procurement Mandate:** Pipeline operators must procure at least 75% of annual system-use gas through long-term contracts (minimum of 3 years) to reduce procurement risks and transaction costs.
- **Pipeline Development Reserve – A Sustainable Infra Model:** Reserve created from the net-of-tax earnings of pipeline entities exceeding 75% utilization.
 - 50% reinvested into infrastructure development
 - 50% passed to consumers via tariff adjustments
 - Creates a self-sustaining, performance-linked development model

Role of PNGRB (Petroleum and Natural Gas Regulatory Board)

Formation:

- Statutory body under the Petroleum and Natural Gas Regulatory Board Act, 2006

Key Functions:

- Regulate refining, transportation, storage, distribution, marketing, supply, and sale of petroleum products and natural gas (excluding production)
- Register entities for marketing notified petroleum and petroleum products
- Protect consumer interests and promote fair trade and competition
- Maintain a data bank of industry-related activities

Appeals:

- Appeals against PNGRB decisions are addressed by the Appellate Tribunal for Electricity under the Electricity Act, 2003

Variable Rate Reverse Repo (VRRR)

Context

- The **Reserve Bank of India (RBI)** recently conducted a **₹1 lakh crore 7-day VRRR auction** to manage the **surplus**

liquidity in the banking system, which had reached approximately **₹3.75 lakh crore**.

What is VRRR?

- The **Variable Rate Reverse Repo (VRRR)** is a **monetary policy instrument** used by the **RBI** to **absorb excess liquidity** from the financial system.
- Unlike the **fixed reverse repo rate**, the **interest rate under VRRR is market-determined** through a competitive auction.
- It allows banks to **park their surplus funds** with the RBI for durations **longer than one day** (usually 7, 14, or 28 days) in return for interest.

Announced By

- **Reserve Bank of India (RBI)** as part of its **liquidity management framework** under the monetary policy operations.

Objectives

- To **absorb surplus liquidity** from the banking system.
- To **influence short-term interest rates** and improve **monetary policy transmission**.
- To enable a **market-based mechanism** for short-term liquidity adjustment between commercial banks and the central bank.

How VRRR Works

1. **Auction Announcement:** RBI specifies the total amount and duration of the VRRR (e.g., ₹1 lakh crore for 7 days).
2. **Bank Participation:** Banks submit competitive bids stating the amount and interest rate at which they wish to lend to the RBI.
3. **Rate Discovery:** RBI determines a **cut-off rate** based on the bids and accepts bids **at or above this rate**.
4. **Interest Earnings:** Participating banks earn interest at the auction-determined rate during the VRRR tenor.

Key Features

- **Market-Linked Rates:** Unlike fixed-rate reverse repos, interest rates in VRRR are discovered via auction.
- **Term Operations:** Operates for multiple days (7, 14, 28 days), unlike overnight fixed reverse repo.

- **Liquidity Tool:** Designed specifically to **absorb excess liquidity** from the system.
- **Rate Ceiling:** The auction rate **cannot exceed the current repo rate**.
- **Operational Flexibility:** RBI can conduct VRRRs of varying sizes and durations based on the prevailing liquidity situation.

Implications of VRRR

1. Money Market

- Tightens liquidity, pushing **short-term interest rates** like **call money rate** and **TREPS (Tri-party Repo)** upward.

2. Bond Market

- May **raise short-term bond yields**, increasing **borrowing costs** for corporates and the government.

3. Banking Sector

- **Pros:**
 - Banks earn **higher returns** on idle funds compared to overnight reverse repo.
- **Cons:**
 - Funds are **temporarily locked**, possibly limiting availability for **loans or investments** during the VRRR period.

India Ranks 4th in Global Income Equality – World Bank Report

India Emerges as the Fourth Most Equal Country Globally

- According to the World Bank's latest estimates, India holds the position of **4th most income-equal country** worldwide.
- **Gini Index score:** 25.5 (lower scores indicate greater equality).
- Only the Slovak Republic, Slovenia, and Belarus have better equality scores.
- This achievement coincides with a significant decline in extreme poverty, dropping from **16.2% (2011-12)** to **2.3% (2022-23)**.
- Over **171 million Indians** have been lifted out of extreme poverty in the last decade.

Understanding the Gini Index and India's Score

- The **Gini Index** measures income inequality:
 - **0** = perfect equality
 - **100** = maximum inequality
- India's score of **25.5** places it in the "moderately low inequality" category.

- For comparison:
 - China: 35.7
 - United States: 41.8
 - G7/G20 averages: significantly higher than India
- India's score is close to the "low inequality" threshold, outperforming many advanced economies.

Decline in Extreme Poverty: A Key Driver

- Using the global poverty line of **USD 2.15/day**, India's extreme poverty rate declined sharply:
 - From **16.2% in 2011-12** to **2.3% in 2022-23**.
- This reflects one of the largest reductions in poverty globally in recent years.

Government Schemes and Inclusive Policy Interventions

The World Bank credits India's success to inclusive policies alongside economic growth:

- **Financial Inclusion and Direct Transfers:**
 - **PM Jan Dhan Yojana:** Over 55 crore bank accounts expanded financial access, especially in rural areas.
 - **Aadhaar-linked Direct Benefit Transfers (DBT):** Improved efficiency and reduced leakages, saving ₹3.48 lakh crore by March 2023.
- **Health and Social Security:**
 - **Ayushman Bharat:** Provides ₹5 lakh health insurance, with 41 crore beneficiaries.
 - **PMGKAY:** Distributed free food grains to over 80 crore people, enhancing food security.
- **Livelihood and Entrepreneurship:**
 - **Stand-Up India:** Offers loans and assistance to SC/ST and women entrepreneurs.
 - **PM Vishwakarma Yojana:** Supports traditional artisans with training and market access.

Balancing Growth with Equity

- India's progress shows a successful blend of economic reforms and social protection.
- According to the Social Welfare Department, the Gini Index score reflects

improved access to **food, jobs, healthcare, and banking.**

- India's journey is a potential model for other developing countries seeking inclusive growth.

Global Context and India's Distinctive Approach

- India ranks among 167 countries surveyed.
- Other countries in the "moderately low inequality" group include Scandinavian welfare states (Norway, Finland, Belgium) and fast-growing economies like Poland and the UAE.
- While many countries rely on long-standing welfare systems, India's success is driven by **digital inclusion, targeted cash transfers, and integrated rural support.**

This makes India a unique example of achieving equity within a large and diverse democracy.

Promise and Pitfalls of India's ₹99,446 Crore Employment-Linked Incentive (ELI) Scheme: Overview of the Employment-Linked Incentive (ELI) Scheme

- **Approval and Budget:** The Union Cabinet has approved the ELI scheme with a budget of ₹99,446 crore, announced in the 2024-25 Union Budget.
- **Objective:** To boost job creation, particularly in the manufacturing sector, as part of the Prime Minister's five-scheme employment package (which also includes internships and youth skill development).
- **Implementation Period:** August 1, 2025 – July 31, 2027.
- **Implementing Agency:** Employees Provident Fund Organisation (EPFO).
- **Target:** Create over 3.5 crore jobs within two years, benefiting approximately 1.92 crore newly employed individuals.

Key Provisions

Employee Benefits

- **Eligibility:** Salaries up to ₹1 lakh per month.
- **Incentive:** One-month EPF wage (up to ₹15,000) per eligible employee.
- **Disbursal:**
 - First instalment after 6 months of continuous service.

- Second instalment after 12 months.
- **Mode:** Direct bank transfer.
- **Savings Component:** Part of the incentive is deposited into a fixed deposit account, which the employee can withdraw later.

Employer Incentives

- **Eligibility:** Establishments registered with EPFO.
- **Support:** Up to ₹3,000 per month for each new employee retained for at least 6 months, provided for two years.
- **Manufacturing Firms:** Incentives extended to the 3rd and 4th years as well.

Employers' Response

- Generally positive, calling the scheme a **"laudable initiative"** encouraging first-time employment and sustained job creation.
- Highlighted potential to boost **labour-intensive sectors** and transform India's employment landscape.
- Industry experts suggested:
 - Inclusion of micro and small manufacturing units (especially those with fewer than 20 employees).
 - Shifting scheme oversight to the **Ministry of MSME**.
 - Using a **structured reimbursement model** linked to payroll growth.
 - Offering a **direct monthly subsidy** to both employers and employees tied to continuous employment for easier and broader adoption.

Trade Union Response and Concerns

- **Bharatiya Mazdoor Sangh (BMS):** Welcomed the scheme but urged expansion of social security and enhancement of job quality.
- **Other Central Trade Unions:** Criticised the scheme, highlighting risks based on prior experiences.

Major Concerns

- **Risk of Fund Misuse:** Fear that workers' savings might be diverted to subsidise employers. Referenced issues in the 2020 Production-Linked Incentive (PLI) scheme, where

benefits went mostly to large firms without substantial job creation.

- **Doubts on EPFO's Role:** EPFO's core mandate is to safeguard employee savings, not create jobs. Questions raised on how EPFO can implement this incentive scheme without specific government funding.
- **Call for a Dedicated Body:** Growing demand to establish a specialised agency to administer the scheme rather than relying on EPFO, which lacks the required mandate and mechanisms.

Additional Pitfalls and Challenges

- **Quality vs Quantity Trade-off:** Risk that firms prioritize the number of hires over skill or productivity.
- **Short-Term Hiring Spikes:** Firms may inflate hiring temporarily just to avail benefits, without a real long-term employment commitment.
- **Implementation Challenges:** Necessity for robust monitoring and verification systems to avoid misuse or falsification of employment data.

Sectoral Bias: Likely to favour larger firms with established compliance systems, potentially excluding micro, small, and medium enterprises (MSMEs), which employ a majority of workers.

Gini Index

- India ranks as the world's fourth most equal society with a Gini Index of 25.5, surpassing all G7 and G20 nations (World Bank report).

About Gini Index

- Also called Gini coefficient or Gini ratio.
- Measures income or wealth inequality across a population.
- Developed by Italian statistician Corrado Gini in 1912.
- Coefficient ranges from 0 (perfect equality) to 1 (maximum inequality).
- Hypothetical examples:
 - Perfect equality: everyone earns the same → Gini score = 0.
 - Perfect inequality: one person earns all → Gini score = 1.
- Based on the Lorenz curve:
 - X-axis: percentiles of population by income/wealth.
 - Y-axis: cumulative income/wealth.

- It measures dispersion, not absolute income or wealth.

India's Gini Index:

- Latest score: 25.5, ranking 4th globally in equality.
- Countries ahead: Slovak Republic, Slovenia, Belarus.
- Surpasses regional peers (e.g., China: 35.7) and all G7/G20 nations.
- Improved from 28.8 in 2011 to 25.5 in 2022, showing meaningful reduction in income inequality.

India's Invisible Trade: Why Services and Remittances Now Drive the Economy

When we think of international trade, images of ships laden with containers and cargo aircrafts often come to mind. Yet, in today's global economy, intangible flows—such as services, remittances, capital, and data—are playing an increasingly central role. For India, this shift has been especially transformative. In fact, these “invisible” components of trade now outpace the country's physical exports in shaping its external economic position.

This article explores how India's trade narrative needs to evolve in step with this quiet but powerful transformation.

1. India's Changing Trade Profile: From Tangibles to Intangibles

Stagnation in Goods, Surge in Invisibles

India's merchandise exports expanded rapidly from **\$66.3 billion in 2003–04** to **\$318.6 billion by 2013–14**, but growth has since plateaued. After reaching a high of **\$456.1 billion in 2022–23**, exports declined to **\$441.8 billion in 2024–25**.

In contrast, **invisible receipts—primarily services exports and remittances—have demonstrated consistent, long-term growth**, rising from **\$53.5 billion in 2003–04** to **\$576.5 billion in 2024–25**.

In 2013–14, goods exports exceeded invisibles by \$85 billion. By 2024–25, invisibles surpassed merchandise trade by \$135 billion—a historic reversal.

2. Time to Rethink Trade Narratives

Despite this shift, trade policy and diplomacy continue to focus disproportionately on physical goods. Even in key negotiations—such as those with the United States—issues like textile tariffs

and agricultural access dominate, while services trade and worker mobility remain sidelined.

India's external engagement is increasingly intangible. A policy framework fixated on cargo and customs risks overlooking the actual drivers of India's global economic integration.

3. Breaking Down India's Invisible Trade

Services Exports: The Backbone

In 2024–25, **services accounted for \$387.5 billion** of India's invisible receipts—up from just **\$26.9 billion in 2003–04** and **\$151.8 billion in 2013–14**. These include:

- **Software services:** \$180.6 billion
- **Business, financial, and communication services:** \$118 billion
- **Professional services:** auditors, analysts, consultants, engineers, and architects serving global clients

Remittances: The Global Indian Dividend

Remittances contributed **\$135.4 billion** in 2024–25, up from **\$22.2 billion in 2003–04**. This is fueled by India's expansive diaspora—from skilled professionals in the U.S. and Europe to migrant workers across the Gulf.

Together, services and remittances make up a resilient and growing component of India's foreign earnings.

4. Resilience Without Incentives

Unlike physical exports, invisibles have grown steadily **without reliance on trade agreements, export incentives, or production-linked schemes**. They've proven resilient to:

- Global financial crises
- Supply chain disruptions
- Geopolitical tensions

This durability highlights their strategic importance. Yet, they remain underrepresented in formal trade discussions and economic policymaking.

5. India vs. China: Contrasting Global Trade Models

India's Invisible Surplus vs. Merchandise Deficit

- **Goods trade deficit:** Doubled from **\$147.6 billion in 2013–14** to **\$287.2 billion in 2024–25**, with imports at **\$729 billion** and exports at **\$441.8 billion**
- **Net invisible receipts:** Jumped from **\$115.3 billion** to **\$263.8 billion** over the same period

- **Current account deficit:** Contained at **\$23.4 billion**, thanks to surplus in services and remittances

China's Opposite Pattern

- **Goods trade surplus:** A massive **\$768 billion in 2024**, with exports at **\$3.4 trillion**
- **Services trade deficit:** **\$344.1 billion**, as China imported **\$613 billion** in services but exported only **\$384 billion**

Where China dominates as the **"factory of the world,"** India is emerging as the **"office of the world,"** offering skilled services, digital infrastructure, and human capital on a global scale.

6. Conclusion: Invisible Trade, Visible Impact

India's global economic engagement is no longer defined by goods shipped across borders. **Services and remittances have become the real drivers of trade performance**, resilience, and foreign exchange stability.

Recognizing this shift requires more than statistical acknowledgement—it demands a recalibration of trade strategy. From diplomatic negotiations to investment priorities, India must place invisibles at the heart of its external economic agenda.

In the 21st century, India's greatest exports may not be things—but skills, services, and ideas.

India's Gini Index Controversy: Are We Measuring Inequality Accurately?

Introduction

A recent government statement positioned India as the **world's fourth most equal country**, citing a **Gini Index of 25.5** from the World Bank's *Poverty and Equity Brief*. The claim suggests that economic growth is being equitably shared across the population. However, this narrative has sparked criticism from researchers and economists who argue that India, in reality, continues to experience **high and rising income inequality**.

Understanding the Gini Index

The Gini Index is a widely used measure of income inequality, ranging from:

- **0** = perfect equality
- **1** = perfect inequality

A lower Gini suggests more equal income distribution. But how the index is calculated—and what type of data is used—matters greatly in interpreting the results.

The Data Discrepancy

Government's Claim vs. World Bank Caveats:

While the Indian government cited the World Bank's 25.5 Gini figure as proof of growing equality, it omitted **critical disclaimers** included in the report. The World Bank acknowledged that **data limitations may lead to underestimation** of actual inequality.

Contradictory Evidence from the World Inequality Database (WID):

In contrast to the government narrative, the **World Inequality Database** reports that India's Gini Index (based on income) rose from **52 in 2004 to 62 in 2023**. In **2023–24**, the **top 10% of earners made 13 times more** than the bottom 10%, indicating a significant income divide.

Why Consumption-Based Gini Understates Inequality

India's Gini figure is derived from **household consumption surveys**, which are known to **understate real inequality** because:

- **Consumption smooths differences** between income groups—wealthier individuals tend to **save more**, thus appearing closer to lower earners in terms of spending.
- This method **misses income and asset disparities**, especially among the ultra-rich.

As a result, comparing India's **consumption-based Gini** with other countries' **income-based Ginis** is misleading and distorts the global picture. **Survey Limitations and the "Missing Rich"**

Non-Response Bias:

Wealthier households are less likely to participate in surveys, leading to underrepresentation.

Sampling Limitations:

Standard surveys rarely capture the top 1%, who hold a disproportionate share of national income and wealth.

Alternative Methods:

To overcome these issues, economists often **merge survey data with tax records**, especially **income tax data**, to better reflect wealth concentration at the top. This hybrid approach—used by the World Inequality Database—presents a more realistic assessment of India's growing inequality.

Limitations of the Gini Index

Although commonly used, the Gini Index has significant flaws:

- It is **less responsive to changes** at the very top or bottom of the income scale.
- It is **more influenced by changes in the middle class**, making it inadequate for capturing the full extent of extreme inequality.

Economists, including Nobel laureate **Abhijit Banerjee**, have cautioned that while the Gini offers a general trend, **it lacks interpretive clarity and precision**—especially in highly unequal societies.

Moving Toward a More Accurate Picture

The Case for Broader Metrics:

Sole reliance on **consumption-based Gini** offers a distorted view of inequality. **Income and wealth data**, including **tax filings and asset disclosures**, must be incorporated into national analyses.

Implications for Policy:

Accurate data is critical for **effective redistribution policies, targeted welfare, and inclusive economic planning**. Misleading equality claims can lead to complacency and underinvestment in social equity.

Conclusion

India's recent Gini Index claim has reignited the debate on how inequality should be measured. While the government emphasizes a low Gini figure based on consumption, alternate data sources paint a contrasting picture of **deepening inequality**, particularly at the top end of the income spectrum. For a more credible and informed policy response, **multi-dimensional and income-based indicators** must be prioritized to reflect the **true state of inequality in India**.

Shadow Banking

Context:

The Finance Minister recently stated that Non-Banking Financial Companies (NBFCs) should no longer be considered shadow banks.

What is Shadow Banking?

- Shadow banking comprises a network of financial intermediaries and institutions that operate outside the traditional regulated banking system.
- These entities are not governed by the same regulatory frameworks as conventional banks, leading to less oversight.

Concerns:

- Lack of transparency in operations.

- Potential to increase systemic financial risks due to limited regulation.

Role in the Economy:

- Despite risks, shadow banks provide crucial credit and liquidity support to various sectors of the economy, complementing traditional banks.

Examples of Shadow Banking Entities:

- Money Market Funds
- Hedge Funds
- Private Equity Funds

Securitization vehicles and Asset-Backed Securities

India's Fisheries Sector - Key Statistics and Progress Context

India has witnessed a dramatic rise in fish production over the past decade, more than doubling between 2013-14 and 2023-24. This growth highlights the effectiveness of the government's **Blue Revolution**, which focused on modernising the fisheries sector, promoting aquaculture, and enhancing export potential.

Key Highlights of India's Fisheries Sector

- **Total Fish Production (2023-24):** Reached an all-time high of **195 lakh tonnes**, compared to **95.79 lakh tonnes** in 2013-14.
- **Inland and Aquaculture Output (2014-24):** Increased by **77.71 lakh tonnes**, a significant rise compared to **26.78 lakh tonnes** during 2004-14.
- **Marine Fish Production:** Almost doubled, going from **5.02 lakh tonnes** (2004-14) to **10.52 lakh tonnes** (2014-24).
- **Seafood Export Growth:** India exported **17.8 lakh metric tonnes** of seafood worth **₹60,524 crore** in 2023-24. In comparison, exports were valued at just **₹610 crore** in 2003-04, according to MPEDA.
- **Record Budget Allocation for 2025-26:** The fisheries sector received its **highest-ever funding** of **₹2,703.67 crore**.
- **Kisan Credit Cards for Fishers:** Over **4.5 lakh cards** have been issued, and the credit limit has been enhanced from **₹3 lakh to ₹5 lakh** to improve financial access.
- **PM Matsya Sampada Yojana (PMMSY):** A total planned investment of **₹20,050**

crore has been allocated for the 2020–25 period to support holistic development.

- **Fisheries and Aquaculture Infrastructure Development Fund (FIDF):** The fund stands at ₹7,522 crore, with 136 projects worth ₹5,801 crore already approved for infrastructure expansion.
- **Integrated Aqua Parks: 11 Aqua Parks** have been approved, with a combined cost of ₹682.6 crore, aimed at boosting integrated fishery hubs.

Deployment of Artificial Reefs: 937 artificial reefs are being set up across 12 states, at a cost of ₹291.37 crore, to support marine biodiversity and sustainable fishing.

Rising Inequality in India: Contrasting Narratives on Distributional Justice

- **Introduction**

A recent World Bank report has reignited debates on inequality in India by suggesting that consumption inequality is both low and declining. However, independent studies and economic data sources offer a contrasting view, highlighting rising income and wealth inequality and questioning the reliability of consumption-based metrics.

- **World Bank Report: Claims and Interpretation**

According to the World Bank, India's Gini coefficient declined from 0.288 in 2011–12 to 0.255 in 2022–23, suggesting lower consumption inequality than many other countries.

Gini Coefficient Overview: This statistical measure ranges from 0 (perfect equality) to 1 (maximum inequality), with lower values indicating more equitable distributions. The government has cited these findings as evidence of successful pro-poor policy implementation and inclusive growth.

- **Critique of Consumption-Based Inequality Measures**

Experts argue that consumption inequality is an inadequate proxy for actual economic disparity, as it fails to capture differences in income and wealth accumulation.

Key Limitations:

- Lower-income households consume a higher share of their earnings, while the wealthy save or invest more.

- Rising income among the rich does not always translate into proportionate increases in consumption.
- Household Consumption Expenditure Surveys (HCES), the basis of the data, are methodologically inconsistent and may underreport high-end expenditures.
- **Findings from Independent Sources**

The World Inequality Database presents a significantly different picture of inequality in India:

- **Income Gini (2022–23):** 0.61, among the highest globally.
- **Wealth Gini (2022–23):** 0.75, with only a few countries showing more concentration.

Wealth Concentration: The top 1% of Indian households control approximately 40% of national wealth. Only countries such as Russia, South Africa, and Uruguay report higher levels of wealth concentration.

- **Limitations of the Gini Coefficient**

Although widely used, the Gini index is an aggregate measure and fails to provide granular insights into:

- Top-end income and wealth disparities (e.g., the share of the top 0.1%).
- Intergenerational wealth transfers.
- The socio-political consequences of high inequality, such as reduced social mobility and institutional capture.
- **Paradox of Falling Consumption Inequality**

This paradox is explained by the tendency of rising incomes among the poor to translate directly into higher consumption, while the rich often divert income into non-consumption activities. As a result, consumption inequality may appear to decline even as income and wealth inequality increase.

Implications for Policymaking: An overreliance on consumption data risks misrepresenting the depth of inequality in India, potentially leading to complacency in policy design.

- **Conclusion**

While the World Bank's consumption-based findings may offer a partial and optimistic view, they obscure the deeper structural inequalities in income and wealth that characterize India's socio-economic landscape. For effective policymaking, it is crucial to adopt comprehensive and disaggregated metrics that reflect the full scope of

inequality. Only then can truly inclusive and sustainable economic strategies be devised.

The State of Inequality in India: A Deeper Look Beyond Consumption Metrics

Context

A recent **World Bank report** has suggested that **India is among the least unequal countries in the world**, citing a decline in the **Gini coefficient of consumption inequality** from **0.288 (2011–12) to 0.255 (2022–23)**. However, this optimistic picture is at odds with findings from multiple sources, including the **World Inequality Database (WID)**, which reveal a **worsening gap in income and wealth**.

Understanding the Dimensions of Inequality

1. Consumption Inequality

- Refers to **differences in household spending** on goods and services.
- The World Bank's low Gini estimate suggests reduced inequality.
- However, consumption inequality often **understates true economic disparities**, as people tend to smooth consumption even in volatile income situations.
- The decline may reflect improved access to credit or subsidies, not genuine **income redistribution**.

2. Income Inequality

- Measures disparities in **wages, salaries, and earnings**.
- According to **WID 2023**, India's **income Gini coefficient is 0.61**—among the **highest globally**, surpassed by only 47 countries.
- Official household surveys under-report income, especially at the top end, **masking the full extent** of the divide.

3. Wealth Inequality

- Captures disparities in **ownership of assets** such as property, stocks, and savings.
- India's **wealth Gini stands at 0.75 (WID, 2023)**, reflecting **severe wealth concentration**.
- The top 1% owns a disproportionately large share of national wealth, highlighting entrenched inequality.

Why Measuring Real Inequality in India Is Challenging

- **Household Surveys (like HCES)** miss out on **top income and wealth brackets**,

which are underrepresented or absent in sample-based datasets.

- **Tax data covers only about 6 crore individuals**, leaving the vast **informal sector** invisible in income assessments.
- **India lacks a formal wealth census**; most wealth estimates rely on indirect proxies such as:
 - Forbes billionaires list
 - SEBI disclosures
 - Real estate valuations
- **Survey design bias and underreporting** by the rich further distort inequality estimates.

Limitations of the Gini Coefficient

While widely used, the **Gini coefficient** has important limitations:

- It provides an **aggregate picture**, hiding **extreme wealth concentration** at the very top.
- It **ignores distribution** within population groups, such as the **bottom 50%** or **top 0.1%**.
- Supplementary indicators like:
 - **Top 1% wealth share**
 - **P90/P10 ratios**
 - **Theil index** are needed for a more accurate representation of inequality.

Why High Inequality Matters

Persistent inequality has broad and damaging implications:

- **Economic Mobility Declines:** The bottom 50% find it harder to move up the ladder.
- **Aggregate Demand Shrinks:** The wealthy save more, but do not spend enough to drive broad-based growth.
- **Social Cohesion Weakens:** Economic disparity fuels polarisation, resentment, and unrest.
- **Policy Distortion:** Elite capture can skew taxation, subsidies, and land use in favour of the rich.
- **Uneven Growth:** GDP growth disproportionately benefits the top 10%, leaving most behind.

India's Constitutional and Policy Obligations

- **Article 38(2)** of the Constitution mandates the state to **reduce income and opportunity disparities**.

- **Article 39(c)** under the **Directive Principles of State Policy** requires the state to **prevent wealth concentration**.
- Social schemes like **MGNREGA, PM-KISAN, PM-SVANidhi**, and the **JAM trinity** aim to bridge inequality, but suffer from **leakages and poor targeting**.

Way Forward: Towards Inclusive Development

To address structural inequality, India must pursue bold, multi-dimensional reforms:

1. Progressive Taxation

- Reintroduce **wealth and inheritance taxes** on the ultra-rich.
- Expand the tax base and reduce regressive indirect tax burdens.

2. Universal Public Services

- Scale up investment in **healthcare, education, nutrition, and housing** to ensure equal life chances.

3. Financial Inclusion

- Improve **low-cost credit access**, especially in rural areas.
- Strengthen borrower protections to reduce dependency on informal lenders.

4. Employment and Skilling

- Align **vocational training** with industry demand.
- Promote **job-rich sectors** like manufacturing, MSMEs, and green economy.

5. Better Data Infrastructure

- Integrate **survey data, income tax records, and asset disclosures**.
- Regularly publish inequality metrics beyond consumption-based figures.

Conclusion

India's rising inequality is more than a statistical concern—it is a structural threat to **social justice, economic resilience, and democratic stability**. While some indicators suggest progress, a broader and more accurate picture reveals **deep disparities in income and wealth**. Bridging these gaps requires not just targeted schemes but **systemic reforms** in taxation, public investment, and data transparency. Only then can India move toward **inclusive and equitable growth** for all.

Informal Credit in India

Context

Despite near-universal access to bank accounts in India, recent research—including from CMIE and PIRAMAL Enterprises—reveals a surge in informal borrowing among low-income households. This

trend exposes the persistent gaps in formal credit inclusion.

Defining Informal Credit

Informal credit includes loans or advances obtained from non-regulated sources such as:

- Local moneylenders
- Pawnshops
- Friends and family
- Chit funds

These channels usually lack formal agreements, legal safeguards, or transparency, placing borrowers at heightened risk.

Recent Trends in Credit Access

- **Bank Access:** According to NFHS-5 (2021), 96% of Indian households have at least one member with a bank account.

Shift Toward Informal Sources:

- A **4.2% decline** in formal credit usage was recorded among poor households (CMIE, 2023).
- Simultaneously, there was a **5.8% increase** in informal borrowing among families earning ₹1–2 lakh annually.

- **Reliance in Rural Areas:** As per NABARD's Financial Inclusion Survey (2019), **three out of four rural adults** depend on informal credit in some capacity.

- **Volume:** Informal credit outstanding was estimated at **₹1.4 lakh crore** in 2022 (CRISIL).

Implications

- **Reluctance of Formal Lenders:** Banks and NBFCs are wary of lending to low-income individuals due to perceived credit risk.
- **Exclusion Due to Documentation Gaps:** Many poor households lack necessary collateral, stable income proof, or formal employment records required for institutional loans.

Mismatch Between Demand and Supply:

Formal credit channels are ill-equipped to meet the urgent, localized, and small-ticket needs of the rural and informal economy.

ADEETIE Scheme: Boosting Energy Efficiency in MSMEs

What is ADEETIE?

- **ADEETIE** stands for **Assistance in Deploying Energy Efficient**

Technologies in Industries & Establishments.

- It is a **flagship initiative** launched by the **Bureau of Energy Efficiency (BEE)** under the **Ministry of Power**.
- The scheme aims to help **Micro, Small, and Medium Enterprises (MSMEs)** reduce energy consumption and become more **climate-resilient**.

Key Features

- Offers **financial and technical assistance** to **Udyam-registered MSMEs** for adopting technologies with **10%+ energy savings potential**.
- Provides:
 - **Interest subvention:**
 - 5% for **Micro and Small Enterprises**
 - 3% for **Medium Enterprises**
 - **Investment Grade Energy Audits (IGEA)**
 - **Detailed Project Reports (DPRs)**
 - **Post-implementation monitoring & verification (M&V)**

Additional Support

- Focus on **capacity building** for MSMEs.

A dedicated **online platform** under ADEETIE will streamline project financing for energy efficiency improvements.

India Reaches 50% Installed Power Capacity from Non-Fossil Sources Milestone Achievement

As per the Ministry of New and Renewable Energy, India has reached **484.82 GW** of total installed electricity capacity, with **50.08%** now sourced from **non-fossil fuel technologies—five years ahead** of its Nationally Determined Contributions (NDCs) under the Paris Agreement.

Key Initiatives Behind the Success

- **PM Surya Ghar Yojana:** Enabled nearly **7 lakh rooftop solar installations**.
- **PM-KUSUM:** Distributed **solar pumps** for energy-secure agriculture.
- **Manufacturing Boost:** Expanded domestic production of **solar PV and wind turbines** via **PLI schemes**.
- **Transmission Expansion:** Investment in **inter-state grids** to move renewable power across the country.

- **Green Energy Access Rules (2022):** Gave consumers **open access to renewable sources**.
- **100% FDI Allowed:** Liberalized foreign investment in the renewable sector.
- **Viability Gap Funding:** Financial support for **offshore wind energy** projects.

Significance of the Achievement

- **Climate Leadership:** Demonstrates that **developing countries** can lead in clean energy transitions.
- **Energy Security:** Reduces reliance on volatile fossil fuel imports.
- **Resilient Energy Mix:** Diversifies sources across **solar, wind, hydro, and bioenergy**.

Job Creation: Stimulates large-scale employment across the renewable energy value chain.

NITI Aayog Report: Impact of U.S. Tariffs on India's Trade and Growth Strategy Opportunities in a Shifting Global Trade Landscape

NITI Aayog's recent report analyzes how U.S. tariff structures impact India's trade performance and outlines strategies to boost **export competitiveness**.

Key Findings: Tariff Implications

- **Market Expansion Potential:** India can **gain market share** in 61% of its U.S.-bound export trade.
- **Competitive Edge:** India benefits from **lower tariffs compared to China, Mexico, and Canada** in sectors such as:
 - Nuclear reactors
 - Electrical machinery
 - Iron and steel
 - Vehicles
 - Textiles
- **Minimal Disadvantage:** Only a **1% average tariff disadvantage** in certain goods.

Opportunities Identified

- **High-Value Sectors:** Electronics, machinery, nuclear tech
- **Labor-Intensive Sectors:** Apparel, home textiles, footwear

Policy Recommendations For Merchandise Exports

- **Boost Competitiveness:** Expand **PLI schemes** to more labor-intensive sectors; reduce cross-subsidies in electricity pricing.

- **Improve Trade Facilitation:** Upgrade **AEO Program**, launch targeted initiatives under the **Export Promotion Mission**.
- **Diversify Markets:** Push for strategic FTAs, including the **India-EU FTA**; strengthen **Jan Vishwas 2.0** for regulatory clarity.

For Services Exports

- **Services-Focused FTAs:** Model deals like the India-UK agreement.
- **Widen MRAs:** Increase global mobility for Indian professionals.
- **Simplify Regulations:** Address licensing, data, and IP compliance hurdles.

Skill & Innovation Push: Invest in sectors like **digital health, fintech, ed-tech, and cloud services**.

Machilipatnam

Context:

Nearly 48% of the Machilipatnam Greenfield Port in Andhra Pradesh is completed, with operations expected by late 2026. This development revives Machilipatnam's historic role as a prominent port city.

About Machilipatnam:

- **Location:**
Coastal city in Krishna district, Andhra Pradesh, located at the mouth of the Krishna River on the Bay of Bengal.
- **Historical Significance:**
 - **Satavahana Era:** Functioned as a major port since at least the 1st century AD.
 - **Medieval Period:** Flourished under the Golconda Sultanate, famous for muslin and textile exports to Persia, Europe, and Southeast Asia.
 - **European Trade:** Hosted Dutch, British, and French trading posts in the 17th century.
- **Decline:**
 - Lost importance in the 18th century as British colonial focus shifted to Madras (now Chennai).
 - Further impacted by coastal siltation and lack of modernization post-independence.
- **Modern Strategic Importance:**
 - The new Greenfield port is under construction at Manginapudi with

modern engineering features like tetrapods and breakwaters.

- Phase-I includes 4 berths, expandable to 16, with a capacity of 36 million tonnes per annum (MTPA), accommodating ships up to 80,000 tonnes.
- Telangana plans to develop a dry port and freight corridor connecting to Machilipatnam.
- The port will handle coal, cement, pharmaceuticals, fertilizers, and container cargo.

Expected to boost employment, land values, and logistics infrastructure along Andhra Pradesh's coast.

Consumer Price Index (CPI)

Retail Inflation Update: Retail inflation recorded its lowest level in six years, dropping to 2.10% in June 2025, according to data released by the Central Statistics Office (CSO) under the Ministry of Statistics and Programme Implementation (MoSPI).

About Consumer Price Index (CPI):

- **Definition:** CPI tracks the change over time in the average prices of goods and services purchased by households for consumption.
- **Purpose and Uses:**
 - Serves as a key macroeconomic indicator reflecting inflation trends.
 - Utilized by governments and central banks for inflation targeting and monitoring price stability.
 - Acts as a deflator in national accounts to adjust for inflation.
 - Used to calculate dearness allowance for employees.

Base Year: The CPI's base year was updated to 2012 to reflect current consumption patterns.

Need to Increase Setup Rate of Global Capability Centres (GCCs) in India: Finance Minister

Context:

The Finance Minister has called on both industry and government sectors to collaborate more closely to accelerate the establishment of Global Capability Centres (GCCs) in India and to attract additional Fortune 500 companies that have yet to establish operations in the country. In 2024,

approximately one new GCC has been established per week on average.

Current Status of GCCs in India:

- India is home to over 1,800 GCCs, which account for around half of all GCCs globally.
- These centres contribute approximately \$68 billion in gross value addition, with projections estimating this could rise to between \$150 billion and \$200 billion by 2030.
- GCCs currently employ roughly 2.16 million people, a figure expected to grow to between 2.5 million and 2.8 million by 2030.
- Over the past five years, GCCs have grown at a compound annual growth rate (CAGR) of 11%, contributing 1.6% to the national GDP.

Understanding GCCs:

- Also referred to as Global In-house Centres (GICs) or captives.
- GCCs are offshore facilities set up by multinational corporations to provide a variety of services such as IT support, research and development (R&D), and customer service to their parent companies.
- They operate as integrated parts of the parent company's internal organizational structure.
- Key reasons for India's attractiveness as a GCC destination include cost-effectiveness, readiness in digital infrastructure and policies (e.g., Smart Cities, Digital India), availability of highly skilled and affordable English-speaking talent, and a vast consumer market.

Challenges in Expanding GCCs in India:

- Limited availability of suitably skilled workers outside major metropolitan areas, especially in Tier-II and Tier-III cities.
- Infrastructure gaps in both physical and digital connectivity.
- Complex and sometimes cumbersome regulatory environments.
- Risks related to cybersecurity threats.

Strategic Measures Recommended:

- Adoption and integration of next-generation technologies like artificial

intelligence, automation, and cloud computing.

- Development of agile governance frameworks to swiftly respond to geopolitical complexities and regulatory uncertainties.
- Revamping workforce strategies by focusing on upskilling, adopting new-age skill sets, and embracing hybrid work models.

Aligning GCCs with sustainability objectives in environmental, social, and governance (ESG) areas.

National Pharmaceutical Pricing Authority (NPPA)

Recent Development: The government has fixed prices for 71 essential drug formulations through the National Pharmaceutical Pricing Authority.

About NPPA:

- **Establishment:** Formed in 1997 by a Government of India Resolution, NPPA operates as an attached office under the Department of Pharmaceuticals (DoP), Ministry of Chemicals and Fertilizers.
- **Primary Objective:** To act as an autonomous regulator for drug pricing, ensuring medicines remain affordable and accessible to the public.
- **Key Responsibilities:**

Setting and revising drug prices in accordance with the Drugs Prices Control Order (DPCO) issued by the DoP.

Decarbonising Global Shipping: India's Role in Green Fuels and Shipbuilding**Introduction: A Global Shift Toward Green Shipping**

The global shipping industry is targeting decarbonisation between 2040 and 2050, moving away from conventional fuels like Very Low Sulphur Fuel Oil (VLSFO), diesel, and LNG. The transition to cleaner alternatives—such as green ammonia, e-methanol, and biofuels—presents a significant opportunity for India to assert itself as a global leader in green maritime energy and infrastructure.

Green Fuel Production: India's Emerging Strength

Green hydrogen, produced by electrolyzing water using renewable energy, serves as the foundation for cleaner shipping fuels. However, due to the instability of hydrogen for maritime use, derivatives like green ammonia (hydrogen

combined with nitrogen) and green methanol (hydrogen combined with captured industrial CO₂) are preferred.

India is already investing in green ammonia, aiming to reduce its dependency on imported LNG for fertilizer production. This existing capability positions the country well to meet global maritime fuel needs.

Green Methanol: The Maritime Fuel of the Future

Among green fuels, green methanol is gaining traction as the preferred transition fuel for the shipping sector. It offers a 90% reduction in emissions compared to traditional marine fuels and can be used with minimal modifications to existing ship engines—unlike green ammonia, which, though emission-free, presents complex handling challenges onboard.

Over 360 methanol-ready vessels are in operation or under construction, backed by global shipping giants like Maersk, CMA CGM, and Evergreen. However, cost remains a barrier: in February 2025, green e-methanol was priced at \$1,950 per tonne in Singapore—more than three times the cost of VLSFO (\$560/tonne). This disparity is driven by the high energy demand (10–11 MWh per tonne) and the capital intensity of green hydrogen production infrastructure.

Despite this, demand for green methanol is expected to surpass 14 million tonnes by 2028, outstripping projected supply of 11 million tonnes and adding further pricing pressure.

India's Strategy for Green Shipping and Global Fuel Supply

India has laid out a comprehensive plan to decarbonise its domestic shipping fleet while becoming a global supplier of green marine fuels.

Key initiatives include:

- Promoting the use of green fuels for container ships.
- Establishing green fuel bunkering hubs at strategic ports such as Tuticorin (V.O. Chidambaranar Port) and Kandla.
- Targeting exports to major refuelling hubs like Singapore, which accounts for roughly 25% of global marine fuel supply.

India's large-scale solar generation capabilities, combined with its growing expertise in green hydrogen and derivative fuels, support this ambition.

Developing a Green Marine Fuel Hub: Opportunities and Obstacles

India aspires to become a major global hub for green marine fuels, particularly green methanol. However, it faces several challenges:

- Heavy reliance on imported electrolyzers and solar panels.
- High upfront costs for renewable energy and CO₂ capture infrastructure.

Still, India's solar capacity growth—from 2.82 GW in 2014 to a projected 105 GW in 2025—demonstrates how policy support and sovereign guarantees can drive green sector expansion. These guarantees can help lower project financing costs by enabling access to cheaper international capital.

Key policy and financial interventions required include:

- **Production-Linked Incentive (PLI) schemes** for domestic electrolyser manufacturing.
- **Incentives for Carbon Capture, Utilisation, and Storage (CCUS)** to enable local production of green methanol from industrial CO₂.
- **Low-interest financing** from multilateral development banks (at rates around 4%, compared to domestic rates of 11–12%) to support large-scale project deployment.

With a goal of building 1.5 GW of domestic electrolyser manufacturing capacity and expanding CO₂ sourcing infrastructure, India is positioning itself to lead in integrated green fuel ecosystems.

Revitalising Shipbuilding Through the Green Transition

India is using the green fuel transition as a catalyst to rejuvenate its shipbuilding and ship-owning industries. Government initiatives include:

- Demand-side incentives and policy support to attract partnerships with international shipbuilders, especially from South Korea and Japan.
- Focus on building new green-compatible ships and retrofitting existing vessels.
- A \$10 billion investment to purchase over 110 ships, with 10–20% of these to be powered by green fuels, built in India, and registered under the Indian flag.

This strategy not only strengthens India's shipbuilding capabilities but also aligns with its broader decarbonisation and economic development goals.

Conclusion: India's Green Maritime Vision

India's multifaceted approach—ranging from green fuel production to shipbuilding—places it at the forefront of the global push for sustainable shipping. By overcoming technological and financial challenges through targeted policy, infrastructure development, and international collaboration, India can emerge as both a green fuel supplier and a maritime manufacturing hub. This dual role strengthens its position in global trade while contributing to a cleaner, more sustainable future for the shipping industry.

India Achieves 50% Non-Fossil Fuel Power Capacity—Five Years Ahead of Target

Context: A Milestone in Clean Energy Transition

India has successfully met one of its key **climate goals** under the **Paris Agreement**—achieving **50% of its installed electricity capacity from non-fossil fuel sources**. This milestone has been reached **five years ahead of the 2030 target** set under the country's **Nationally Determined Contributions (NDCs)**.

What Does the 50% Non-Fossil Milestone Mean?

As of **June 30, 2025**, India's **total installed power capacity** stands at **484.82 GW**, out of which **50.08%** now comes from **non-fossil fuel sources**, including:

- **Renewables (Solar, Wind, etc.):** 184.62 GW
- **Large Hydro Projects:** 49.38 GW
- **Nuclear Power:** 8.78 GW
- **Total Non-Fossil Fuel Capacity:** 242.78 GW
- **Fossil Fuel (Thermal) Capacity:** 241.04 GW (49.92%)

This demonstrates a significant structural shift in India's power sector, moving away from coal-based generation towards cleaner alternatives.

Key Drivers Behind the Achievement

1. **Strong Political Will:** Consistent leadership from the central government, especially the **Prime Minister's Office** and the **Ministry of New and Renewable Energy (MNRE)**, has ensured clear policies, funding mechanisms, and execution roadmaps.
2. **Private Sector Participation:** Rapid capacity growth was enabled by large-scale **investments from domestic and international firms**, particularly in solar,

wind, and hybrid renewable energy projects.

3. **State-Level Innovation:** States like **Gujarat** and **Tamil Nadu** have pioneered **renewable energy parks** and **wind energy corridors**, supporting decentralised and region-specific adoption.
4. **Digital Energy Infrastructure:** Investments in **smart meters**, **electric vehicle (EV) infrastructure**, and **digital load management systems** have improved grid efficiency and renewable energy integration.
5. **Global Partnerships:** Initiatives such as the **International Solar Alliance (ISA)** and **Just Energy Transition Partnership (JETP)** have facilitated **technology transfer**, concessional finance, and **international collaboration**.

Challenges on the Road Ahead

Despite this progress, India faces several hurdles in scaling up and sustaining its clean energy transition:

- **Grid Stability Concerns:** The variability of solar and wind energy creates difficulties in maintaining **grid frequency and reliability**, especially without sufficient storage.
- **Land Conflicts:** Large-scale renewable installations have led to **displacement of farmland and community land**, raising **environmental and social justice** issues.
- **Lack of Storage Capacity:** **Battery storage** and **pumped hydro** solutions remain underdeveloped, limiting 24/7 renewable power supply.
- **Intermittency Issues:** Renewable generation depends heavily on **weather patterns**, leading to **unpredictable output** and **planning challenges**.
- **Cybersecurity Risks:** The increasing **digitalisation** of the power sector makes it vulnerable to **cyberattacks**, malware, and operational disruptions.

The Way Forward: Building a Resilient and Inclusive Energy Future

To build on this early success and move toward **net-zero emissions**, India must:

1. **Modernise Power Grids:** Integrate **AI-based demand forecasting**, two-way

- communication, and smart grid technologies to enhance efficiency.
2. **Expand Storage Infrastructure:** Accelerate investments in **Battery Energy Storage Systems (BESS)** and **pumped hydro storage** to stabilise power supply from renewables.
 3. **Promote Circular Economy:** Establish systems to **recycle solar panels**, wind turbine blades, and batteries to reduce waste and mineral dependency.
 4. **Ensure Energy Equity:** Expand **rooftop solar, microgrids, and off-grid solutions** in **rural, tribal, and underserved regions** to ensure just and inclusive energy access.
 5. **Scale Up Green Hydrogen:** Invest in green hydrogen production to **decarbonise hard-to-abate sectors** like transport, refineries, and heavy industry.
 6. **Strengthen Cyber Resilience:** Enhance **digital security protocols**, real-time monitoring, and establish a **national cybersecurity framework** for energy assets.

Conclusion: A Proof of Possibility

India's achievement of **50% non-fossil fuel power capacity** is a landmark moment, demonstrating that **climate action and economic development can progress in parallel**. It enhances India's standing as a **global clean energy leader**, setting an example for other developing nations. Going forward, the challenge will be to build a **resilient, equitable, and intelligent energy ecosystem** that ensures both environmental sustainability and energy security.

Insurance Regulatory and Development Authority of India (IRDAI)

Current Update

The **IRDAI** has recently constituted **committees of whole-time members** to investigate violations committed by select **insurance companies and intermediaries**.

About IRDAI

- A **statutory authority** established under the **IRDAI Act of 1999**.
- Operates autonomously under the **Ministry of Finance, Government of India**.

Core Functions

- **Protecting policyholders' interests** by ensuring fair practices and timely claims settlement.
- **Regulating and developing the insurance sector** while maintaining market transparency and consumer trust.
- **Monitoring financial stability and solvency** of insurance providers.
- **Preventing unethical pricing** and ensuring insurance affordability.
- **Licensing & Supervision**

IRDAI issues and renews licenses to:

- **Life Insurance Companies**
- **General Insurance Companies**, including **standalone health insurers**
- **Reinsurance Companies**
- **Insurance intermediaries** such as:
 - Brokers
 - Corporate Agents
 - Surveyors
 - Third-party Administrators (TPAs)

Organizational Structure

- Consists of:
 - **One Chairman**
 - **Five full-time members**
 - **Four part-time members**, all appointed by the **Government of India**.

Key Responsibilities

- Overseeing **policy terms**, pricing, and conditions.
- Regulating **investments and solvency margins** of insurers.
- Defining **eligibility and training standards** for insurance agents and intermediaries.
- Conducting **audits, inspections, and investigations** into the operations of insurers and agents.
- Promoting **insurance access in rural and vulnerable areas**.
- Enforcing **financial disclosure and reporting norms**.
- Approving **new insurance products and innovations**.

Headquarters: Hyderabad

Silicon-Perovskite Tandem Solar Cells

Context

The Union Minister for New and Renewable Energy (MNRE) praised a major technological advancement by NCPRE—a tandem solar cell combining silicon and perovskite materials that achieved a record 29.8% efficiency. This innovation is seen as a transformative step for India's solar energy sector.

What Are Silicon-Perovskite Tandem Solar Cells?

Tandem solar cells stack two light-absorbing materials—silicon and perovskite—to capture a broader range of the solar spectrum. This layered structure significantly increases energy conversion efficiency compared to conventional silicon-only cells.

Developer

- **ART-PV India**, a startup incubated at **IIT Bombay**.
- **Key Features**
- Achieved **29.8% efficiency** in a 4-terminal Silicon/CdTe-Perovskite configuration.
- Potential to exceed **30% efficiency**, placing it among the most efficient solar cells developed in India.
- Promises **lower production costs** and **higher energy output per unit area**.

Potential Applications

- Residential and commercial **rooftop solar systems**.
- **Large-scale solar parks** for grid-level energy supply.
- **EV charging stations** powered by high-efficiency solar panels.

Significance for India

- A major stride towards the **Aatmanirbhar Bharat** initiative by promoting home-grown solar technology.
- Reduces dependency on **imported solar modules**, especially from China.
- Strengthens India's position as a **global leader in advanced photovoltaics**.
- Supports the country's **Net Zero by 2070** climate target.

Stimulates the **domestic green tech manufacturing** ecosystem with export potential.

OECD-FAO Agricultural Outlook 2025-2034: Key Insights & India's Agri-Marketing Challenges

Context

The **OECD-FAO Agricultural Outlook 2025-2034** presents a decade-long forecast for

agricultural commodities—including fish—covering trends at the **national, regional, and global levels**. It serves as a key reference for policy planning, trade forecasting, and sustainability assessments in the food and agriculture sectors.

Global Agricultural Market Trends (2024 Highlights)

1. Rising Biofuel Demand

- **Global biofuel consumption** is projected to grow at an annual rate of **0.9%**.
- This growth will be **driven by India, Brazil, and Indonesia**, reflecting these countries' increasing investment in renewable energy within the agriculture-energy nexus.

2. Cotton Market Dynamics

- **Global cotton consumption** is rising.
- **India is on track to surpass China** as the **world's largest cotton producer**, indicating a shift in global textile supply chains.

India's Agricultural Marketing Landscape

• Definition

Agricultural marketing in India involves the entire system of **handling, processing, transporting, and selling** agricultural produce—from the **farm gate to the consumer**. It includes goods in raw form and those processed for downstream industries such as **textiles**.

Key Challenges in Agricultural Marketing in India

1. Inadequate Infrastructure

- Poor storage and logistics lead to **post-harvest losses estimated at ₹92,000 crore**, as per the **Central Institute of Post-Harvest Engineering & Technology**.
- Lack of **cold storage, processing units**, and **efficient transport** limits farmers' ability to preserve and sell perishable goods.

2. Fragmented Market Systems

- Agricultural marketing is governed by state-specific **Agricultural Produce Market Committee (APMC) Acts**, leading to **regional fragmentation**.
- Absence of a **unified national market** restricts interstate trade and hinders price discovery.

3. Limited Market Access for Small Farmers

- **Small and marginal farmers**, especially in remote areas, are often forced to sell to **local traders** at lower prices due to limited connectivity or market presence.
- This weakens farmers' bargaining power and reduces their income.

Government Initiatives to Strengthen Agri-Marketing

1. National Agriculture Market (e-NAM)

- A **digital trading platform** connecting APMC mandis across states.
- Enables farmers to access **real-time prices** and sell their produce to **buyers nationwide**, enhancing **price transparency and competition**.

2. 10,000 Farmer Producer Organisations (FPOs) Scheme

- Aims to **aggregate small farmers** into producer collectives to improve their **market negotiation power** and **supply chain integration**.

3. Agriculture Infrastructure Fund (AIF)

- A **₹1 lakh crore central scheme** offering **financial incentives** and **interest subvention** for creating post-harvest infrastructure like:
 - Warehouses
 - Cold chains
 - Primary processing units
 - Community farming assets

4. Agricultural Marketing Infrastructure (AMI) Scheme

- Supports the construction of **godowns and storage units** in rural areas to:
 - Reduce wastage
 - Ensure better price realization
 - Improve food security

Conclusion

The **OECD-FAO Outlook** highlights the rising global demand for agri-products like **biofuels and cotton**, with India poised to play a major role. However, realizing this potential depends heavily on **strengthening India's agricultural marketing system**. Addressing infrastructure gaps, integrating fragmented markets, and improving access for smallholders will be critical to ensuring **inclusive growth** and **global competitiveness** in agriculture.

Indian Council of Agricultural Research (ICAR) Context:

The 97th Foundation Day of ICAR was commemorated in New Delhi, where the Union

Agriculture Minister addressed both scientists and farmers.

About ICAR:

- **Definition:** The Indian Council of Agricultural Research (ICAR) is an autonomous apex institution under the Ministry of Agriculture and Farmers' Welfare. It oversees agricultural education, research, and extension activities across India.
- **Establishment:** Founded on 16 July 1929 as the Imperial Council of Agricultural Research.
- **Legal Status:** Reconstituted under the Societies Registration Act, 1860.
- **Headquarters:** New Delhi.
- **Parent Body:** Department of Agricultural Research and Education (DARE).
- **Leadership:** The Union Minister of Agriculture serves as the ex-officio President.

Primary Functions:

- **Education & Research:** Plans, finances, and coordinates research and development in agriculture and allied fields including fisheries, animal husbandry, agroforestry, and home science.
- **Technology Transfer & Extension:** Acts as a central knowledge hub for farmers via publications, exhibitions, and outreach programs.
- **Capacity Building:** Facilitates skill development and advanced agricultural education through competitive exams and recruitment via the Agricultural Scientists Recruitment Board (ASRB).
- **Consultancy & Collaboration:** Partners with national organizations like CSIR and BARC, as well as international entities, to promote integrated rural development and improve post-harvest management.
- **Policy Advisory:** Provides recommendations to the government on sustainable agriculture, innovation, and food security strategies.

Major Announcements at the 97th Foundation Day:

- **Viksit Krishi Sankalp Abhiyan:** The largest-ever farmer-scientist dialogue identifying 500 research areas tailored to region- and crop-specific needs.

- **Field-Guided Research Agenda:** Research priorities set by farmers with teams adopting a "One Team, One Goal" model.
- **Emphasis on Natural Farming:** Promoting chemical-free, sustainable agricultural practices for environmental health.
- **Fertilizer Testing Kits:** Portable kits introduced to enable farmers to verify soil and input quality, aiming to reduce adulteration.
- **Toll-Free Grievance Helpline:** Established to report seed and fertilizer fraud, alongside a crackdown on over 30,000 unregulated bio-stimulant products.

Ethical MoUs & Price Oversight: Mandates fair pricing in ICAR-industry collaborations to safeguard farmer interests.

NLC India Limited (NLCIL)

Context:

The Union Cabinet approved a special investment exemption permitting NLC India Limited (NLCIL) to invest ₹7,000 crore in renewable energy projects without prior approvals.

About NLCIL:

- **Nature:** A Navratna Central Public Sector Enterprise (CPSE) involved in lignite mining and power generation (thermal, coal, and renewable).
- **Established:** 1956.
- **Headquarters:** Neyveli, Tamil Nadu.
- **Governance:** Under the Ministry of Coal.
- **Mission:** To integrate People, Planet, and Profit by leading sustainable mining and green energy initiatives.

Functions and Objectives:

- Mining lignite and coal domestically and internationally.
- Power generation via thermal and renewable energy.
- Undertaking sustainability projects such as eco-restoration, afforestation, and rainwater harvesting.
- Implementing clean mining and emission control technologies with a focus on community-centered CSR.
- Aligning operations with India's climate goals and the Net Zero roadmap.

Details of Investment Exemption:

- **Scope:** Allows ₹7,000 crore investment by NLCIL in its wholly-owned subsidiary NLC India Renewables Ltd (NIRL), which may further invest directly or via joint ventures in renewable energy projects.
- **Relaxations:**
 - Waiver of the 30% net worth ceiling imposed by the Department of Public Enterprises (DPE).
 - Exemption from investment caps as per Navratna CPSE rules.

Applicability: For both NLCIL and NIRL as part of India's renewable energy expansion, including transfer of 2 GW existing renewable assets and new green investments.

Right to Rehabilitation

Context:

In the recent Supreme Court judgment (Estate Officer, Haryana Urban Development Authority vs. landowners), it was ruled that rehabilitation is not a fundamental right.

Judgment Details:

- Article 21 (Right to Life) cannot be broadly applied to claim deprivation of livelihood in land acquisition cases.
- Constitution guarantees fair monetary compensation, but rehabilitation beyond legal entitlement is not mandatory.

Limitations on Rehabilitation:

- The Land Acquisition Act does not recognize rehabilitation as a constitutional right (citing Amarjit Singh vs. State of Punjab, 2010).

The state cannot be compelled to provide alternative housing (State of MP vs. Narmada Bachao Andolan, 2011).

Global Findex 2025 – World Bank Report

India-Specific Highlights

- **Account Ownership:** Nearly 90% of Indian adults have bank accounts.
- **Inactive Accounts:** 16% have inactive accounts (vs. 4% global LMIC average).
- **Gender Gap Reduction:** Decline in inactive accounts among both **men and women**.
- **Barriers:**
 - Mobile phone costs

Network unreliability

National Financial Reporting Authority (NFRA)

Context

- **Shri Nitin Gupta**, a retired IRS officer and former Chairman of the Central Board of Direct Taxes (CBDT), has been appointed as the new Chairperson of the **National Financial Reporting Authority (NFRA)**.

Overview of NFRA

- **Type:** Independent regulatory body
- **Ministry:** Ministry of Corporate Affairs
- **Date of Establishment:** 1st October 2018
- **Legal Basis:** Constituted under **Section 132(1) of the Companies Act, 2013**
- **Headquarters:** New Delhi
- **Mandate and Objectives**
- Regulate and enforce **accounting and auditing standards**.
- Recommend policies and frameworks to ensure strong **corporate financial governance**.
- Supervise and improve the **quality of audit practices** in India.
- Investigate **professional misconduct** by auditors of specified classes of companies.
- Serve public and investor interests by promoting **transparent and reliable financial disclosures**.

Entities Under NFRA Jurisdiction

- All **listed companies** on Indian and foreign stock exchanges.
- **Unlisted public companies** meeting any of the following thresholds:
 - Paid-up capital of **₹500 crore or more**
 - Turnover of **₹1,000 crore or more**
 - Aggregate outstanding loans, deposits, or debentures of **₹500 crore or more**
- **Banks, insurance companies, power companies**, and companies governed by special Acts.
- **Foreign subsidiaries or associates** of Indian companies contributing **20% or more** to consolidated income or net worth.
- Any other entity referred by the **Central Government** in **public interest**.

Key Features

- Operates with **statutory autonomy** and has **investigative powers**.
- Can issue **directives, debar auditors**, and **impose penalties**.

- Aligns India's accounting and audit practices with **global standards** like IFRS and ISA.
- Aims to improve **corporate governance, investor confidence**, and **audit integrity**.
- Strengthens regulatory oversight of **statutory auditors and financial reporting systems**.
- **Significance**
- Functions as a **financial watchdog** promoting discipline in corporate financial practices.
- Fills gaps left by **self-regulatory bodies** like ICAI.

Enhances **investor trust**, particularly for **large unlisted companies**.

GENIUS Act: U.S. Framework to Regulate Stablecoins Context

The United States has introduced the **GENIUS Act**, a legislative step aimed at creating a structured regulatory framework for **stablecoins**, a rapidly growing class of digital assets.

What Are Stablecoins?

- **Definition:** Stablecoins are a type of **cryptocurrency** that are pegged to the value of a **real-world asset**, such as a currency (e.g., US dollar), commodity, or financial instrument.
- **Example: Tether (USDT)** is a widely used stablecoin backed by the U.S. dollar.
- **Purpose:** Their relative price stability makes them suitable for **efficient digital payments** and **cross-border transactions**.

How Does Cryptocurrency Work?

- **Blockchain Technology:**
 - Transactions are recorded on a **public distributed ledger** known as the **blockchain**.
 - Every participant holds a copy of this ledger, ensuring **transparency and immutability**.
- **Mining Process:**
 - Cryptocurrencies are created through **mining**, where powerful computers solve complex mathematical puzzles.
 - Successful miners are rewarded with newly generated coins.
- **Usage:**

- Cryptocurrencies can be **purchased through brokers** and stored in **digital wallets** for spending or investment.

Why Is the Use of Stablecoins Increasing?

- **Price Stability:**
 - Unlike volatile cryptocurrencies (e.g., Bitcoin), stablecoins are tied to **underlying assets**, providing **steady value**.
 - This makes them more reliable as **mediums of exchange** and for daily transactions.
- **Credible Issuers:**
 - Stablecoins are often issued by **regulated banks, non-bank financial institutions, or tech companies**, lending **credibility and trust** to their value.
- **Governance Mechanism:**
 - Most stablecoin ecosystems are managed by **governance bodies** that oversee monetary policy, reserves, and transparency.

Cryptocurrency Regulation in India

- **Current Status**
- **Unregulated Asset Class:**
 - As of now, **cryptocurrencies and crypto assets are not regulated** by any financial authority in India.
- **Taxation Framework (Finance Act, 2022)**
- Introduced a **30% tax on capital gains** from the transfer of **Virtual Digital Assets (VDAs)**.
- Under the **Income Tax Act, 1961**, a **VDA** includes:
 - Any code, number, or token—created cryptographically—that can be **transferred, stored, or traded electronically**.
 - Examples: **Cryptocurrencies, Non-Fungible Tokens (NFTs)**.
- **Money Laundering Prevention (2023 Update)**
- VDAs have been brought under the **Prevention of Money-Laundering Act (PMLA), 2002**, enabling stricter scrutiny of crypto transactions to curb illicit use.

Conclusion

The **GENIUS Act** marks a critical step in acknowledging the **growing relevance of**

stablecoins and addressing associated **legal, financial, and systemic risks**. While the U.S. moves towards a clear framework for these digital assets, **India has taken initial steps through taxation and anti-money laundering laws**, though **full regulation is still evolving**.

Offshore Areas Atomic Minerals Operating Right Rules, 2025

Context

The Government of India has notified new rules under the **Offshore Areas Mineral (Development and Regulation) Act, 2002**.

Objective

- To regulate the **exploration and mining of atomic minerals** like **uranium and thorium** in **offshore regions**.

Key Features

- Applicable only if atomic mineral concentration **exceeds specified thresholds**.
- Government-nominated entities can receive **exploration licenses or production leases**.
- **Foreign entities** must obtain **prior government approval** to operate.

Major Atomic Minerals in India

- **Uranium**
 - Found in **Jharkhand, Andhra Pradesh, Rajasthan, Meghalaya**.
 - **Jaduguda (Jharkhand)**: India's first commercial uranium mine.
 - Other sites: **Lambapur-Peddagattu (AP), Bagjata (Jharkhand)**.
 - Indian uranium deposits are generally **small and low-grade**.
- **Thorium**
 - India has **limited uranium but rich thorium resources**.

Monazite sands (8–10% thorium) found in **Kerala and Odisha beaches**.

Consumer Price Index (CPI) for AL and RL

Recent Update

- The **Labour Bureau** has revised the **base year** for the **CPI for Agricultural Labourers (CPI-AL)** and **Rural Labourers (CPI-RL)** from **1986–87=100** to **2019=100**.

About CPI-AL and CPI-RL

- These indices **replace** the earlier series based on the **1986–87 base year**.

- **Compiled by:** The Labour Bureau, which functions under the **Ministry of Labour and Employment**.

Purpose of CPI

- The **Consumer Price Index (CPI)** tracks changes over time in the **general price level** of a basket of **goods and services** typically purchased by **households for consumption**.
- CPI-AL and CPI-RL specifically reflect the **cost of living changes** for **agricultural and rural labour households**, respectively.

Who is an Agricultural Labourer (AL)?

- An individual engaged in **one or more agricultural occupations** as a **hired labourer**, regardless of whether the payment is in **cash, kind, or a combination** of both.

Who is a Rural Labourer (RL)?

A person involved in **manual work** in **rural areas**, employed in either **agricultural or non-agricultural** sectors, and compensated in **cash, kind, or a mix of both**.

India's Food Inflation Trends: Relief and Risks in 2025

Inflation Reaches New Lows

In June 2025, India recorded a **Consumer Price Index (CPI) inflation rate of just 2.1%**, significantly lower than the **US (2.7%)** and **UK (3.6%)**. The contrast in **food inflation** is even starker: India saw a **1.1% decline**, while the US and UK experienced increases of **3%** and **4.5%**, respectively. This marks the lowest level of both retail and food inflation since January 2019—a major relief for the Reserve Bank of India following a prolonged battle with high inflation during 2023–2024.

Drivers of Low Food Inflation

1. Bumper Harvests from Surplus Monsoon

A surplus monsoon in 2024 led to abundant **kharif and rabi** crop production, helping ease food prices in early 2025. Improved rainfall distribution and water availability contributed significantly to supply-side stability.

Understanding Food Inflation in India

- **Definition:** Food inflation refers to the annual rate of price increase in essential food items.
- **Measurement:** Tracked by the **Ministry of Statistics and Programme**

Implementation (MoSPI) via the **Consumer Price Index (CPI)**.

- **Impact:** Particularly burdensome for lower- and middle-income households, where food constitutes a major share of expenses.
- ##### **2. Wheat Stocks Surge, Ensuring Cereal Security**

Strong monsoon conditions in 2024 resulted in a healthy wheat harvest. Government godowns held **358.78 lakh tonnes (lt)** of wheat as of July 1, 2025—up from 282.61 lt the previous year and the highest in four years. Procurement also rose to **300.35 lt** (April–June 2025), compared to 266.05 lt in 2024 and 187.92 lt in 2022. Combined with high rice reserves, India is now well-equipped to support the **Public Distribution System (PDS)** and manage market prices, unlike the more fragile scenario in recent years.

3. Rainfall Patterns, Crop Shifts, and Inflation Outlook

The 2025 monsoon arrived early (May 24 in Kerala) and delivered **7.1% above-normal rainfall** by July 20. Most areas experienced surplus rain, boosting sowing in major **kharif** crops. Exceptions included **arhar (pigeon pea), soyabean, and cotton**, where lower market prices and pest issues—not poor rainfall—led to reduced planting.

Farmers are increasingly shifting to **maize**, driven by higher profitability linked to its role in **ethanol, feed, and starch** industries. Despite reduced acreage in some **pulses and oilseeds**, food inflation remains under control due to record imports:

- **72.56 lt** of pulses
- **164.13 lt** of vegetable oils

The government extended **zero-duty imports on pulses** until March 2026 and **cut import duties on key edible oils**, bolstering supply and curbing inflation risks.

Fertiliser Shortage: A Looming Concern

Despite a promising monsoon and strong crop outlook, fertiliser availability poses a risk. As of July 1:

- **Urea stocks** dropped from 103 lt to **61.22 lt**
- **DAP stocks** declined from 19.18 lt to **12.98 lt**

The shortfall stems from lower imports, mainly due to **China's export restrictions**. Urea imports from China plunged from **21.48 lt to 1.04 lt**, and

DAP from 22.87 lt to 8.43 lt, driving DAP prices up from \$525 to \$810 per tonne.

Whether this shortage will significantly impact yields remains uncertain, but it introduces an element of vulnerability in an otherwise robust agricultural season.

Public Sector Unit (PSU) Dividends: Rising Government Revenues

Context

In FY 2024-25, the Government of India's dividend income from non-banking Central Public Sector Enterprises (CPSEs) nearly doubled compared to FY 2020-21, reaching ₹74,017 crore.

What Are PSU Dividends?

- **Definition:**
Dividends are profit distributions made by CPSEs to their majority shareholder, the Central Government.

Dividend Trends and Insights

- **Growth Surge:** Dividend receipts increased significantly from ₹39,558 crore in FY 2020-21 to ₹74,017 crore in FY 2024-25.
- **Sector Concentration:** Five major firms accounted for 42% of total dividends:
 - Coal India
 - ONGC
 - Indian Oil Corporation (IOC)
 - Bharat Petroleum Corporation Limited (BPCL)
 - GAIL
- **Oil Marketing Companies (OMCs) Performance:** Despite a decline in global oil prices, dividends from IOC and BPCL increased by 255% since 2022-23.
- **Policy Mandate (November 2024):** The Department of Investment and Public Asset Management (DIPAM) issued a directive requiring:
 - A minimum dividend payout of 30% of Profit After Tax (PAT) or

4% of net worth, whichever is higher, as the annual dividend.

National Sample Survey (NSS) - 75 Years

Context

The National Sample Survey (NSS), India's premier data collection system, marks 75 years since its establishment by P.C. Mahalanobis in 1950 to collect social and economic data using random sampling methods.

- About NSS

Administered By:

- Ministry of Statistics and Programme Implementation (MoSPI)

Leadership:

- Headed by a Director General, responsible for conducting large-scale All-India sample surveys.

Key Areas of Coverage:

- Household-level socio-economic surveys on:
 - Population, fertility, family planning
 - Births, deaths, and migration trends
- Agricultural and livestock surveys
- Enterprise surveys, especially in the unorganized sector
- Price surveys for rural retail prices and inflation metrics
- Village-level infrastructure surveys

Divisional Structure of NSS

1. **Survey Design and Research Division (SDRD) - Kolkata**
 - Responsible for technical survey planning, definitions, sample design, and methodologies.
2. **Field Operations Division (FOD) - Delhi/Faridabad**
 - Handles data collection across India.
3. **Data Processing Division (DPD) - Kolkata**
 - Oversees sample selection, software development, and data validation and tabulation.
4. **Survey Coordination Division (SCD) - New Delhi**
 - Coordinates inter-divisional activities and ensures survey synchronization.

Major Surveys Conducted by NSS

- **Urban Frame Survey (2022-2027):**
 - Aims to establish and update a reliable urban sampling frame, vital for urban socio-economic studies.
- **Annual Survey of Industries (ASI):**
 - Analyzes changes in the growth, composition, and structure of India's organized manufacturing sector.
- **Periodic Labour Force Survey (PLFS):**

- Initiated in **2017**, it is the **primary source** for national **labour force statistics** (employment, unemployment, etc.).
- **Price Surveys:**
 - Includes data collection for:
 - **Consumer Price Index – Urban & Rural (CPI-U/R)**
 - **Consumer Price Index for Agricultural and Rural Labourers (CPI-AL/RL)**

Wholesale Price Index (WPI)

Government's Strategic Roadmap for a Sustainable and Competitive Coal Sector Context

India possesses the **fifth-largest coal reserves** globally, and **coal accounts for 55%** of the nation's total energy consumption. To modernise the coal sector, reduce import dependency, and align with environmental goals, the government has laid out a **multi-pronged strategy** focusing on **sustainability, efficiency, and self-reliance**.

Sustainability Initiatives in the Coal Sector

1. Greening and Land Reclamation

- **Afforestation of Mined-Out Areas:** Systematic plantation activities in reclaimed mine lands.
- **Participation in Green Credit Programme:** Coal and lignite PSUs actively involved in the **Ministry of Environment, Forest and Climate Change's (MoEF&CC)** initiative to generate green credits.

2. Treated Mine Water Utilization

- Reuse of mine water for:
 - a) **Community purposes:** Irrigation and domestic supply
 - b) **Industrial applications:** Dust suppression, firefighting
 - c) **Environmental restoration:** Groundwater recharge, aquaculture

1. Sustainable Sand Extraction

- **Overburden Sand Recovery:** Extracting sand from overburden (mining waste) for construction use and underground stowing.
- This supports:
 - **Construction material supply**
 - **Sustainable mining practices**

- **Revival of riverine ecosystems**
- 2. **Adoption of Blast-Free Mining Technology**
 - Introduction of modern equipment such as:
 - **Surface Miners**
 - **Continuous Miners**
 - **Rippers**
 - These technologies eliminate the need for conventional drilling and blasting, thereby reducing environmental and safety risks.
- 3. **Clean Coal and Renewable Energy Integration**
 - Focus areas include:
 - **Coal Gasification**
 - **Coal Bed Methane (CBM) extraction**
 - These initiatives aim to reduce the environmental footprint and improve the energy efficiency of coal usage.

Measures to Reduce Coal Imports

1. Boosting Domestic Production and Usage

- **Coal block allocations** to private and public sector players
- **Streamlined clearance procedures** to accelerate operationalisation
- Formation of an **Inter-Ministerial Committee (IMC)** to coordinate efforts on **coal import substitution**

2. Improving Evacuation and Supply Chain Infrastructure

- Development of:
 - **New railway lines** for coal movement
 - **Upgraded transport logistics**
 - **First Mile Connectivity (FMC) projects** to facilitate faster, cleaner, and more efficient coal loading and dispatch

3. Fiscal Support via SHAKTI Policy

- Under the **SHAKTI (Scheme for Harnessing and Allocating Koyala Transparently in India)** policy:
 - **Imported coal-based power plants** are now allowed improved access to **domestic coal supply**, reducing reliance on imports.

4. Coking Coal Mission

- Launched to enhance domestic production of **coking coal**, critical for the **steel industry**.

- Aims to reduce India's dependence on coking coal imports and support the growth of indigenous steel manufacturing.

Conclusion

The government's coal sector strategy reflects a **balanced approach**, combining **economic competitiveness** with **sustainability imperatives**. Through cleaner technologies, improved infrastructure, and reduced import reliance, India aims to ensure **energy security**, **environmental stewardship**, and **industrial self-reliance** in its coal-driven sectors.

Stablecoins

- **Context**

The **GENIUS Act**, recently signed by **US President Donald Trump**, establishes the **first federal framework** for stablecoins pegged to the US dollar, reviving global interest in regulated digital currencies.

What Are Stablecoins?

Stablecoins are **blockchain-based digital currencies** that maintain a **stable value** by pegging themselves to a reference asset, typically a **fiat currency** such as the US dollar.

Developed By

- **Private issuers** including:
 - Tether (USDT)
 - Circle (USDC)
 - MakerDAO (DAI)
- Now **federally regulated** in the US under the **GENIUS Act**, with oversight and auditing requirements.

Objectives

- Ensure **price stability** unlike highly volatile cryptocurrencies.
- Facilitate **efficient digital payments**, especially for **cross-border and decentralized transactions**.
- Serve as **liquidity anchors** within the crypto financial ecosystem.

Key Features

1. **Pegged Value:** Anchored to fiat currencies (e.g., USD), commodities (e.g., gold), or crypto assets.
2. **Reserve Mechanisms:**
 - Fiat-collateralised (e.g., USDC)
 - Crypto-collateralised (e.g., DAI)
 - Algorithmic (e.g., TerraUSD, now defunct)
 - Commodity-backed (e.g., PAX Gold)

3. **Blockchain-Enabled:** Allows **real-time, borderless, programmable payments**.
4. **Regulatory Disclosure (GENIUS Act):**
 - 100% reserve backing
 - Monthly audits
 - Focus on consumer protection
5. **Smart Contract Compatibility:** Widely used in **DeFi** for lending, trading, and liquidity provision.

Significance

- **Financial Inclusion:** Provides digital payment access in regions with limited banking infrastructure.
- **Reduced Transaction Costs:** Enables low-cost, fast **international remittances**.
- **Hedge Against Volatility:** Used as a digital safe haven during periods of crypto market instability.

Stablecoins vs CBDCs

Feature	Stablecoins	CBDCs
Issuer	Private entities (e.g., Tether, Circle)	Central banks (e.g., RBI, US Federal Reserve)
Backing	Reserves in fiat, crypto, or commodities	Directly backed by sovereign currency
Legal Status	Varies by jurisdiction; regulated in the US	Full legal tender
Risk	Higher, due to counterparty or reserve risk	Low, as backed by sovereign guarantees
Use Case	Crypto trading, DeFi, cross-border payments	Mainstream retail and wholesale applications
Control & Transparency	Depends on issuer governance and audits	Fully state-regulated and monitored

Unlocking India's Nuclear Power Potential by 2047

Budgetary Push and Strategic Vision

The **Union Budget 2025-26** marks a decisive turn in India's energy strategy by targeting a **nuclear power capacity of 100 GW by 2047**, a

dramatic rise from the current **8.18 GW**. This aligns with India's twin national objectives of:

- Achieving **Viksit Bharat by 2047**
- Meeting **net-zero emissions by 2070**

To jumpstart this vision, the government has launched a **Nuclear Energy Mission**, allocating **₹20,000 crore** to develop at least **five indigenous Small Modular Reactors (SMRs)** by **2033**. However, reaching this target requires **private sector involvement**, necessitating amendments to:

- **Atomic Energy Act, 1962**
- **Civil Liability for Nuclear Damage Act (CLNDA), 2010**

A shift in mindset is also critical — from a **state-dominated approach** to a **public-private collaborative model**.

India's Nuclear Journey: From Promise to Policy Barriers

India's nuclear programme began with high ambition:

- **Apsara reactor** established in **1956**
- First power reactor at **Tarapore** commissioned in **1963**
- Visionary scientist **Dr. Homi Bhabha** targeted **8 GW** of capacity by **1980**

However, geopolitical challenges derailed progress:

- **1962 war with China**
- India's refusal to join the **Nuclear Non-Proliferation Treaty (1968)**
- The **1974 Peaceful Nuclear Explosion** led to international sanctions and technology denial

India responded by indigenising reactor technology, developing **220 MW Pressurised Heavy Water Reactors (PHWRs)**. After the **1998 nuclear tests**, diplomatic efforts led to:

- Recognition as a responsible nuclear state
- **NSG waiver**, re-opening global nuclear trade

Still, restrictive domestic laws like **CLNDA** deterred foreign investment, leaving **Russia** as the only active foreign partner — currently building **six VVER-1000 reactors at Kudankulam** under a pre-CLNDA agreement.

Nuclear Energy and India's Development Goals

India's ambition to become a **developed nation by 2047** requires:

- **Per capita income** rising from **\$2,800** to **\$22,000**

- **GDP growth** from **\$4 trillion** to **over \$35 trillion**
- A fivefold increase in electricity capacity (currently **480 GW**)

But renewables are intermittent and underperforming:

- In **2024**, renewables made up **50% of installed capacity** but produced only **240 TWh**
- **Coal** still accounted for **75% of actual electricity generation**

Given India's climate goals — **500 GW of non-fossil energy by 2030**, **50% of demand from renewables**, and **net-zero by 2070** — nuclear energy is essential. With **renewables projected to meet only 20-25%** of demand (even with storage), nuclear is critical to bridging the gap.

Policy Roadmap: Enabling India's Nuclear Future

To meet its **100 GW by 2047** goal, India is pursuing reforms on three fronts:

1. Expansion Strategy

- **Standardising Small Modular Reactors (SMRs):** Based on India's **220 MW PHWR** design, the government aims to deploy these SMRs to **replace over 100 GW** of ageing captive thermal plants over two decades.
- **Scaling 700 MW PHWR Projects:** NPCIL will accelerate these projects by simplifying **land acquisition**, speeding up **approvals**, and **boosting domestic supply chains**.
- **Reviving Global Partnerships:** Long-stalled nuclear collaborations with **France and the U.S.** are being revitalised to bring in advanced technologies.

2. Legal and Institutional Reforms

- **Amend the Atomic Energy Act (1962):** The law must be updated to allow **private participation**, clarify **ownership**, **fuel supply**, and **operator responsibilities**.
- **Revise the CLNDA (2010):** Modify the **supplier liability clause** to reduce risk and encourage foreign technology providers to invest.
- **Clarify Nuclear Tariffs:** Legal disputes like **NPCIL vs Gujarat Urja Vikas Nigam** highlight the need for transparent, Electricity Act-compliant **tariff-setting mechanisms**.

- **Establish an Independent Regulator:** The **AERB**, currently under the Department of Atomic Energy, lacks autonomy. The **2011 draft Bill** to make it a **statutory body** must be revived, especially with private players entering the sector.

3. Financial and Market Incentives

- **Classify Nuclear as Renewable:** Although low-carbon, nuclear isn't recognised as renewable. Reclassification would unlock **green finance** and **tax benefits**.
- **Enable Viability Gap Funding & PPAs:** Long-term **Power Purchase Agreements** and **targeted subsidies** are vital to incentivise nuclear infrastructure.
- **Allow FDI up to 49%:** Partial foreign ownership can attract global capital while maintaining Indian control.

Public Sector JVs and the Way Forward

Past efforts to reform nuclear power through public-private JVs have been slow:

- The **NPCIL-NTPC JV (2011)** was dormant for years but has now been revived to build **four 700 MW reactors** at **Mahi Banswara, Rajasthan**
- A new JV with **Rural Electrification Corporation (REC)** is being considered

Yet, these remain **government-led initiatives**.

Conclusion

Reaching **100 GW of nuclear power by 2047** is possible — but only with **bold reforms, private sector integration, and foreign collaboration**. India must act decisively. Half-measures will no longer suffice.

Critical Minerals as a Strategic Asset for India Context

India's push for clean energy, advanced electronics, and strategic technologies has brought critical minerals—such as lithium, cobalt, and rare earth elements (REEs)—into sharp policy focus. The launch of the **National Critical Mineral Mission (NCMM)** and China's export restrictions have further underscored India's vulnerability and the urgent need for resource self-reliance.

What Are Critical Minerals?

- **Definition:** These are minerals crucial for economic growth, energy transition, and national security. They are often in limited

domestic supply and exposed to high geopolitical risks.

- **Key Minerals:** Lithium, cobalt, nickel, graphite, silicon, and rare earth elements (REEs).
- **Applications:** Critical to the functioning of electric vehicles (EVs), solar panels, wind turbines, semiconductors, telecom infrastructure, and defence technologies.

Strategic Importance for India

1. **Energy Security:** India is entirely import-dependent for lithium, cobalt, and REEs, which directly affects EV and battery manufacturing.
2. **Technological Sovereignty:** Autonomy in strategic sectors like telecom, defence, and AI hinges on mineral access.
3. **Geopolitical Stability:** Diversifying away from China-dominated supply chains strengthens India's role in the Indo-Pacific and Quad frameworks.
4. **Industrial Development:** India's **Production Linked Incentive (PLI)** schemes for EVs, electronics, and solar energy require assured mineral inputs.
5. **National Defence:** REEs are essential for missile guidance, surveillance, and navigation systems.

Key Indian Policy Measures

1. National Critical Mineral Mission (NCMM)

- Launched in 2024 under the **Ministry of Mines**.
- Aims to secure critical mineral value chains through exploration, processing, and strategic stockpiling.

2. MMDR Act Amendment

- Modified the **Mines and Minerals (Development and Regulation) Act** to allow auctions for 30 critical minerals.
- Five auction rounds have been completed; over **400 exploration projects** are in the pipeline.

3. Global Partnerships

- **Mineral Security Partnership (MSP)** with the U.S. and Australia.
- **Bilateral MoUs** with Argentina and Bolivia for lithium procurement.
- Active engagements through **Quad, G20, and BRICS** forums.

Challenges in the Critical Mineral Ecosystem

1. **High Import Dependency:**

- India imports nearly **100% of lithium, cobalt, and REEs**.
- China controls **70–90%** of global midstream refining and processing.
- 2. **Weak Domestic Capacity:**
 - India is still in early-stage exploration.
 - Lacks infrastructure for refining, separation, and value addition.
- 3. **Private Sector Barriers:**
 - Low investor turnout in mineral auctions due to **technical and financial constraints**.
- 4. **Environmental and Social Governance (ESG) Hurdles:**
 - Many mineral blocks are located in **ecologically sensitive or tribal regions**.
 - Legal delays arise from ESG non-compliance and local resistance.
- 5. **Underdeveloped Recycling Ecosystem:**
 - **Battery and e-waste recycling** remains largely informal and disorganised.
 - There's a lack of formal infrastructure for **collection, dismantling, and incentives**.

Strategic Roadmap Forward

1. **Develop Midstream Infrastructure:**
 - Set up **mineral processing zones** with PLI-type incentives.
 - Promote public-private partnerships in **refining and conversion** technologies.
2. **Boost Exploration and Auctions:**
 - Enhance **Geological Survey of India (GSI)** capabilities.
 - Provide **geodata access and viability gap funding** to attract investors.
3. **Promote Sustainable Mining:**
 - Implement **ESG frameworks**, conduct third-party audits, and ensure community benefit-sharing.
 - Streamline environmental clearances without compromising standards.
4. **Build Circular Economy Capacity:**
 - Invest in **formal battery and electronics recycling facilities**.

- Offer **tax incentives** for high-efficiency recovery systems.
- 5. **Diversify Supply Chains Globally:**
 - Pursue **"friendshoring"** with reliable partner nations.
 - Secure **long-term trade agreements** via diplomatic channels.

Conclusion

Critical minerals underpin India's ambitions for clean energy, industrial growth, and strategic autonomy. While the NCMM represents a strong first step, success will require a multi-pronged approach that blends self-reliance (**Atmanirbharta**) with sustainability, equity, and long-term planning. A resilient ecosystem must combine **policy stability, ESG compliance, private investment, and international partnerships**.

Ethanol Blended Petrol (EBP) Programme

Context

India has reached **20% ethanol blending in petrol** by **2025**, achieving its target **five years ahead** of the original 2030 goal — a major milestone announced by the Union Petroleum Minister.

About the EBP Programme

Objective

- To **blend ethanol with petrol**, reducing fossil fuel use, **enhancing energy self-reliance**, and **lowering carbon emissions**.

Launch and Oversight

- Initiated in **2003**, significantly scaled up after **2014**.
- Managed by the **Ministry of Petroleum and Natural Gas**, in collaboration with:
 - Ministry of Agriculture
 - Ministry of Food Processing

Targets and Achievements

- **Initial Goal:** 20% blending by 2030 (per National Policy on Biofuels, 2018).
- **Achieved Early:** Target met by **2025**.

Key Features

- Ethanol is derived from:
 - **Sugarcane juice**
 - **B-molasses**
 - **Damaged food grains**
- **OMCs** (Oil Marketing Companies) procure ethanol at **government-fixed prices**.
- Price hike approved for ethanol for **Supply Year 2024–25**.

- Infrastructure:
 - Dedicated **ethanol distilleries**
 - Support under **SATAT** and **PLI** schemes

Significance

- Contributes to India's **Paris Agreement commitments**.
- Strengthens **energy Atmanirbharta (self-reliance)**.
- Reduces **urban air pollution**.
- Boosts the **rural economy** and supports **farmers**.

Promotes **green energy innovation** and biofuel investment.

Redeeming India's Nuclear Power Promise — 100 GW by 2047

Context

In the Union Budget 2025–26, the government announced a goal of achieving **100 GW of nuclear power capacity by 2047**, backed by a ₹20,000 crore investment in **Small Modular Reactors (SMRs)**. This marks a major shift toward positioning nuclear energy as a key driver of India's **net-zero** and **developmental goals**.

India's Nuclear Journey: From Isolation to Integration

- **Early Developments:**
 - *Apsara* (1956): Asia's first research reactor.
 - *Tarapur* (1963): First commercial power plant.
- **Post-1974 Isolation:**
 - Nuclear test + non-signature of NPT led to global isolation.
- **Indigenous Innovation:**
 - Developed **220 MW PHWRs** to reduce reliance on imported fuel.
- **Global Re-Entry:**
 - The **2008 Indo-U.S. nuclear deal** and **NSG waiver** reopened doors for nuclear fuel and technology imports.

Why Nuclear Power Matters for India

1. **Stable Base-load Energy:**
 - Unlike solar/wind, nuclear provides continuous power—crucial for manufacturing and urban expansion.
2. **Clean Energy Source:**
 - Minimal greenhouse gas emissions; helps meet **net-zero by 2070**.

3. **Energy Security:**

- Reduces dependence on fossil fuel imports, enhancing **strategic autonomy**.

4. **High Energy Density:**

- Compact and efficient energy generation—saves land and logistics.

5. **Supports Viksit Bharat 2047 Goals:**

- Critical to powering a **\$35 trillion economy** and meeting development targets.

Key Challenges to Nuclear Expansion

1. **Outdated Legal Framework**

- **Atomic Energy Act (1962)** restricts nuclear projects to government entities.
- **CLNDA (2010)** imposes **supplier liability**, deterring foreign investment.

2. **Weak Regulatory Infrastructure**

- **AERB** lacks statutory independence.
- The **Nuclear Safety Regulatory Authority Bill (2011)** remains stalled.

3. **Financial Barriers**

- High capital cost (~\$2 million/MW) vs. <\$1 million/MW for coal.
- Limited access to **green financing** and **PPP frameworks**.

4. **Policy and Tariff Conflicts**

- NPCIL tariffs governed by **Atomic Energy Act**, leading to disputes with DISCOMs over regulatory clarity.

5. **Foreign Collaboration Delays**

- Projects with **France (EPRs)** and **U.S. (Westinghouse AP1000)** have seen **minimal progress** in 15 years.

Way Forward: Unlocking Nuclear Potential

1. **Legal Reforms**

- Amend **Atomic Energy Act** and **CLNDA** to:
 - Allow private/foreign JV participation.
 - Clearly define **operator-supplier liability**.

2. **Independent Regulatory Authority**

- Revive the **Nuclear Safety Regulatory Authority Bill**.
- Ensure transparency in safety and licensing.

3. **Green Financing Tools**

- Recognize nuclear as **low-carbon** under green energy taxonomy.

- Offer **tax incentives**, **viability gap funding**, and **long-term PPAs**.

4. Scale Up SMRs

- Standardize **220 MW PHWRs** for modular deployment.
- Target **industrial captive use** to replace 100 GW of thermal base-load.

5. Revive and Fast-Track International Partnerships

- Accelerate deals with **France** and the **U.S.**.

Encourage **PSUs and large private firms**

GST and Progressivity: What the Latest Study Reveals

Context

Consumption taxes constitute over **62% of India's tax revenue**, making the **Goods and Services Tax (GST)** crucial in understanding economic equity. A recent study by the **National Institute of Public Finance and Policy (NIPFP)** challenges the prevailing notion that GST disproportionately burdens the poor.

Key Findings

- **GST is Progressive:**
 - **Higher-income groups** bear a greater share of the tax.
 - **GST Burden (2022-23):**
 - **Rural Areas:** Bottom 50% pay 31%, Top 20% pay 37%.
 - **Urban Areas:** Bottom 50% pay 29%, Top 20% pay 41%.
 - This counters the **2023 Oxfam report** which claimed that the poor paid two-thirds of GST.
- **Multiple Slabs Aid Fairness:**
 - **Essentials** like food, healthcare, and education are either exempt or taxed at low rates (5-12%).
 - The study warns that **removing the 12% slab** and shifting items to 5% or 18% may **increase burdens** on lower-income groups.

Policy Implications

- **Simplification vs. Equity:** Rate restructuring needs to account for **consumption patterns** across income classes.

Policymakers must carefully balance **administrative efficiency** with **distributional fairness** when revising GST rates.

Central Board of Direct Taxes (CBDT)

Recent Focus

The CBDT is enhancing its efforts to detect tax evasion through the use of data analytics and artificial intelligence, particularly to identify inconsistencies in income reporting.

About

- The CBDT is a statutory body established under the Central Board of Revenue Act, 1963.
- It operates under the Department of Revenue, Ministry of Finance.

Functions

- Formulates policies for the administration of direct taxes.
- Oversees the implementation and enforcement of tax laws.
- Supervises the functioning of the Income Tax Department.
- Recommends legislative changes and tax rate adjustments.

Historical Background

- Initially part of a unified Board of Revenue established in 1924 under British rule.
- The board was bifurcated in 1964 into:
 - Central Board of Direct Taxes (CBDT)
 - Central Board of Excise and Customs (now CBIC)

Structure

- Headed by a Chairman and supported by six members, each responsible for a specific function:
 1. Income Tax
 2. Legislation and Computerisation
 3. Revenue
 4. Personnel and Vigilance
 5. Investigation
 6. Audit and Judicial

All members are ex-officio Special Secretaries to the Government of India and are selected from the Indian Revenue Service (IRS).

Henley Passport Index 2025

Context

- As per the **Henley Passport Index 2025**, India has **climbed 8 positions**, moving from **85th to 77th** in the global passport ranking.
- **About the Index**
- **What it Measures:** Passport strength, determined by the number of countries a

passport holder can visit **without a pre-arranged visa**.

- **Published by:** Henley & Partners, a global citizenship and residence consultancy.
- **Data Source:** Based on data from the **International Air Transport Association (IATA)**, supplemented by independent research.
- **Total Scope:** Evaluates **199 passports** against **227 destinations**.

Ranking Criteria

- Includes visa-free access, visa-on-arrival, and electronic travel authorizations.
- Reflects diplomatic strength and global mobility of passport holders.

2025 Global Highlights

- **Top Performers:**
 - **Singapore:** Ranks **1st** with access to **193 destinations**.
 - **Japan & South Korea:** Tied for **2nd**, with access to **190 countries**.
 - **EU countries** (Germany, France, Italy, etc.): Occupy most of the **top 5 spots**.
- **Rising Performers:**
 - **UAE:** Jumped from **42nd to 8th** in a decade.
 - **China:** Improved from **94th to 60th** since 2015.
 - **Saudi Arabia:** Gained 4 more destinations, now offering access to **91 countries**.
- **Lowest Rank:**
 - **Afghanistan:** Remains at the bottom with access to just **25 destinations**.
- **Declining Powers:**
 - **USA:** Dropped to **10th** from 9th.
 - **UK:** Slipped to **6th**, down from 5th position.

India's Performance

- **Current Rank:** **77th**
- **Visa-Free Access:** **59 countries** (e.g., Malaysia, Maldives, Thailand)
- **Visa-on-Arrival:** Available in Sri Lanka, Myanmar, Indonesia, Macau, etc.
- **Historical Movement:**
 - **Lowest Rank:** 90th (in 2021)
 - **Highest Rank:** 71st (in 2006)
- **Reasons for Improvement:**

- Strengthened **bilateral relations**
- Expanding **economic influence**

Digitization of visa processes

Power Market Coupling

Regulatory Development

- The **Central Electricity Regulatory Commission (CERC)** has mandated that **Power Market Coupling** will commence with the **Day-Ahead Market (DAM)** starting **January 2026**.

Key Concepts

- **Day-Ahead Market (DAM):** Platform for trading electricity one day in advance.
- **Market Coupling:** Aggregation of buy/sell orders from all exchanges to determine a **uniform market-clearing price**.

Objective: To promote **price convergence** and **efficient electricity market integration**.

Financial Inclusion Index (FI-Index) – FY 2025

Latest Status

- RBI reports improvement in FI-Index score:
 - **FY 2025:** 67.0
 - **FY 2024:** 64.2

About the FI-Index

- Developed by the **Reserve Bank of India (RBI)** in consultation with sectoral regulators.
- Measures the extent of financial inclusion in India.

Index Details

- **Range:** 0 (no inclusion) to 100 (full inclusion)
- **Components:**
 - **Access (35%)** – Availability of services.
 - **Usage (45%)** – Extent of use of financial services.
 - **Quality (20%)** – Includes financial literacy, consumer protection, and service equality.

Key Features

- Covers data from banking, insurance, pensions, postal, and investment sectors.
- Built without a base year – reflects cumulative progress.

Published annually in July.

Financial Conditions Index (FCI)

Background

- The **Reserve Bank of India (RBI)** has proposed developing a **Financial**

Conditions Index (FCI) for India, enabling daily monitoring of financial market trends.

About FCI

- Measures how tight or relaxed financial market conditions are relative to historical averages since **2012**.
- Covers five key market segments:
 1. Money Market
 2. Government Securities (G-Sec) Market
 3. Corporate Bond Market
 4. Foreign Exchange (Forex) Market
 5. Equity Market

Higher FCI values indicate **tighter** financial conditions

Draft National Telecom Policy 2025: Building a Secure, Inclusive, and Sustainable Telecom Ecosystem

Introduction

The **Department of Telecommunications (DoT)** has released the **Draft National Telecom Policy 2025** for public consultation—seven years after the National Digital Communications Policy (NDCP) 2018. This draft outlines a roadmap to position India as a **telecom product powerhouse**, emphasizing innovation, indigenous manufacturing, secure connectivity, and environmental sustainability.

Vision

To transform India into a “**telecom product nation**” that delivers **universal, meaningful, secure, and sustainable connectivity** for all citizens, while promoting innovation and self-reliance in the telecom sector.

Strategic Focus Areas

1. Universal and Reliable Connectivity

- **5G Expansion:** Extend **5G coverage to 90% of the population by 2030**.
- **Complete 4G Penetration:** Achieve **100% 4G network coverage** across the country.
- **Fiberisation of Towers:** Increase fiber-connected towers from **46% to 80%** to enhance speed and reliability.
- **Wi-Fi Hotspots:** Deploy **1 million public Wi-Fi hotspots** (revised from 10 million target in 2018).
- **Satellite Internet:** Promote satellite-based broadband in **remote and underserved areas**.

2. Employment and Skilling

- **Job Creation:** Generate **10 lakh new jobs** in the telecom sector.
- **Upskilling:** Reskill another **10 lakh existing workers** to adapt to emerging technologies.

3. Domestic Manufacturing and R&D

- **Production Boost:** Target a **150% increase** in domestic telecom manufacturing by 2030.
- **Telecom Manufacturing Zones (TMZs):** Establish dedicated zones with integrated infrastructure to support end-to-end manufacturing.
- **R&D and Standards:** Promote local **R&D initiatives** and **participation in global standard-setting**, including **6G** development.
- **CSR Incentives:** Recognize **telecom R&D under CSR** funding to encourage private sector participation.

4. Cybersecurity and Artificial Intelligence

- **AI-Driven Cybersecurity:** Deploy AI tools for **threat detection and network defense**.
- **Address Generative AI Risks:** Tackle **offensive uses of AI**, including deepfakes and automated cyberattacks.
- **Consumer Grievances:** Introduce **AI-powered chatbots** on a **unified grievance redressal portal**.
- **Border Security:** Improve surveillance of **cross-border signals and satellite interference**.

5. Green Telecom and Sustainability

- **Carbon Reduction:** Cut **telecom sector emissions by 30%**.
- **Circular Economy:** Promote **reuse and recycling** of telecom infrastructure and devices.

6. Technology Advancements

- **Quantum-Secure Communication:** Invest in **quantum encryption** for next-gen secure networks.
- **Privacy-Centric Shift:** **Lawful interception** provisions removed, signaling a move toward **privacy-respecting governance**.
- **Mobile Number Validation:** Strengthen identity verification mechanisms through **draft regulations on mobile identity services**.

Policy Comparison: 2018 vs 2025

Feature	NDCP 2018	Draft Policy 2025
Policy Name	National Digital Communications Policy	National Telecom Policy
Employment Target	40 lakh jobs (digital sector)	10 lakh jobs (telecom-specific)
Wi-Fi Hotspot Target	10 million	1 million (realigned target)
Domestic Manufacturing	Moderate focus	150% increase + TMZs
AI & Cybersecurity	Minimal emphasis	Comprehensive AI-led security framework
Sustainability	No quantifiable targets	30% emission cut + circular economy push

Conclusion

The **Draft National Telecom Policy 2025** lays the foundation for a **future-ready telecom sector** that is not only robust and secure, but also inclusive and sustainable. With a strong push for **indigenous innovation**, **AI integration**, and **green technology**, the policy aligns India's telecom ambitions with its digital sovereignty and economic empowerment goals.

If effectively implemented, it could play a transformative role in shaping **India's leadership in global telecom innovations** such as **6G**, **quantum communication**, and **AI-driven governance**.

Renewable Power Generation Costs (RPGC) Report - 2024

Released By

- **International Renewable Energy Agency (IRENA)**

Key Findings

1. Record Capacity Additions

- Global renewable energy capacity additions in **2024** reached **582 GW**.
 - **Solar Photovoltaics (PV): 452.1 GW** (77.8% of total)
 - **Wind Energy: 114.3 GW**

2. Cost Competitiveness

- **Renewables are more cost-effective** than fossil fuel-based energy alternatives.
- **Wind power** remains the **most affordable** source of electricity generation.

3. Economic Benefits

- Renewable energy generation **helped avoid USD 467 billion** in fossil fuel-related expenses in 2024.

4. Short-Term Challenges

- Geopolitical instability
- **Supply chain disruptions**

Trade-related obstacles and protectionist policies
Double Taxation Avoidance Agreement (DTAA)

Context

The **Supreme Court of India** ruled that under the India-UAE DTAA, even **temporary or shared use of premises** qualifies as a **Permanent Establishment**, not just exclusive possession.

About DTAA

- **Definition:** A bilateral agreement between two or more countries to prevent the **same income from being taxed twice**.
- **Purpose:**
 - To eliminate **double taxation** for **NRIs, PIOs, and OCIs**.
 - Facilitates **smooth international business and investment**.

India's Reach: India has signed **94 DTAA**s with countries like **Australia, Austria, Albania, Armenia**, and others.

India's Insurance Sector: Anticipated Boom and Structural Shifts by 2030

India's insurance industry is on the verge of a significant transformation, driven by changing consumer behaviors, rising awareness, and structural reforms. A joint study by the Insurance Brokers Association of India (IBAI) and McKinsey & Company—based on insights from 2,500 retail consumers—highlights the sector's rapid evolution and strong growth prospects through 2030.

Projected Growth Trajectory

- **Gross Written Premiums (GWP) Surge**
- **Expected growth:** GWP is projected to rise from ₹11.2 lakh crore in 2024 to ₹25 lakh crore by 2030—a 123% increase.
- **Definition:** GWP represents the total premium collected by insurers before deductions like reinsurance.

- **Improving Insurance Penetration**
- Penetration is expected to rise from **3.7% in 2024 to 5% by 2030**, moving closer to the **global average of 6.8%** (2023).
- From FY2020 to FY2024, total premiums grew from ₹7.8 lakh crore to ₹11.2 lakh crore, demonstrating strong double-digit growth.

Retail Insurance Market: Diverging Needs and Expectations

- **Life Insurance Dominance**
- Retail premiums are forecasted to reach **₹21 lakh crore by 2030**, with **over 90% from life insurance**.
- **Customer Segmentation and Behavior**
- **Opportunity concentration:** 65% of retail growth lies at two ends of the market spectrum:
 - **HNI/UHNI segment** (assets > ₹8.5 crore)
 - **Mass-market customers** with basic insurance needs
- **Awareness vs. Actual Coverage**
- 60% of affluent customers believe ideal coverage should be 10x their salary, but only 30% have it.
- This highlights a significant **intent-coverage gap** in the market.
- **Key Influences on Purchase Decisions**
- 70% of HNI/UHNI buyers rely on **trusted advisors**
- 45% of mass-market customers are influenced by **family and friends**
- **Claims Management Challenges**
- 50% of HNIs considered switching insurers due to poor claims experiences.
- 55% of SMEs reported claim rejections; 75% need help managing claim paperwork.

Institutional Insurance: Growth Frontiers and Challenges

- **Non-Life Insurance Expansion**
- Institutional GWP is projected to **triple to ₹2.8 lakh crore** by 2030.
- SMEs currently contribute about 10% but are expected to drive future growth.
- **SME Segment: A Growth Engine with Barriers**
- Half of SME potential is concentrated in **17 cities** and **10 capital-intensive industries** like textiles, automotive, and pharmaceuticals.

Structural Hurdles

- **Low insurance uptake** due to:
 - Limited awareness of risk mitigation
 - Perception of insurance as non-essential
 - Margin pressures

Role of Compliance and Advisory Support

- 70% of SMEs purchase insurance primarily for **regulatory compliance**, not risk protection.
- There's a strong need for **tailored products, advisory services, and claims assistance**.

Policy and Regulatory Implications

- Closing the insurance gap can bolster both **economic stability and individual financial security**.
- **Innovative, customer-focused insurance models**
- **Simplified and transparent claims processes**
- **Improved insurance literacy**, particularly for SMEs and low-income groups

Regulatory Environment and Market Landscape

- Insurance is a **Union List** subject in India's Constitution—regulated solely by the **central government**.
- The **Insurance Regulatory and Development Authority of India (IRDAI)**, established in 1999, oversees the sector.
- India has **57 insurers**: 24 in life insurance and 33 in non-life insurance.
- The public sector includes **LIC (life)** and **six general insurers**, plus the national reinsurer **GIC Re**.
- **Foreign Direct Investment (FDI)**
- The sector has attracted **₹54,000 crore (US\$ 6.5 billion)** in FDI over the last nine years.
- The FDI cap was raised from **49% to 74%**, and as per **Union Budget 2025**, may increase further to **100%**, subject to full reinvestment of premiums within India.

Conclusion

India's insurance sector stands at a pivotal moment. With the right mix of regulatory support, customer education, and technological

innovation, it is well-positioned to become a key pillar of financial security and economic growth by 2030.

Organic Certification in India

Context

APEDA recently refuted allegations related to the authenticity of **Organic Cotton Certification** in India.

Key Certification Framework

National Programme for Organic Production (NPOP)

- **Nodal Agency:** Agricultural and Processed Food Products Export Development Authority (APEDA), under the Ministry of Commerce & Industry.
- **Purpose:**
 - Accredits certification bodies.
 - Sets standards for organic farming and processing.
 - Promotes marketing and export of organic products.
- **International Recognition:**
 - Accepted as equivalent by the **European Commission** and **Switzerland** for **unprocessed plant products**.

Participatory Guarantee System (PGS-India)

- **Nature:** A **peer-review certification** system.
- **How It Works:**
 - Farmers collectively inspect and verify each other's farming practices.

Entire holdings of the group are certified as organic through mutual agreement and collective responsibility.

World Food India 2025

Overview

- **Organizer:** Ministry of Food Processing Industries, Government of India
- **Venue:** **Bharat Mandapam**, New Delhi
- **Dates:** From **25th September 2025**
- **Theme:** "**Processing for Prosperity**"

Background

- First held in **2017**, with successful editions in **2023** and **2024**.
- Designed as a global platform for **investment, innovation, and collaboration** in India's food processing sector.

Key Objectives

- Act as a **gateway to the Indian food economy**
- Promote **investment and trade opportunities**
- Facilitate connections between:
 - Manufacturers
 - Policy-makers
 - Food processors
 - Global investors and organizations

Government Support

- Aligns with the **Make in India** initiative.
- Key schemes include:
 - Development of **Mega Food Parks** with common facilities and infrastructure

Plug-and-play models for entrepreneurs in agriculturally rich zones

Adopt Formalisation to Drive Productivity in Indian Manufacturing

Context

A recent analysis of **Annual Survey of Industries (ASI) data from 1999 to 2019** reveals a concerning trend in India's formal manufacturing sector: **contractual labour use has doubled**, rising from 20% to 40.7%. However, this shift is largely **motivated by cost-cutting rather than enhancing flexibility or skills**, undermining long-term productivity growth.

Core Problem: Informalisation Within the Formal Sector

While labelled "formal," India's manufacturing sector is increasingly **relying on informal practices**—especially through excessive **contract labour**. This practice is **not aligned with productivity goals**, but instead focuses on **circumventing labour laws and reducing wages**.

Key Insights from the Study

1. Surge in Contractual Labour

- Share of contract workers in manufacturing rose to **40.7% by 2022-23**.
- This trend spans **across all sub-sectors**, including large enterprises.

2. Wage Disparities and Cost Advantages

- On average, **contract workers earn 14.47% less** than regular employees.
- In **large firms**, the wage gap reaches **31%**, reducing overall labour costs by **24%** for contract-heavy operations.

3. Sharp Productivity Gaps

- Firms heavily reliant on contract labour show **31% lower productivity** than those with regular workers.
- In small, labour-intensive firms, the gap widens to **42%**.
- Minor productivity gains (5–20%) are observed only in **high-skill or capital-intensive sectors** with limited contract use.

4. High Turnover, Low Skill Development

- Short-term contracts lead to **frequent attrition**, discouraging employers from investing in **training or innovation**—further limiting productivity.

Structural Issues Undermining Formalisation

- **Misaligned Incentives:** Contractors often **lack a stake in workforce development**, leading to poor alignment between employer and contractor objectives.
- **Decline in Work Discipline and Output Quality:** Temporary employment reduces **worker accountability**, increasing risks of **low performance and quality lapses**—classic moral hazard issues.
- **Avoidance of Legal Protections:** Contractual hiring is frequently used to **bypass the Industrial Disputes Act, 1947**, avoiding obligations related to **retrenchment, layoff protections, and dispute resolution**.
- **Disincentives for Training and Innovation:** Constant churn in the workforce reduces **incentives to upskill** or improve workplace practices.
- **Gaps in Social Security:** Many contract workers are **excluded from social protections** like EPF, ESI, and maternity benefits, reinforcing **economic vulnerability** and informalisation.

Regulatory and Policy Challenges

1. Delay in Labour Code Implementation

- The **Industrial Relations Code, 2020**, designed to formalise short-term hiring, is still awaiting **adoption at the state level**, stalling reform.

2. Risks of Precarity

- While promoting hiring flexibility, the new codes risk **institutionalising job insecurity** if not **backed by strong enforcement mechanisms**.

3. Union Resistance

- **Labour unions** oppose liberal hiring policies, fearing **erosion of collective bargaining**, which has led to **political and legal pushback**.

4. Withdrawal of PMRPY Incentives

- The **Pradhan Mantri Rojgar Protsahan Yojana (PMRPY)**, which encouraged formal hiring by subsidising EPF contributions (2016–2022), ended **prematurely**, before formalisation gains were consolidated.

5. Weak Contract Regulation

- **Labour inspections**—especially in MSMEs—remain inadequate, allowing **unregulated use of contract labour** without accountability.

Policy Recommendations

1. Careful Labour Code Implementation

- Ensure **fixed-term contracts** provide essential benefits and protections to avoid disguised informalisation.

2. Encourage Longer Tenures

- Offer **incentives like EPF subsidies or preferential access to government contracts** for firms using longer-duration contracts.

3. Revive and Improve PMRPY

- Reinstate the scheme with **stronger accountability and tracking mechanisms** to ensure it genuinely supports formalisation.

4. Link Formalisation with Skilling

- Provide **subsidised access to skilling initiatives** (e.g. PMKVY) only to firms that demonstrate **formal and stable employment practices**.

5. Regulate Contract Labour Use

- Impose **productivity-linked penalties or audits** if contract labour exceeds set thresholds, particularly in **low-skill sectors**.

Conclusion

The increasing reliance on **cost-driven contract labour** is eroding **productivity, innovation, and industrial stability** in India's manufacturing sector. To support sustainable growth and global competitiveness, India must:

- Embrace **genuine formalisation**,
- Promote **skill-based, long-term employment**, and

- Ensure a **balanced approach** that combines flexibility with **job quality and social protections**.

Only then can India realise its manufacturing potential and generate **inclusive, productive employment** at scale.

IMF Raises India's Growth Forecast to 6.4%: A Sign of Economic Resilience

Context

In its **July 2025 World Economic Outlook (WEO) Update**, the **International Monetary Fund (IMF)** has **revised India's GDP growth forecast upward to 6.4%** for both **FY2025-26** and **FY2026-27**, reaffirming India's position as the **fastest-growing major economy** in the world.

About the IMF Forecast Update

- The **World Economic Outlook** is the IMF's key report offering **macroeconomic projections** for countries and global regions.
- In the **July 2025 update**, India's growth outlook was:
 - **Raised by 20 basis points** for FY2025-26 (from **6.2% to 6.4%**)
 - **Increased by 10 basis points** for FY2026-27 (from **6.3% to 6.4%**)

India's Growth Trajectory: Key Highlights

- **Forecasted GDP growth:**
 - **6.4%** for both **FY2026** and **FY2027**
 - In calendar-year terms: **6.7% for 2025, 6.4% for 2026**
- **Drivers behind the upward revision:**
 - **Declining inflation**, especially from lower food prices
 - **Improved external conditions**, including lower global uncertainty
 - **Relaxation of import tariffs** and **eased financial conditions**
 - Sustained momentum in **economic reforms** and **public investment**, particularly in infrastructure
- **Global comparison:**
 - IMF projects **global growth at 3.0% (2025) and 3.1% (2026)**, placing India well above the global average

Significance of the Forecast for India

- **Macroeconomic Confidence:**

- Highlights India's **economic stability** amid global volatility

- **Policy Validation:**

- Endorses the government's **reform-focused approach**, including spending on infrastructure, digitalisation, and human capital

- **Investor Attraction:**

- Enhances **investor confidence**, encouraging foreign capital inflows and boosting India's **global credit image**

- **Strategic Planning Tool:**

- Provides a supportive macro backdrop for shaping the **Union Budget, NITI Aayog's Vision 2047**, and other long-term growth frameworks

Conclusion

The IMF's upward revision of India's growth forecast to **6.4%** reflects strong **macroeconomic fundamentals**, a **resilient policy framework**, and the country's growing role in the global economy. As India aims for long-term transformation, such projections offer both **validation and opportunity** for continued reform and investment.

Alternative Investment Fund (AIF)

Context:

The **Reserve Bank of India (RBI)** has introduced revised regulations that limit investments by regulated entities to a **maximum of 20%** of an AIF scheme's total corpus.

About AIF:

- An **Alternative Investment Fund (AIF)** refers to a privately pooled investment vehicle established or incorporated in India, which collects funds from **sophisticated Indian or foreign investors** based on a defined investment policy to benefit its investors.
- AIFs are regulated by the **Securities and Exchange Board of India (SEBI)** under the **SEBI (Alternative Investment Funds) Regulations, 2012**.

Categories of AIFs:

1. Category I AIFs:

- Focus on investments in **start-ups, early-stage ventures**, or **socially/economically beneficial sectors**.

- **Examples:** Venture Capital Funds, Angel Funds, SME Funds, Infrastructure Funds.
- 2. **Category II AIFs:**
 - Do not use leverage (borrowing), except for routine operational expenses.
 - **Examples:** Private Equity Funds, Debt Funds, Real Estate Funds.
- 3. **Category III AIFs:**
 - May use leverage, including through investments in **listed or unlisted derivatives**.

Examples: Hedge Funds, Private Investment in Public Equity (PIPE)

National Stock Exchange of India (NSE)

Context

The NSE crossed **23 crore unique trading accounts** in July 2025, just three months after reaching 22 crores.

About NSE

- **What is NSE?**
 - India's premier stock exchange and among the largest globally by market capitalization and derivatives trading volume
 - Recognized as an institution of national importance and critical market infrastructure
- **Incorporation & Operations:**
 - Incorporated in **1992**
 - Recognized by SEBI in **April 1993**
 - Commenced trading in **1994**
 - Headquartered in **Mumbai, Maharashtra**

Key Objectives

- Democratize capital markets by broadening access
- Ensure transparency, efficiency, and technological innovation
- Promote financial inclusion through investor awareness and participation

Salient Features

- Pioneer in **electronic, screen-based, anonymous order-driven trading** in India
- Ranked 5th largest stock exchange worldwide by market capitalization
- Largest derivatives exchange globally by contracts traded

- Technology-driven platform providing fast, secure, and reliable transactions across multiple asset classes
- Open access regulated by qualifications — no brokerage cartel, ensuring fair participation
- Innovation hubs include:
 - **NSE IX** at GIFT City for multi-asset global trading
 - **NSE EMERGE** platform for SMEs and startups
 - **Social Stock Exchange** (launched 2023) to enable fundraising by nonprofits

Core Functions

- Operates markets for equity, debt, derivatives, ETFs, REITs, and InvITs
- Provides clearing, settlement, and risk management services

Conducts investor education and awareness programs

The Banking Laws (Amendment) Act, 2025

Context

Effective from **1 August 2025**, this Act introduces reforms enhancing governance, audit transparency, depositor protection, and cooperative bank regulation.

About the Act

- A comprehensive reform law issued by the Ministry of Finance
- Amends five major legislations regulating the Indian banking sector

Key Objectives

- Strengthen governance in banks
- Safeguard depositors and investors
- Improve audit quality, especially in public sector banks (PSBs)
- Align cooperative bank regulations with constitutional standards

Key Features

1. **Redefining 'Substantial Interest' Threshold:**
 - Raised from ₹5 lakh to ₹2 crore to reflect inflation and sector growth (unchanged since 1968)
2. **Director Tenure in Cooperative Banks:**
 - Extended from 8 to 10 years (excluding chairperson and full-time directors) to comply with the 97th Constitutional Amendment
3. **Unclaimed Assets to Investor Education and Protection Fund (IEPF):**

- PSBs can transfer unclaimed shares, interest, and bond redemptions to IEPF, aligning with Companies Act norms for efficient fund use
 - Reporting frequency changed from every Friday to end-of-fortnight/month/quarter to ease operational load and improve data quality
4. **Audit Transparency & Independence:**
- PSBs empowered to fix statutory auditor remuneration to enhance audit quality and attract top-tier professionals
5. **Streamlined Reporting to RBI:**
- Significance**
- Modernizes regulatory provisions last updated 50 years ago
 - Boosts accountability in cooperative banks in line with democratic principles
- Enhances depositor confidence through better asset security and audit standards

CONSTITUTION, POLITY AND GOVERNANCE

Reservation Policy in Supreme Court Administration

- For the first time, the Supreme Court has implemented a **formal reservation policy** for Scheduled Caste (SC) and Scheduled Tribe (ST) employees in its internal administration.
- The policy applies to direct appointments and promotions for posts such as registrars, senior personal assistants, assistant librarians, junior court assistants, and chamber attendants.
- Judges are **not** covered by this reservation policy.
- Reservation quotas are:
 - 15% for SC employees.
 - 7.5% for ST employees.
- The policy aligns with the central government's reservation norms.

National Indicator Framework (NIF) Progress Report 2025

- Purpose:**
Reflects India's commitment to Sustainable Development Goals (SDGs) and serves as the core tool for monitoring SDG progress at the national level.
- Key Issues Highlighted:**
 - Rising adolescent birth rate in girls
 - Increase in road accident fatalities
 - Decline in issuance of soil health cards
 - Reduction in primary government expenditures as a proportion of the original approved budget

SDG	Indicator	2015-16 / Baseline	2024-25 / Latest
Zero Hunger (SDG 2)	Agriculture income per worker	₹61,247	₹94,110
Clean Water & Sanitation (SDG 6)	Rural access to safe drinking water	94.57%	99.62%

Clean Energy (SDG 7)	Share of renewable energy in total installed capacity	16.02%	22.13%
	Renewable energy generation capacity (watts per capita)	64.04 (2014-15)	156.31
Decent Work & Economic Growth (SDG 8)	Social protection coverage	22% (2016)	64.3%
Industry & Innovation (SDG 9)	Emission intensity of GDP (reduction from 2005 baseline)	—	36% reduction by 2020
Reduced Inequality (SDG 10)	Gini coefficient (Rural)	0.283 (2011-12)	0.237 (2023-24)
	Gini coefficient (Urban)	0.363 (2011-12)	0.284 (2023-24)
Responsible Consumption (SDG 12)	Percentage of waste processed	17.97%	80.7%
Life on Land (SDG 15)	Forest cover	21.34% (2015)	21.76% (2023)

Outcome-Driven Data for Empowering Governance: A Path to Viksit Bharat Introduction: Reimagining Public Service Delivery

As India aspires to become a **Viksit Bharat (Developed India)**, effective governance must evolve beyond rigid bureaucratic systems to become **citizen-centric, transparent, and outcome-focused**.

This transformation relies on the **intelligent use of data**—not merely for oversight, but as a tool for continuous improvement, local responsiveness, and empowering frontline workers.

Currently, while India generates vast amounts of data in sectors like **health, education, nutrition, and livelihoods**, much of it is used to track **inputs** (e.g., supplies or enrolments) rather than actual **outcomes** (e.g., learning levels or treatment success).

The need is clear: shift from data collection fatigue to **insightful action** that delivers meaningful impact.

India's Data Ecosystem: Rich but Fragmented

India's governance data systems include:

- **Unified District Information System for Education (UDISE+)**
- **Health Management Information System (HMIS)**
- **National Family Health Survey (NFHS)**
- **National Sample Survey (NSS)**

Despite their depth, these datasets are:

- Often **infrequent, too broad, or disconnected** from real-time local needs
- Heavily skewed toward **input metrics**, leaving actual impact areas under-measured
- Used in a **top-down manner**, with frontline staff feeding data upward without feedback or local utility

The 4As Framework: Making Data Actionable

To transform monitoring into a driver of change, a **4As framework** is proposed:

1. **Ascertain**
Identify the **critical outcomes** that matter most for each sector (e.g., child literacy, health recovery rates).
2. **Assess**
Embed **simple, low-burden assessments** regularly to track these outcomes.
3. **Assist**
Use data to support, **not penalize**, field workers through mentoring, coaching, and timely feedback.
4. **Adapt**
Continuously **refine strategies** based on ground-level feedback, performance trends, and citizen input.

This approach shifts the focus from **volume** to **value**—enabling **real-time learning and course correction**.

State-Level Innovations: Leading the Way

Several states are pioneering **outcome-oriented data practices**, demonstrating scalable models:

Uttar Pradesh – NIPUN Bharat Mission

- Started with a clear question: *What should a child learn by each grade?*
- Introduced **weekly learning goals (Lakshyas)**, integrated into teacher training and monitoring systems
- Reused existing structures for seamless implementation, avoiding bureaucracy-heavy additions

Andhra Pradesh – Real-Time Dashboards + Mentorship

- Piloted real-time dashboards linked with **field mentoring and school visits**
- Resulted in a **20% improvement in foundational learning** within one year

Telangana – Human Development and Livelihood Survey (HDLS)

- Tracks **annual citizen outcomes** to guide dynamic budgeting and policy tweaks
- Departments like rural development use **self-reporting and feedback loops** to promote accountability without blame

Odisha – Data for Problem-Solving

- Conducts **quarterly block-level teacher meetings**
- Focuses not on reporting alone, but on **collaborative problem-solving** using school-level data

Building Institutional Capacity: Role of Data Analytics Units (DAUs)

To make data use **systemic** rather than **episodic**, the creation of **Data Analytics Units (DAUs)** within planning departments is recommended. These units would:

- **Integrate data** from multiple sources—program records, citizen feedback, field assessments
- Deliver **real-time, actionable insights** for policymakers
- Transform departments from **data collectors** into **data-driven changemakers**

By embedding analytics at the core of governance, departments can **track impact, adapt strategies, and improve service delivery** in a continuous loop.

Conclusion: Toward a Data-Empowered Viksit Bharat

India's path to becoming a developed nation depends not just on generating data—but on **using it meaningfully** to drive change. Outcome-driven monitoring systems, supported by real-time analytics and frontline engagement,

are critical to building a governance framework that is **agile, accountable, and aligned with citizens' needs**.

With state innovations showing the way and national systems aligning toward outcomes, India has the opportunity to lead the world in **data-empowered public governance**.

National Sports Policy (NSP) 2025: Harnessing the Power of Sports for Holistic Development

Introduction
The Union Cabinet has approved the National Sports Policy (NSP) 2025, replacing the earlier NSP of 2001. This updated policy envisions "Harnessing the Power of Sports for the Nation's Holistic Development" and aligns with India's growing ambitions in sports, fitness, and inclusive development.

Background

India's first National Sports Policy was introduced in 1984. The 2025 policy builds on past frameworks with a broader and more integrated approach.

Core Pillars of NSP 2025 (Khelo Bharat Niti)

- 1. Excellence on the Global Stage**
 - Strengthening the sports ecosystem from grassroots to elite levels
 - Improving the capacity and governance of National Sports Federations
 - Enhancing coaching, infrastructure, and high-performance systems
- 2. Economic Development through Sports**
 - Promoting sports tourism, startups, and entrepreneurship
 - Generating employment and business opportunities in the sports sector
- 3. Social Development and Inclusion**
 - Ensuring access to sports for women, marginalised communities, and persons with disabilities
 - Using sports as a tool for empowerment and social integration
- 4. Sports as a People's Movement**
 - Promoting mass participation and a fitness culture
 - Expanding universal access to public sports facilities
 - Building awareness and enthusiasm for sports across communities
- 5. Integration with National Education Policy (NEP) 2020**
 - Embedding sports into school curricula

- Providing specialised training for physical education instructors
- Encouraging holistic development through academic-sports synergy

Strategic Framework for Implementation

1. Governance and Regulation

- Establishing a strong legal and regulatory structure
- Ensuring transparency, professionalism, and accountability in sports administration

2. Private Sector Engagement

- Promoting Public-Private Partnerships and Corporate Social Responsibility in sports
- Leveraging private funding and innovation for infrastructure and athlete development

3. Technology and Monitoring

- Using AI, data analytics, and digital platforms for talent scouting and performance tracking
- Setting up a National Monitoring Framework to evaluate outcomes

4. Institutional Ecosystem

Constitutional Status

- Sports is a State subject under the Seventh Schedule of the Indian Constitution

Ministry and Structure

- Governed by the Ministry of Youth Affairs and Sports (MYAS), which includes the Department of Youth Affairs and the Department of Sports

Key Institutions and Initiatives

- Sports Authority of India (SAI), established in 1984 under the Societies Act, 1860
- Major schemes include:
 - Target Olympic Podium Scheme (TOPS), launched in 2014
 - Khelo India Programme, launched in 2017
 - Fit India Movement, launched in 2019

Conclusion

The National Sports Policy 2025 presents a forward-looking and comprehensive approach to make sports a catalyst for national development. It seeks to not only develop world-class athletes but also drive economic growth, social inclusion, and a healthier, more active society.

Central Adoption Resource Authority (CARA)

Recent Update

CARA has clarified that **digitally certified adoption orders** sent via email are **legally valid and sufficient**. Adoptive parents **do not need hard copies** of the orders, as per existing rules.

About CARA

- **Statutory Body** under the **Ministry of Women & Child Development**, Government of India
- Originally established in **1990** as an autonomous body
- Became a **statutory body** under **Section 68** of the **Juvenile Justice (Care and Protection of Children) Act, 2015 (JJ Act 2015)**
- Functions as the **nodal agency for adoption of Indian children**, overseeing **in-country** and **inter-country** adoptions

International Role

- Acts as India's **Central Authority under the Hague Convention on Inter-country Adoption (1993)**
- India ratified the Hague Convention in **2003**

Legal Frameworks Governing Adoption in India

Children in India can be adopted under:

- **Hindu Adoption and Maintenance Act, 1956**
- **Guardians and Wards Act, 1890**
- **Juvenile Justice Act, 2000 / 2015**

The **JJ Act, 2015** mandates registration of **Child Care Institutions (CCIs)** and their linkage with CARA.

Key Functions of CARA

1. Regulatory & Monitoring Functions

- Monitor and regulate the **in-country adoption process**
- Supervise **inter-country** adoptions
- Maintain a **centralised database** of children and prospective adoptive parents (via the **Child Adoption Resource Information and Guidance System - CARINGS**)

2. Inter-country Adoption

- Receive and process applications from **NRIs, OCIs, and foreign nationals**
- Issue **No Objection Certificates (NOC)** for intercountry adoptions
- Issue **Conformity Certificates** under **Article 23** of the **Hague Convention**

- Coordinate with **Indian diplomatic missions** and **immigration authorities** regarding intercountry adoptions

3. Capacity Building & Advocacy

- Provide **training and guidance** to:
 - **State Adoption Resource Agencies (SARAs)**
 - **District Child Protection Units (DCPUs)**
 - **Specialised Adoption Agencies (SAAs)**
- Organise **workshops, consultations, and seminars**
- Promote **awareness and advocacy** for adoption and non-institutional child care

4. Standards & Research

- Establish **uniform standards** and indicators for adoption agencies
- Conduct **research, documentation, and publication** on adoption-related issues
- Maintain a **confidential database** of adopted children and adoptive parents

5. International Coordination

- Enter into **bilateral agreements** with foreign Central Authorities under the Hague Convention
- **Authorize Foreign Adoption Agencies (AFAAs)** to process applications for intercountry adoption of Indian children

6. Support Services

- Establish **counselling centres** at central and state levels to assist adoptive families
- Support SARAs in setting up **district-level counselling services**

Associated Bodies Monitored by CARA

- **State Adoption Resource Agencies (SARAs)**
- **Specialised Adoption Agencies (SAAs)**
- **Authorised Foreign Adoption Agencies (AFAAs)**
- **Child Welfare Committees (CWCs)**

District Child Protection Units (DCPUs)

Research Development and Innovation (RDI) Scheme

The Union Cabinet, led by the Prime Minister, has approved the RDI Scheme with a corpus of Rs. One lakh crore to boost private sector investment in research, development, and innovation.

Purpose:

To provide long-term, low or zero-interest financing/refinancing to address funding challenges in the private sector, encouraging

innovation, technology adoption, and competitiveness, especially in sunrise and strategic sectors.

Key Objectives:

- Scale up RDI in sunrise and strategic domains linked to economic security and self-reliance.
- Finance high-level Technology Readiness Level (TRL) projects.
- Support acquisition of critical and strategically important technologies.
- Facilitate the establishment of a Deep-Tech Fund of Funds.

Funding Mechanism:

- Two-tiered system:
 - A Special Purpose Fund (SPF) within the Anusandhan National Research Foundation (ANRF) will hold the corpus.
 - SPF funds will be allocated as long-term concessional loans or equity (especially for startups) to second-level fund managers who then finance R&D projects.
- Contribution to Deep-Tech or other Funds of Funds is included.

Governance and Execution:

- ANRF's Governing Board, chaired by the Prime Minister, provides strategic direction.
- ANRF's Executive Council approves guidelines, recommends fund managers, and identifies sunrise sector projects.
- An Empowered Group of Secretaries (EGoS), led by the Cabinet Secretary, oversees approvals, reviews performance, and manages scheme modifications.

The Department of Science and Technology (DST) is the nodal department for implementation.

RailOne App

- Recently launched by the Union Railway Minister in New Delhi.
- **Purpose:** A super app serving as a one-stop platform for all railway-related queries and passenger services.
- **Developer:** Created by the Centre for Railway Information Systems (CRIS), a Railways PSU.
- **Integration:** Combines services previously spread across multiple apps like IRCTC Rail Connect, UTSonMobile,

Rail Madad, NTES, and Food on Track into a single user-friendly platform.

- Reserved tickets are still issued via IRCTC, with RailOne authorised by IRCTC similar to other commercial partners.

Key Features of RailOne

- **Ticket Booking:** Book both reserved and unreserved tickets easily using the "Plan My Journey" tool, supporting multiple classes and quotas.
- **My Bookings:** Access full booking history with filters by duration and ticket type.
- **Live Train Tracking & PNR Updates:** Receive real-time updates on train status, platforms, and delays.
- **Coach Position Finder:** Locate your coach position on the platform for easier boarding.
- **Food Ordering:** Order meals from partner vendors directly to your seat.
- **Rail Madad Integration:** Lodge complaints or share feedback with Indian Railways and track resolution status.
- **Refund Management:** Initiate and monitor refunds for canceled or missed trains through a simple interface.
- **Multilingual Support:** App available in multiple Indian languages for regional accessibility.
- **Single Sign-On:** Log in using IRCTC or UTS credentials—no need to remember multiple passwords.

Secure Payments: Use Indian Railways' digital wallet (R-Wallet) with biometric or mPIN authentication for secure transactions.

Gig Workers in India: Bridging Data Deficits for Inclusive Labour Representation

India's primary labour survey, the Periodic Labour Force Survey (PLFS), has faced criticism for its inability to accurately reflect the rising population of gig and platform-based workers, despite policy acknowledgments and new welfare measures targeting this group.

With a shift in the nature of employment, India's labour market is undergoing a fundamental transformation. Gig and platform jobs — such as ride-hailing, food delivery, online freelancing, and home-based services — are becoming increasingly prevalent, operating largely outside the conventional employer-employee setup. According to a 2022 report by NITI Aayog, the gig

workforce is expected to reach 23.5 million by 2029–30.

Recognising this change, the 2025 Union Budget expanded several social protection initiatives to include gig workers. However, the PLFS, which remains the country's key source of employment data, does not adequately capture this evolving segment of the labour force.

Legal Framework and Policy Foundations

The **Code on Social Security, 2020**, formally acknowledged gig and platform workers, defining them as individuals engaged in work outside the traditional employment model. Platform work, in particular, involves earning income through digital platforms that connect workers to clients. While Section 2(35) provides a broad definition, it does not clearly distinguish gig workers from self-employed or casual labourers. Importantly, Clause 141 mandates the establishment of a Social Security Fund for unorganised and gig workers, and the National Social Security Board (as per Section 6) is responsible for overseeing related welfare schemes. However, for these policies to be effective, they depend heavily on accurate, detailed labour data — which remains lacking.

Challenges with the PLFS

1. General Inclusion, Specific Exclusion

The Ministry of Statistics and Programme Implementation has noted that all income-generating activities are technically captured in the PLFS. However, the survey lacks a specific identifier for gig workers. As a result, they are grouped under generic categories like 'self-employed', 'own-account worker', or 'casual labour'.

This broad classification overlooks key features of gig work:

- Simultaneous engagement with multiple apps
- Algorithm-driven job access
- Irregular income
- Lack of formal contracts

This “statistical invisibility” not only masks the true scale of gig work but also obstructs access to targeted welfare and protections.

2. Misclassification of Work Types

Current survey design leads to misrepresentation. For instance, a shop owner and a food delivery agent working via Swiggy or Zomato may both be listed as self-employed — despite having drastically different job structures, income risks, and dependencies.

Gig work is typically marked by:

- Absence of written employment contracts
- No employer-backed benefits or protections
- Platform dependence and performance-based ratings
- Flexible yet unstable job structures

These aspects are currently not reflected in PLFS coding, weakening the quality of labour data that informs policy decisions.

Progress with Limitations: Acknowledgment Without Adequate Representation

Government programs like e-Shram, Ayushman Bharat PM-JAY inclusion, and digital worker IDs have attempted to bring gig workers into the formal social protection fold. However, without concurrent reform in labour statistics, it is difficult to assess coverage, monitor implementation, or identify who is being left out. The 2025 revision of the PLFS brought certain methodological improvements, such as increased sample sizes, monthly reporting, and broader rural data. Yet, it still stops short of establishing a clear statistical identity for gig and platform workers.

The Way Forward: Building Inclusive Labour Data

To align labour statistics with emerging employment realities, India must:

- Amend PLFS classification systems to separately list gig and platform-based workers
- Introduce new survey modules to capture task-based and app-mediated work
- Utilize digital data from platforms like Uber and Urban Company to enrich traditional datasets
- Integrate welfare registration data (e.g., from e-Shram) into national labour databases

Accurate and inclusive data is not merely about better representation — it is essential for designing and delivering fair, responsive welfare systems that reflect today's diverse labour landscape.

Madras High Court Strikes Down Unlawful Phone Surveillance Order

In a significant ruling with wide-reaching constitutional consequences, the **Madras High Court annulled a 2011 phone-tapping directive** issued by the **Union Ministry of Home Affairs (MHA)**, declaring it unconstitutional. The

Court found that the surveillance was conducted without satisfying the legal prerequisites of a “public emergency” or a threat to “public safety,” thereby **violating the right to privacy under Article 21** of the Indian Constitution.

Key Takeaways from the Judgment

Violation of Article 21 – Right to Privacy

The Court held that **telephone interception is a serious invasion of privacy**, permissible only when it strictly complies with procedures established by law. It clarified that **covert surveillance aimed at crime detection does not qualify as an exception** unless it meets the thresholds of public emergency or public safety. Citing the **landmark K.S. Puttaswamy v. Union of India (2017)** case, the judgment reaffirmed privacy as a **fundamental right**.

A critical observation by the Court:

“The impugned order does not meet the thresholds of ‘public emergency’ or ‘public safety’... It is a secretive operation which falls outside the legal framework laid down by the Supreme Court.”

Case Background

- The surveillance in question was conducted in **2011** under **Section 5(2) of the Indian Telegraph Act, 1885** and **Rule 419-A of the Telegraph Rules, 1951**.
- The interception was based on allegations of a **₹50 lakh bribe to an Income Tax officer**.
- The **CBI defended the move**, claiming it was necessary to detect and prevent corruption.
- A **writ petition under Article 226** was filed in **2018** challenging the validity of the interception order.

Legal Context and Judicial Reasoning

Relevant Laws and Rules

- **Section 5(2)** permits interception only when a **public emergency** arises or **public safety** is at risk.
- **Rule 419-A** requires mandatory **oversight by a Review Committee**, which was bypassed in this case.

Supreme Court Precedents Cited

- **PUCL v. Union of India (1997)**: Declared phone tapping legal only under stringent conditions.

- **K.S. Puttaswamy (2017)**: Recognised the right to privacy as intrinsic to personal liberty under Article 21.
- **Maneka Gandhi v. Union of India (1978)**: Stressed that any legal process impacting fundamental rights must be **just, fair, and reasonable**.

Constitutional Significance

The ruling traces the **evolution of privacy as a legal right**, from its roots in British common law to **seminal US cases like Katz v. United States**, and finally to its full recognition by the **Indian Supreme Court in Puttaswamy**.

The Court emphasized that **executive action without legal backing endangers constitutional democracy**, and any restriction on fundamental rights must uphold **due process**, aligning with principles of **natural justice** and **civilised governance**.

Conclusion

This landmark judgment serves as a strong **judicial check against unauthorized surveillance**, underlining the **boundaries of executive authority** in the digital age. It reinforces that **individual liberties cannot be compromised** without lawful justification and reiterates the judiciary's pivotal role in **upholding democratic values and the right to privacy under Article 21**.

US Courts Uphold Fair Use in AI Training: Key Copyright Battles Underway

In two pivotal rulings, US courts have backed tech companies developing generative AI, addressing for the first time whether using copyrighted material for AI training constitutes infringement. The decisions lean in favour of fair use, potentially shaping how courts interpret similar cases going forward.

Generative AI systems—like ChatGPT and Gemini—depend on vast datasets that include books, articles, and online content. While authors and content creators have sued for unauthorized use, tech firms argue that such use is **“transformative”** and qualifies as **fair use** under US copyright law.

Although the two court cases followed different legal tracks, both concluded that AI training could fall within fair use, especially when the resulting output is new and serves broader public purposes.

Case 1: Writers vs Anthropic – Fair Use Confirmed

In August 2024, authors Andrea Bartz, Charles Graeber, and Kirk Wallace Johnson filed a class action suit against **Anthropic**, developer of the Claude AI models. They claimed their books had been used without permission, damaging their livelihoods by enabling low-cost, AI-generated alternatives.

Court's Ruling: Training Qualifies as Fair Use

The Northern District of California ruled in Anthropic's favour. The judge found the training process to be **transformative**, not replicating or substituting the original works. Instead, it was likened to how a person reads and learns from books to create new ideas.

Judge's Quote: "Like any reader aspiring to be a writer, Anthropic's LLMs trained upon works... to create something different."

Under the **fair use doctrine**, limited use of copyrighted material is permissible for purposes such as education, commentary, research, and news reporting.

Case 2: Writers vs Meta - Court Sides with Tech, Highlights Ethical Gaps

In a separate class action, 13 authors sued **Meta**, alleging that its LLaMA models were trained on unauthorized copies of their work. The writers argued the AI could reproduce content resembling their copyrighted material.

Court's Ruling: No Demonstrable Market Harm

The judge ruled in Meta's favour, stating that the plaintiffs did not show how the AI's output harmed the commercial market for their original works. The court acknowledged the **transformative nature of AI-generated content**, while also cautioning that tech firms should consider compensating creators fairly.

Key Note: Though Meta won, the court acknowledged the broader ethical concern—creators deserve recognition and possibly remuneration in an AI-driven economy.

Wider Legal Landscape: Unsettled and Expanding

Legal challenges are far from over:

- **Anthropic** is also facing a lawsuit from music publishers for unauthorized use of song lyrics.
- **Meta, OpenAI, and Microsoft** are embroiled in multiple copyright disputes. Twelve lawsuits, including one filed by *The New York Times*, have been consolidated.

- **Ziff Davis** has filed a separate suit against OpenAI.
- Visual artists have taken legal action against **Stability AI, Runway AI, DeviantArt**, and **Midjourney** over alleged misuse of images. **Getty Images** is suing Stability AI for copying over 12 million copyrighted photos.

Indian Media Takes Legal Action

In 2024, **Asian News International (ANI)** filed a lawsuit against OpenAI, accusing it of misusing Indian news content. Other major Indian outlets—such as *The Indian Express*, *Hindustan Times*, and *NDTV*—joined the cause through the **Digital News Publishers Association (DNPA)**, indicating growing legal momentum in India.

Implications: Legal Support, But No Clear Resolution

The US rulings support AI companies by recognising their training practices as **fair use**, setting early precedent. However, they **don't resolve the bigger questions**:

- Should authors and artists be compensated for training use?
- What protections exist for creative livelihoods in the face of AI-generated content?
- How do courts handle training datasets sourced from pirated or gray-market archives like Books3?

Conclusion

These landmark rulings mark a turning point in the legal regulation of generative AI. While they provide **short-term clarity for developers**, they also highlight enduring ethical and economic tensions. As lawsuits continue across jurisdictions, the future of copyright in the age of AI remains highly contested and evolving.

PARAKH (Performance Assessment, Review and Analysis of Knowledge for Holistic Development)

- **Portal:** PARAKH Rashtriya Sarvekshan Dissemination Portal was recently launched.
- **Purpose:** Provides open access to national and state-level data on student performance. Helps States/UTs design targeted plans to improve learning outcomes.

About PARAKH

- Established in 2023 as a National Assessment Centre under NCERT as an independent body.

- Objectives:**

Set norms, standards, and guidelines related to student assessments.

Focus Areas: Capacity development, achievement surveys, school board equivalence, and holistic progress cards.

PARAKH Rashtriya Sarvekshan Dissemination Portal

- Recently launched to provide open access to National and State-level student performance data.
- Purpose:**
 - Helps States and Union Territories design targeted plans to improve learning outcomes and bridge skill gaps.
- What is PARAKH?**
 - Stands for Performance Assessment, Review and Analysis of Knowledge for Holistic Development.
 - Established within NCERT in 2023.
 - Aims to standardize school board assessments across India.
 - Staffed by leading assessment experts with knowledge of Indian and international education systems.
 - Works to bring school boards across States and UTs onto a common platform.
 - Supports mandates of the National Education Policy (NEP) 2020.
- Major Areas of Focus:**
 - Capacity development in competency-based assessment.
 - Conducting large-scale achievement surveys.
 - Ensuring equivalence of different school boards.

Developing holistic progress cards for all school stages: foundational, preparational, middle, and secondary.

Television Rating Point (TRP)

- The Ministry of Information and Broadcasting has proposed amendments to the Policy Guidelines for Television

Rating Agencies-2014 to better reflect India's diverse and changing media consumption habits.

- What is TRP?**

- TRP measures the popularity and viewership of television programs.
- Higher viewership means a higher TRP.
- TRP is calculated over a period, usually a week.
- Broadcasters and advertisers use TRP to assess which programs attract more viewers.
- Advertisers decide where to place ads based on TRP; investors use it to make financial decisions.

- How is TRP Calculated in India?**

- TRP is calculated by the Broadcast Audience Research Council (BARC).
- BARC installs devices called "BAR-O-meters" in selected households (over 58,000 homes).
- These meters record which channels or programs are watched by family members or selected people.
- This method is known as People Meters.
- Another method is picture matching, where the device records a small portion of the screen being watched.
- Collected data is analyzed to calculate TRPs.

BARC releases weekly TRP ratings every Thursday, ranking channels and programs.

Defence Acquisition Council (DAC)

Context:

- The DAC recently approved capital acquisition proposals worth ₹1.05 lakh crore, emphasizing 100% indigenous sourcing to strengthen India's defence capabilities.

Recent Approvals:

- ₹1.05 lakh crore worth of capital acquisitions were approved under the Buy (Indian-IDDM) category.
- Naval acquisitions got Approval of Necessity (AoN) for Moored Mines, Mine Counter Measure Vessels, Submersible

Autonomous Vessels, and Super Rapid Gun Mounts.

- The Ministry of Defence (MoD) is close to finalizing procurement of three regiments of Quick Reaction Surface-to-Air Missiles (QR-SAM) worth about ₹30,000 crore for the Indian Army's air defence.
- The Cabinet Committee on Security approved a ₹62,700 crore contract for 156 Light Combat Helicopters (Prachand) from Hindustan Aeronautics Limited (HAL), marking the biggest-ever helicopter deal.

About Defence Acquisition Council (DAC):

- DAC is the top decision-making authority in the Ministry of Defence for all procurement-related matters.
- Established in 2001 after reforms following the Kargil War (1999) based on the Group of Ministers Report on National Security.
- It operates under the Ministry of Defence, Government of India.

Composition:

- Chaired by the Defence Minister.
- Members include the Chief of Defence Staff and the Chiefs of Army, Navy, and Air Force.

Objectives:

- Ensure timely, cost-efficient, and capability-focused defence procurement while optimizing the allocated budget.

Key Functions:

- Approves the Acceptance of Necessity (AoN) for capital acquisition proposals.
- Gives in-principle approval to the 15-year Long-Term Integrated Perspective Plan (LTIPP).
- Categorizes procurement into Buy (Indian), Buy & Make, and Make categories.
- Decides on Transfer of Technology (ToT) and offset obligations for contracts above ₹300 crore.
- Addresses single-vendor procurement issues.

Oversees field trial evaluations and assesses performance of defence equipment.

Overseas Citizen of India (OCI)

Context:

- The Prime Minister announced during his visit to Trinidad and Tobago that people of

Indian origin up to the sixth generation in that country will now be eligible for OCI cards.

About OCI:

- OCI is a type of permanent residency granted to foreign nationals of Indian origin, allowing them to live, work, and travel in India without needing a visa.
- Launched in August 2005 under the Citizenship (Amendment) Act, 2005.
- Administered by the Ministry of Home Affairs, Government of India.

Objective:

- To maintain a connection with the global Indian diaspora by providing long-term rights to stay and participate in India's economic and cultural life, without granting dual citizenship.

Eligibility (as per Section 7A of the Citizenship Act, 1955):

- Foreign citizens who:
 - Were Indian citizens after 26 January 1950.
 - Were eligible for Indian citizenship on 26 January 1950.
 - Belonged to a territory that became part of India after 15 August 1947.
- Their children, grandchildren, and great-grandchildren.
- Minor children with at least one parent being an Indian citizen.
- Spouses of Indian citizens or OCI holders (marriage must be at least 2 years old).

Not Eligible:

- Applicants or ancestors who were citizens of Pakistan, Bangladesh, or any country notified by the Indian government.

Key Features of OCI Card:

- Provides a multiple-entry, lifelong visa to India.
- No requirement for police reporting, even for extended stays.
- Allows employment in India without a visa.
- Equal rights with Non-Resident Indians (NRIs) in education, finance, housing, and property ownership, except for agricultural land.
- Permits purchase of residential and commercial properties in India.

- Does not grant dual citizenship, but offers most rights except voting and holding constitutional offices.

Applications and status tracking are done online via the OCI portal.

Motor Vehicle Aggregator Guidelines (MVAG), 2025

Context:

- The Ministry of Road Transport and Highways updated the MVAG to include new mobility trends like bike taxis, electric vehicles (EVs), and app-based autorickshaws.

About MVAG:

- Regulatory framework under the Motor Vehicles Act, 1988, governing app-based ride-hailing platforms (e.g., Ola, Uber, Rapido).
- Issued by the Ministry of Road Transport and Highways.

Key Features:

- **Driver Welfare and Earnings:**
 - Drivers using their own vehicle get at least 80% of the fare.
 - Drivers using aggregator-owned vehicles get at least 60%.
 - Mandatory health insurance of ₹5 lakh and term insurance of ₹10 lakh per driver.
 - Low-rated drivers (bottom 5%) must undergo quarterly training.
- **Passenger Protection:**
 - ₹5 lakh travel insurance mandatory per passenger.
 - Aggregators must resolve complaints within 3 days and inform passengers of outcomes.
 - Fares charged only from pick-up to drop-off.
- **Fare Regulation:**
 - States to fix base fares per vehicle category.
 - Aggregators can charge between 50% less than base fare up to twice the base fare as a dynamic pricing cap, limiting surge pricing.
- **Penalties for Cancellations:**
 - 10% penalty (up to ₹100) on driver or rider for unjustified cancellations.
 - Valid cancellation reasons must be listed publicly.

• **Bike-Taxi Legal Recognition:**

- Non-transport motorcycles allowed for ride-hailing with state approval.
- Clarifies legality for bike taxi services like Rapido.

• **EV Promotion & Accessibility:**

- States may set annual EV adoption targets for aggregators.
- Inclusion of vehicles accessible for persons with disabilities (Divyangjan) is mandatory.

• **Driver Screening:**

- Mandatory police verification, medical and psychological tests before onboarding.
- Aggregators to provide induction and annual refresher training.

• **Grievance and Licensing:**

- Aggregators must appoint grievance officers and display contact details publicly.
- Centralized portal to manage licenses, renewals, and deposits.

• **Compliance and Penalties:**

- Violations can result in fines from ₹1 lakh to ₹1 crore.

Repeat violations may lead to license suspension (3 months) or cancellation.

Draft Model Code of Conduct for College Teachers: Overview and Implications

Context

The **Tamil Nadu Higher Education Department** has released a **draft Model Code of Conduct** for college faculty, aiming to regulate professional ethics, especially in areas such as **social media engagement, political neutrality, and classroom conduct**. The initiative reflects a broader commitment to fostering ethical, inclusive, and accountable academic environments.

Understanding a Code of Conduct

A **Code of Conduct** is a set of actionable standards designed to regulate professional and ethical behavior within institutions. Unlike a **Code of Ethics**, which is rooted in moral values and philosophical ideals (e.g., virtue ethics, deontology), a Code of Conduct is more prescriptive, outlining specific behaviours and consequences for violations.

Types of Code of Conduct

1. Compliance-Based Codes

- Emphasize adherence to **laws, rules, and institutional policies**.
- Focus on **duty-bound (deontological)** ethics.
- Non-compliance leads to **disciplinary action**.

2. Value-Based Codes

- Grounded in **organizational values** like justice, integrity, and equity.
- Encourage **self-regulation** and ethical reflection.
- Inspired by **virtue ethics**, focusing on moral character development.

Key Features of the Draft Code

- **Standards for Acceptable Behaviour:** Clearly defines professional conduct to protect institutional integrity. *Example: TANSCH's draft advises respectful online engagement to safeguard reputation.*
- **Guidance on Teacher-Student Relations:** Promotes fairness, respect, inclusivity, and student privacy. *Example: Delhi University guidelines stress professional boundaries.*
- **Responsible Social Media Use:** Prohibits posting content that may harm public sentiment or the institution's image. *Example: Teachers advised against making reels promoting personal or offensive content.*
- **Political Neutrality:** Encourages academic impartiality by discouraging participation in political movements. *Example: Tamil Nadu teachers cautioned against affiliating with disruptive political groups.*
- **Promotion of Inclusivity:** Bans discrimination based on caste, religion, or gender. *Example: NEP 2020 underscores inclusive, bias-free campuses.*
- **Research Ethics and Integrity:** Emphasizes academic honesty, prohibiting plagiarism and falsification of data. *Example: UGC mandates anti-plagiarism software for thesis checks.*

Implementation Strategies

- **Institutional Customization:** Universities can adapt the model code to fit their local and institutional contexts.

- **Training and Awareness:** Regular ethics workshops and orientations can instill ethical literacy.
- **Role-Modelling by Leadership:** Senior faculty and administrators must lead by example to establish ethical norms.
- **Feedback and Review:** Stakeholder engagement ensures the code remains responsive and relevant.
- **Ethics Committees:** Dedicated bodies can oversee, investigate, and advise on ethical breaches.

Challenges and Limitations

- **Weak Enforcement:** Without proper monitoring, the code risks becoming symbolic rather than effective.
- **Over-Standardization:** A rigid one-size-fits-all approach may overlook cultural or contextual variations.
- **Academic Freedom Risks:** Poorly defined rules may unintentionally suppress free expression or critical discourse.
- **Ambiguity in Language:** Vague provisions may lead to inconsistent or arbitrary enforcement.
- **Resistance to Change:** Senior faculty may view reforms as intrusive or unnecessary.

Conclusion

A thoughtfully constructed Code of Conduct is essential for cultivating **ethical, inclusive, and professionally accountable** academic spaces. However, its **success relies on clarity, stakeholder participation, institutional backing**, and respect for **academic freedom**. When implemented effectively, it not only protects institutional values but also strengthens the integrity of the higher education system.

PM-POSHAN Scheme

Context

Over a century after the first school meal initiative in the Madras Presidency, the **PM-POSHAN scheme** continues to address child hunger and promote education in India. However, despite its longstanding importance, a new report points to ongoing **ground-level issues** such as **delays in fund disbursal, caste-based discrimination, and rising implementation costs**.

About the Scheme

- **Full Name:** *Pradhan Mantri Poshan Shakti Nirman Yojana*

- **Launch Year:** 2021-22 (replacing the former *Midday Meal Scheme* that started in 1995)
- **Nature of Scheme:** Centrally Sponsored; follows a **60:40 cost-sharing model** between the Centre and States
- **Core Aim:** To offer **one freshly cooked meal daily** to students in **Classes 1 to 8** enrolled in **government and government-aided schools**

Key Features

1. **Nutritional Content:** Meals typically include **grains (rice or wheat), pulses, vegetables, and eggs or bananas** where permitted by local guidelines.
2. **Beneficiary Coverage:** As of 2023-24, the scheme benefits **11.80 crore children** across **11.20 lakh schools** nationwide.
3. **Funding Outlay:** The financial allocation until 2025-26 stands at ₹54,061 crore from the Centre and ₹31,733 crore from States and UTs.
4. **Innovative Additions:**
 - Promotion of **school-level nutrition gardens**
 - Implementation of **digital monitoring tools**
 - Incorporation of **social audit mechanisms** for increased transparency
5. **Integrated Implementation:** The scheme operates in coordination with initiatives such as **Samagra Shiksha Abhiyan** and **Poshan Abhiyan** to ensure **comprehensive child development**.

Successes of PM-POSHAN in India

- **Improved School Participation:** According to a 2024 review (Jean Drèze), the scheme has had a measurable impact on **student enrolment, attendance, and retention**, particularly among **marginalised communities**.
- **Promoting Gender Equality:** Data from Tamil Nadu shows a **significant decline in dropout rates among girls**, attributed to **nutritional support** and the **inclusion of breakfast meals**.
- **Addressing Classroom Hunger:** For many economically disadvantaged children, the midday meal serves as their **primary or only meal**, helping them

focus better in school, as highlighted by UNICEF.

- **State-Level Innovations:**
 - Tamil Nadu has introduced a **Breakfast Scheme** as a complementary initiative.
 - Kerala has diversified its meals by adding dishes such as **egg-fried rice**.
- **Community Involvement:** Kerala's model involves **local cooks** and **community stakeholders**, strengthening both **nutritional delivery** and **hygiene standards**.

Key Challenges in Implementation

- **Delays in Fund Release:** Teachers from Kerala and Uttar Pradesh report having to **use personal resources or loans** to manage meal expenses due to fund transfer delays lasting **up to 3-6 months**.
- **Insufficient Per-Child Budget:** With allocations ranging from **₹6 to ₹10 per child per day**, states like UP and Kerala find it challenging to meet actual meal costs, which are estimated at **₹30 to ₹40 per child per day**.
- **Uniform Guidelines Ignoring Local Needs:** The scheme's **standardised national framework** overlooks **local dietary customs**, especially in **tribal and rural areas** where food preferences vary.
- **Caste Discrimination in Meal Access:** Instances from Delhi NCR, Tamil Nadu, and Bihar reveal that **Dalit children** are sometimes **segregated during mealtimes** or even **denied food**, undermining the scheme's inclusivity goals.
- **Increased Administrative Burden on Teachers:** Teachers like Vasudha from Kerala have raised concerns that responsibilities related to **cooking and administration** are cutting into their **teaching hours**, impacting **instructional quality**.
- **Infrastructure Shortcomings:** Many schools **lack adequate cooking facilities, storage space, or enough staff**, despite having to prepare meals for **hundreds of students daily**.

Way Forward

- **Updating Cost Norms:** Adjust the per-child expenditure to reflect **regional food prices** and **inflation** to ensure meals are **nutritious and adequate**.
- **Timely Fund Disbursement:** Introduce **direct transfer systems** to schools with **fixed timelines** to improve fund flow **efficiency and transparency**.
- **Flexible Menu Design:** Allow **states and districts** to tailor meal menus to suit **local dietary habits**. *Example: Odisha's incorporation of millets into the menu.*
- **Stronger Monitoring Mechanisms:** Expand the use of **real-time dashboards, tech platforms, and community-led audits** to enhance oversight and accountability.
- **Promote Equality and Respect:** Conduct regular **sensitisation programs** in schools to combat **caste-based discrimination** and promote a **culture of dignity**.
- **Collaborate with Civil Society:** Engage **NGOs and community organisations** to help address **nutritional gaps, gender disparities, and mental health needs** among students.

Conclusion

The PM-POSHAN scheme remains an integral part of India's strategy to tackle **childhood hunger**, improve **educational participation**, and ensure **nutritional equity**. While its goals and design are commendable, its full impact can only be realised through **timely funding, local customisation, robust monitoring, and social inclusion measures**.

UMEED Portal

The Union Ministry of Minority Affairs has launched the UMEED Central Portal as part of the Unified Waqf Management, Empowerment, Efficiency, and Development (UMEED) Rules, 2025.

Purpose of UMEED Portal:

This portal acts as a centralized digital platform for the real-time uploading, verification, and monitoring of Waqf properties across India.

Key Features:

- Creation of a comprehensive digital inventory with geo-tagging of all Waqf properties.
- An online grievance redressal mechanism to improve responsiveness.

- Transparent processes for leasing and usage tracking of Waqf assets.
- Integration with GIS mapping and other e-Governance tools.
- Public access to authenticated records and reports, enhancing transparency.

Unified Pension Scheme (UPS)

The Finance Ministry has announced that all tax benefits available under the National Pension System (NPS) will be extended to the Unified Pension Scheme (UPS).

About

UPS is introduced as an option under the NPS framework and is a fund-based payout system. It relies on the consistent and timely accumulation and investment of contributions made by both the employee and the employer (Central Government).

UPS:

Important Features:

- The pension amount will be based on 50% of the average basic pay drawn during the last 12 months before superannuation, given a minimum qualifying service of 25 years.
- The scheme guarantees a minimum pension of ₹10,000 per month after at least 10 years of service.

National Commission for Minorities (NCM)

Overview:

The National Commission for Minorities (NCM) was established with the primary aim of safeguarding and promoting the interests of minority communities in India. Since the retirement of its previous Chairperson and members in April 2025, the Commission has been awaiting new appointments.

About NCM:

- The NCM is a statutory body functioning under the Ministry of Minority Affairs.
- Originally created in January 1978 as the Minorities Commission, it was tasked with protecting minority interests.
- With the enactment of the National Commission for Minorities Act in 1992, the commission gained statutory status and was renamed the National Commission for Minorities.
- The Commission's mandate includes protecting minority rights and implementing confidence-building measures in response to emerging challenges.

- It advises the central and state governments on policies related to the welfare and development of minority communities.

Minority Communities Recognized:

- Initially, five religious groups were notified as minorities: Muslims, Christians, Sikhs, Buddhists, and Zoroastrians (Parsis).
- In 2014, Jains were also recognized as a minority community.
- According to the 2011 Census, these six religious minority groups together represent approximately 20% of India's population.

Composition and Tenure:

- The Commission comprises a Chairperson, a Vice Chairperson, and five members, all nominated by the central government.
- All members must belong to minority communities and be persons of eminence, ability, and integrity.
- As per Section 4(1) of the NCM Act, 1992, members hold office for a term of three years from the date they assume charge.

Aadhaar-based Face Authentication (FaceAuth)

Context:

Himachal Pradesh has become the first Indian state to implement Aadhaar-based face authentication (FaceAuth) for ration distribution under the Public Distribution System (PDS).

About Aadhaar-based Face Authentication:

- Developed by the Unique Identification Authority of India (UIDAI) as an additional authentication method.
- Other existing Aadhaar authentication methods include OTP-based, fingerprint, and iris-based verification.
- FaceAuth works on a **1:1 matching process**, where the live facial image captured during authentication is matched against the facial image stored in the Aadhaar database linked to the individual's Aadhaar number.

National Medical Commission (NMC)

Recent Development: The NMC has issued the *Medical Institutions (Qualifications of Faculty) Regulations, 2025* through the Post Graduate

Medical Education Board (PGMEB), its autonomous body.

About NMC:

- India's leading regulatory authority governing medical education and practice.
- Established under the National Medical Commission Act, 2019, replacing the Medical Council of India (MCI).
- Responsible for formulating policies regulating medical institutions, research, and professionals.

National Company Law Appellate Tribunal (NCLAT)

Recent Judgment: NCLAT ruled that the Insolvency and Bankruptcy Code (IBC), 2016 does not have the power to override the Prevention of Money Laundering Act (PMLA), 2002.

About NCLAT:

- Constituted under the Companies Act, 2013.
- Serves as the appellate authority for orders passed by the National Company Law Tribunal (NCLT).
- Also hears appeals against decisions by the Insolvency and Bankruptcy Board of India, Competition Commission of India (CCI), and National Financial Reporting Authority (NFRA).

Principal bench is located in New Delhi.

Fugitive Economic Offenders Act, 2018

Context:

A Delhi court recently declared a UK-based arms consultant as a fugitive economic offender under this Act.

About the Fugitive Economic Offenders Act, 2018:

- **Definition of Fugitive Economic Offender (FEO):** An individual who has an arrest warrant issued for a scheduled offence and who either leaves India to avoid prosecution or refuses to return to face prosecution.
- **Scheduled Offences:** Offences listed in the Act's Schedule involving financial crimes with a value of ₹100 crore or more.
- **Procedure:** The authority concerned must file an application before a Special Court to get a person declared as an FEO.

- **Special Court:** A Court of Session designated under the Prevention of Money Laundering Act (PMLA), 2002.

Defence Accounts Department (DAD): Supporting Defence Financial Management Overview:

The Defence Accounts Department (DAD) operates under the administrative jurisdiction of the Ministry of Defence and recently received emphasis from the Defence Minister for its role in improving the Armed Forces' operational readiness and financial flexibility.

Functions:

- The department is led by the Controller General of Defence Accounts (CGDA).
- Its responsibilities broadly include auditing, providing financial advice, making payments, and maintaining accounts for all expenses related to the Armed Forces.
- This covers bills for supplies and services, construction and repairs, pay and allowances, pensions of defence personnel and civilians, as well as auditing cash and stores for all Ministry of Defence entities.
- DAD has a vast operational footprint, with 1,110 offices catering to the Army, Navy, Air Force, and other organizations such as Defence Ordnance Factories (41), DRDO Laboratories/Projects (50), Coast Guard, DGQA, DGBR, DGNCC, DG Defence Estates, and the Canteen Stores Department (CSD).
- As the principal accounting authority for the Ministry of Defence, CGDA supplies information necessary for Appropriation Accounts and prepares Annual Consolidated Accounts for Defence Services Receipts and Charges.
- It also acts as the Principal Accounts Officer for the Ministry's Civil Estimates and prepares annual accounts for the Ordnance Factory Board, Military Farms, Canteen Stores Department, and Works Expenditure.
- Furthermore, the CGDA submits the Annual Audit Certificate of Defence Services to the Comptroller and Auditor General of India, which is subsequently presented to Parliament.

- The department has recently taken on the responsibility of auditing offset claims.

History:

- The Defence Accounts Department is among the oldest departments under the Government of India, tracing its roots to Military Pay Masters of the East India Company.
- The first Pay Master was appointed in January 1750 to manage payments at Fort Williams, Calcutta, with field payments handled by Commissaries.
- By 1776, a Commissary General was appointed to oversee accounts.
- The role was renamed Military Auditor General in 1788, who supervised all military financial disbursements.
- Post-1858, under British Crown rule, Military Accountants General operated in the Bengal, Madras, and Bombay Presidencies.
- In April 1864, the office of Accountant General, Military Department, was established and recognized as the head of Military Accounts in 1865.
- The department was renamed Defence Accounts Department on 1 October 1951, with its head titled Controller General of Defence Accounts.

Since August 1983, with the introduction of the Integrated Financial Advisor scheme, the department has come under the administrative control of the Ministry of Defence.

National Overseas Scholarship (NOS) Scheme: Facilitating Higher Education Abroad for Marginalised Students

About the Scheme: The National Overseas Scholarship (NOS) is a Central Sector initiative designed to support students from marginalized communities with low income by enabling them to pursue higher education abroad at the Master's or Ph.D. level. The scheme is managed by the Ministry of Social Justice & Empowerment.

Selection Details:

- Annually, 125 new candidates are selected for the scholarship, subject to fund availability.
- Of these, 115 slots are reserved for Scheduled Castes (SC), 6 for Denotified, Nomadic, and Semi-Nomadic Tribes, and 4 for Landless Agricultural Labourers and Traditional Artisans.

- Additionally, 30% of the scholarships are set aside specifically for female candidates.

Eligibility Criteria:

- The applicant must be below 35 years of age as of 1st April of the selection year.
- The candidate should have secured admission or an unconditional offer to pursue a Master's or Ph.D. from an accredited university or institute abroad.
- The qualifying examination marks should be at least 60% or equivalent grade (Master's degree for Ph.D. applicants; Bachelor's degree for Master's applicants).
- The applicant's family income from all sources should not exceed ₹8 lakh per annum.

Exclusions:

- Scholarships are not provided for undergraduate (Bachelor's) courses.
- A maximum of two children per family are eligible, with the second child's admission contingent upon available slots in the final selection cycle.
- Candidates currently studying, having studied abroad with other scholarships or self-funded, are not eligible.
- The scholarship does not cover pursuing the same academic level (Master's or Ph.D.) for which the candidate already holds a qualification from any institution, in India or abroad.

Recent Developments: The Ministry of Social Justice & Empowerment is in the process of requesting additional budget allocation to expand the scheme's reach.

Enemy Property Act, 1968

Context:

The **Madhya Pradesh High Court** dismissed a challenge by an actor against a government notification that declared his property as 'enemy property' under the provisions of the **Enemy Property Act, 1968**.

About the Enemy Property Act, 1968

- **Definition of 'Enemy':**
 - A nation (and its citizens) that has carried out external aggression against India.
 - Currently includes **Pakistan** and **China**.
- **What is Enemy Property?**

- Any property owned, held, or managed on behalf of an enemy, enemy subject, or enemy firm.
- Such properties are **vested with the Custodian of Enemy Property for India**, functioning under the **Ministry of Home Affairs**.

- **2017 Amendment Highlights:**

- The definition of 'enemy' was expanded to include:
 - **Legal heirs or successors** of enemies, regardless of their Indian citizenship.
 - Individuals who **changed their nationality** after being classified as enemies.

Judicial Divergence on Phone Tapping: Madras and Delhi High Court Rulings

Context

Recent decisions by the **Delhi High Court** and the **Madras High Court** have addressed the legality of phone tapping, both dealing with the justification of **"preventing incitement to commit a crime"**—a recognised ground for lawful interception under Indian law. While the Delhi High Court upheld the validity of the interception order, the Madras High Court set it aside, raising important constitutional questions regarding **privacy and procedural safeguards**.

Judicial Positions

Delhi High Court

- The Court **upheld the government's order of interception**, citing the legal ground of preventing criminal incitement.
- It recognised the **legitimacy of interception** when it complies with procedural norms and is anchored in statutory authority.

Madras High Court

- The Court **quashed the interception order**, asserting that **telephone tapping amounts to a violation of the fundamental right to privacy** under **Article 21** of the Constitution unless it strictly follows **due process established by law**.
- The ruling reflects the evolving constitutional jurisprudence on **privacy**.

post-Puttaswamy judgment (2017), which reaffirmed the right to privacy as a fundamental right.

Legal Framework Governing Phone Tapping in India

1. Telecommunications Act, 2023 and 2024 Rules

- The **Telecommunications (Procedures and Safeguards for Lawful Interception of Messages) Rules, 2024**, issued under the **Telecommunications Act, 2023**, provide the latest procedural framework for lawful interception.
- These rules outline **who may authorise interception, conditions under which it can be ordered, and the oversight mechanisms** to prevent misuse.

2. Information Technology Act, 2000

- Governs the interception of **electronic communications** such as **emails, social media messages, and encrypted apps like WhatsApp**.
- Interception is permitted under specific circumstances involving national security or prevention of crime, subject to procedural safeguards.

Judicial Precedent: PUCL v. Union of India (1997)

The landmark Supreme Court ruling in **People's Union for Civil Liberties (PUCL) v. Union of India (1997)** established key principles:

- **Upheld the constitutionality of Section 5(2)** of the Indian Telegraph Act, which permits interception under specific grounds such as public emergency and public safety.
- Introduced **procedural safeguards** to prevent arbitrary tapping:
 - Interception orders must be issued **only by the Union or State Home Secretary**.
 - Orders are valid for a **maximum of two months**, subject to renewal.
 - A **review committee** must examine the necessity and legality of the interception.

Constitutional Dimensions

- The right to privacy, affirmed in **K.S. Puttaswamy v. Union of India (2017)**, is a **core component of Article 21 (Right to Life and Personal Liberty)**.

- Any state action that infringes on privacy must be:

- **Sanctioned by law,**
- **Necessary in a democratic society, and**
- **Proportionate to the aim pursued.**

The Madras High Court's decision aligns with these principles, underscoring the **need for strict adherence to procedure and minimal intrusion**.

Conclusion

The contrasting rulings by the Delhi and Madras High Courts underscore the **tension between state security interests and individual privacy rights** in an era of expanding surveillance capacities. As legal standards evolve under the **Telecommunications Act, 2023**, and in light of the **constitutional emphasis on procedural fairness**, judicial scrutiny of interception orders remains a vital check on executive overreach.

Peering into India's Digital Divide: Insights from NSS 2025

Introduction

The **Comprehensive Modular Survey: Telecom 2025 (CMS)** conducted by the **National Sample Survey (NSS)** presents a nuanced picture of India's evolving digital landscape. Moving beyond the question of basic connectivity, the survey highlights persistent **inequalities in digital access, usage, and empowerment**, calling for a transition from first-generation access-based reforms to second-generation empowerment-driven strategies.

Understanding the Digital Divide

The **digital divide** refers to disparities in access to and effective use of digital technologies such as mobile phones, internet services, and information and communication technology (ICT) skills. This divide manifests in multiple dimensions:

- **Access Gap:** Differences in ownership of digital devices and availability of internet.
- **Usage Gap:** Variation in the nature of digital activity—e.g., entertainment versus educational or financial use.
- **Skill Gap:** Inadequate ability to engage in productive digital practices (e.g., document creation, cyber hygiene).
- **Gender Gap:** Disproportionate digital access and literacy among women and girls.

Key Trends from NSS 2025 CMS

1. Access Patterns

- **Mobile Phone Use:** 97.1% of youth use mobile phones; however, only 73.4% own them.
- **Ownership Disparity:**
 - Urban youth: 82%
 - Rural youth: 69.3%
 - Males: 83.3%
 - Females: 63%

2. Usage Patterns

- **Internet Usage Among Women:** Increased from 77.1% (2022) to 91.3% (2025).
- **Purpose of Use:**
 - 30.4% of users engage with the internet solely for entertainment.
 - Entertainment usage is higher among young women (36%).

3. Digital Skills

- Basic ICT skills are widespread (85.1% can send attachments), but **productive skills** remain low:
 - Only 32.2% created digital presentations.
 - 22.9% drafted text documents.
- **Online Banking:**
 - 68.7% of youth use it, but stark divides persist:
 - Urban: 79.7% | Rural: 63.4%
 - Male: 79.3% | Female: 57.5%

4. Connectivity Infrastructure

- Internet availability:
 - Urban households: 91.6%
 - Rural households: 83.3%
- **Fibre-optic Connectivity:**
 - Only 7.2% of households have it.
 - Rural fibre coverage: merely 3.2%

First-Generation Digital Inclusion Initiatives

India's digital inclusion efforts were spearheaded by foundational programs that emphasized access:

- **BharatNet:** Connected over 1.7 lakh Gram Panchayats with optical fibre, enabling rural access to e-governance and online services.
- **Digital India Mission:** Established infrastructure such as **Common Service Centres (CSCs)** and **Digital Lockers**.
- **PMGDISHA:** Trained millions in basic digital literacy in rural India.

- **UPI & JAM Trinity:** The integration of **Jan Dhan-Aadhaar-Mobile** enabled a robust and inclusive fintech ecosystem.

Outcomes of First-Generation Reforms

- **Near-Universal Mobile Use:** 97% of youth now use mobile phones; rural usage stands at 92.7%.
- **UPI Adoption:** 80.7% of youth use UPI; traditional banking tools like net banking remain underused (0.7%).
- **Mobile-First Internet:** Low-cost smartphones and data plans have made mobile internet the dominant access point, especially in rural areas.
- **Gender Progress:** Rural female internet usage rose dramatically to 91.3%, signaling quiet but significant digital empowerment.

Persistent Challenges

Despite improvements, several barriers remain:

- **Ownership Gender Gap:** Only 56.9% of rural young women own mobile phones, compared to 81.2% of men, limiting autonomous use.
- **Limited Productive Engagement:** Most digital activity remains consumption-oriented; creation, problem-solving, and civic use are minimal.
- **Dependence on Family Devices:** Many women rely on male relatives' phones, restricting privacy and personal agency.
- **Low Civic Awareness:** Only 26.9% of youth know how to report cybercrime; this figure drops below 22% for rural and female users.
- **Digital Financial Literacy:** Only 18.8% of youth use both UPI and net banking, indicating poor multimodal financial fluency.

Towards Second-Generation Digital Inclusion

To move from **access** to **empowerment**, India's digital policy must undergo a strategic shift:

1. Empowerment Through Skills

- Invest in digital **content creation**, **problem-solving**, and **critical thinking**.
- Introduce practical **ICT modules in school curricula**, including cyber hygiene and digital tools.

2. Women-Centric Interventions

- Target rural **Self-Help Groups (SHGs)** and women with mobile-based solutions

for health, education, entrepreneurship, and civic participation.

3. Infrastructure Strengthening

- Accelerate **fibre-to-village** connectivity.
- Develop **community-based digital hubs** at panchayat and school levels with public Wi-Fi access.

4. Digital Financial Inclusion

- Expand training in **digital banking tools**, secure wallet use, and financial planning, particularly for rural and female populations.

5. Localized Awareness Campaigns

- Promote digital literacy and online services using **local languages and culturally relevant content**, focused on employment, healthcare, governance, and education.

Conclusion

India has achieved a milestone in near-universal mobile and internet access, but the **digital divide has evolved** into a **digital empowerment gap**. Addressing this new phase requires **second-generation reforms** that focus on **ownership, agency, digital skills, and meaningful usage**—especially for **rural youth and women**. A mobile phone in every hand must translate to **equal power in every mind**, ensuring that digital inclusion fosters both access and autonomy.

National Maritime Domain Awareness (NMDA) Project

The Indian Navy has recently formalized an agreement with Bharat Electronics Limited (BEL), Bengaluru, for the implementation of the National Maritime Domain Awareness (NMDA) Project.

Project Objective

The NMDA Project aims to enhance maritime and coastal security through a comprehensive and integrated approach. It focuses on the collection, analysis, and dissemination of maritime data among various stakeholders to improve situational awareness and coordinated responses.

Key Features and Upgrades

The project involves the modernization of the existing National Command, Control, Communication, and Intelligence (NC3I) Network into an advanced NMDA Network. This upgrade includes the integration of artificial intelligence (AI)-enabled software designed to facilitate intelligent surveillance and support decision-making processes.

The Information Management and Analysis Centre (IMAC) located in Gurugram, currently serving as the central node of the NC3I Network, will be transformed into a Multi-Agency NMDA Centre. This enhanced facility will host personnel from 15 different agencies representing seven critical ministries such as Defence, Shipping, Petroleum, and Fisheries, promoting seamless inter-agency coordination and information sharing.

Operational Integration

NMDA will create a unified operational picture of India's extensive coastline and adjoining maritime zones by linking maritime agencies, coastal states, and union territories. The project will also integrate data streams from commercial shipping, fisheries, and other maritime sectors, thereby enhancing India's capabilities in maritime threat response, search-and-rescue operations, and environmental incident management.

Implementation

The project will be executed on a turnkey basis under the administration of the Indian Navy. Bharat Electronics Limited will act as the lead systems integrator, providing cutting-edge hardware solutions and AI-powered software platforms to ensure the project's technological sophistication.

Indian Telecom Services - 2024-25 Performance Indicators

Released By: Telecom Regulatory Authority of India (TRAI)

Key Statistics

- **Internet Subscribers:** Increased from **954.40 million** (2024) to **969.10 million** (2025).
- **Telephone Subscribers:** Slight rise from **1,199.28 million** to **1,200.80 million**.
- **Overall Tele-Density:** Declined from **85.69%** to **85.04%**.
 - **Urban Tele-Density:** 131.45%

Rural Tele-Density: 59.06%

BIND Scheme (Broadcasting Infrastructure and Network Development)

Latest Update

- A new **Akashvani Kendra (All India Radio station)** is being established in **Ujjain, Madhya Pradesh**, with funding under the BIND Scheme.

Overview of BIND Scheme

- **Type:** Central Sector Scheme

- **Ministry:** Ministry of Information and Broadcasting
- **Launched:** 2023

Purpose

- To **strengthen and modernize** Prasar Bharati's infrastructure (All India Radio & Doordarshan).
- **Supports:**
 - **Expansion of broadcasting networks**
 - **Upgradation of content and equipment**
 - **Improved coverage in remote areas**

Implementing Agency

Prasar Bharati, India's autonomous public broadcaster.

Ministry of Mines Launches 'Aspirational DMF Programme'

Overview:

The Union Ministry of Mines has unveiled operational guidelines for the 'Aspirational DMF Programme,' which seeks to integrate District Mineral Foundation (DMF) initiatives with the Aspirational District Programme (ADP) and Aspirational Block Programmes (ABP).

Background:

- The guidelines build upon the **Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY)**, which focuses on developing mining-affected areas using DMF funds.
- The ADP and ABP are NITI Aayog initiatives aimed at accelerating development in the country's most underdeveloped districts and blocks.

About the Aspirational DMF Programme:

- **Objective:** To align DMF projects with key sectors and performance metrics of ADP/ABP, thereby amplifying development outcomes in mining-affected regions.
- **Priority Sectors for Alignment:**
 - Health and Nutrition
 - Education
 - Agriculture and Water Resources, including allied activities
 - Basic Infrastructure
 - Social Development, Financial Inclusion, and Skill Development
- **Coverage:** Currently, 106 Aspirational Districts and 473 Aspirational Blocks are

linked with DMFs, with plans for expansion.

About District Mineral Foundation (DMF):

- DMFs are non-profit entities established under Section 9(B) of the Mines and Minerals (Development and Regulation) Act (MMDR), 1957, amended in 2015.

Purpose: To work for the welfare of people and regions impacted by mining operations, as defined by respective State Governments.

Protecting and Preserving Voting Rights in India: Legal Status, Electoral Rolls & Universal Suffrage

Introduction: Supreme Court's Recent Directive

The Supreme Court recently directed the Election Commission to accept Aadhaar cards, voter ID cards, and ration cards for updating the electoral rolls in Bihar. It underscored that the right to vote is a core principle of Indian democracy.

Universal Suffrage in India: A Pioneering Step

- India stands apart from many Western democracies by having adopted universal adult suffrage from the beginning.
- In contrast, the United Kingdom initially limited voting rights to wealthy men, extending them to women only in 1928. In the United States, while women and Black citizens formally gained voting rights earlier, many continued to face discriminatory practices for decades.
- India, from its very first elections, took a bold and inclusive stance by ensuring voting rights for all adult citizens.

Constitutional and Legal Framework for Voting Rights

Constitutional Guarantee: The Constitution, through Article 326, grants voting rights to all citizens aged 18 and above, regardless of gender, caste, religion, education, or property ownership. This was further strengthened by the 61st Constitutional Amendment in 1989, which lowered the voting age from 21 to 18.

Legal Framework: Two key laws reinforce the right to vote:

- The **Representation of the People Act, 1950** governs the preparation of electoral rolls.
- The **Representation of the People Act, 1951** regulates the conduct of elections and addresses electoral offenses.

Administrative Innovations for Inclusive Voting

- To enable participation by 173 million mostly illiterate voters during India's first general elections, Chief Election Commissioner Sukumar Sen introduced **election symbols**, allowing voters to recognize parties and candidates without needing to read. This administrative innovation made voting accessible and inclusive.
- The Election Commission continues to play a crucial role in making sure every eligible Indian — even in the most remote regions — can exercise their right to vote.

Legal Status of the Right to Vote in India

- **Statutory Nature of the Right:** In Indian law, the right to vote is not classified as a fundamental or constitutional right. Instead, it is a **statutory right** granted under **Section 62 of the Representation of the People Act, 1951**.
- **Judicial Interpretation:** The Supreme Court in **Kuldip Nayar v. Union of India (2006)** held that voting is a statutory right. Though the **Rajbala v. State of Haryana (2016)** judgment referred to it as a constitutional right, the earlier larger bench decision in **Kuldip Nayar** takes precedence.
- In the more recent **Anoop Baranwal v. Union of India (2023)** case, the Court reaffirmed this position. Justice Ajay Rastogi, in a dissenting opinion, argued that voting could be connected to fundamental rights under Articles 19(1)(a) and 21, but this was not the majority view.
- Despite its classification, voting is widely regarded as essential to democracy and is often described as a **"democratic imperative."**

Safeguarding Democracy through Accurate Electoral Rolls

- Maintaining accurate and up-to-date electoral rolls is vital to ensuring free and fair elections. The principle of **"one person, one vote"** relies heavily on the integrity of these rolls.
- Errors like mass deletions, duplicate names, or inclusion of ineligible

individuals can lead to impersonation, voter suppression, and manipulation of results. Accepting a variety of ID documents (Aadhaar, voter ID, ration card) helps include more citizens and promotes fair representation.

- According to the Supreme Court in **Lakshmi Charan Sen v. A.K.M. Hassan Uzzaman (1985)**, political parties also share responsibility in maintaining the integrity of electoral rolls, especially in a country with widespread illiteracy. Their vigilance is critical in protecting the legitimacy of the electoral process.

Ordinary Residency and Voter Eligibility

- **Definition and Significance:** Under Article 324 of the Constitution and Section 19 of the Representation of the People Act, 1950, the Election Commission prepares electoral rolls based on **ordinary residence**. This term implies a genuine, regular presence in a particular constituency — not a temporary or short-term stay.
For instance, a student living in a hostel may not qualify if their permanent home is elsewhere. In **Manmohan Singh's case (1991)**, the court clarified that "ordinary residence" refers to habitual presence, not merely a registered address.
- **Special Categories of Voters:** Postal ballots are available for **service voters** such as military personnel, government officials posted abroad, and election staff. **Overseas Indian citizens** can register under **Section 20A of the RPA**, but must cast their votes in person.

Citizenship Verification and the Bihar Controversy

A central issue in the updating of Bihar's electoral rolls is how citizenship is verified.

In **Lal Babu Hussein v. ERO (1995)**, the Supreme Court invalidated Election Commission instructions that allowed the removal of names based on unproven claims of foreign origin. The Court emphasized that:

- Citizenship must not be challenged arbitrarily.
- Previous voter rolls must be respected.

- Electoral officers must follow due process as outlined in the **Citizenship Act** and the **Constitution**.

This principle was upheld again in the **Md. Rahim Ali case (2024)**, reinforcing that no voter can be excluded based on mere suspicion or without proper inquiry.

Conclusion: Voting as the Heart of Democracy

Though voting in India is a statutory right, it remains one of the most critical elements of democratic life. Legal clarity, administrative innovation, and judicial safeguards all contribute to protecting this right. Maintaining accurate voter rolls, ensuring fair inclusion, and resisting arbitrary disenfranchisement are essential to preserving the strength and legitimacy of India's democracy.

Electoral Roll Revision in India: Special Intensive Revision, History, and Legal Safeguards

Current Context: The Bihar Special Intensive Revision (SIR)

The Supreme Court has permitted Bihar's **Special Intensive Revision (SIR)** of electoral rolls to continue, while advising the Election Commission of India (ECI) to accept **Aadhaar, voter ID, and ration cards** as valid supporting documents.

However, controversy has emerged over a new ECI requirement: even existing voters (those enrolled post-2003) are now being asked to furnish **birth or place-of-birth documents** to verify citizenship. Critics argue that this could lead to **mass voter disenfranchisement**, particularly in vulnerable populations.

This concern is not new. In previous electoral revisions across India, similar fears were raised. Over time, **legal safeguards** have evolved to protect voter rights:

- Courts have ruled that **no voter can be excluded without due process and proper inquiry**.
- **Past voter lists** must be respected as valid documentation.
- Citizenship cannot be questioned based on **vague suspicions or unverified allegations**.

Types of Electoral Roll Revisions in India

- **Intensive Revision:** This process involves **house-to-house verification** to create new electoral rolls from scratch. It is typically conducted when existing rolls are outdated or unreliable — often before

major elections or after redrawing of constituencies.

- **Summary Revision:** A routine **annual update**, where draft rolls are published and citizens can apply for additions, deletions, or corrections. Unlike intensive revisions, this process does **not involve home visits**.
- **Special Revision:** Carried out in **exceptional circumstances** — for example, when major errors are discovered or areas are missed during a previous revision. A special revision can follow either summary or intensive procedures, depending on the situation.

Bihar's Exercise: A Special Intensive Revision

The current exercise in Bihar is a **Special Intensive Revision (SIR)** — a hybrid process that combines features of both intensive and summary methods. It is conducted under the ECI's authority granted by **Section 21(3) of the Representation of the People Act, 1950**.

What makes this revision stand out is a **new requirement**: electors must provide **documentary proof of birth or place of birth** during the verification process. This was not mandated in earlier revisions and is central to current debates. The term "special" reflects this **customized, situation-specific approach**.

Why the SIR Began Now — Starting with Bihar

This is India's **first nationwide special intensive revision in over two decades**, starting with Bihar where **Assembly elections are due before November**.

The ECI has cited several reasons:

- **Urbanisation and migration** have led to widespread **duplicate entries**, as voters shift addresses without removing earlier registrations.
- Persistent **political complaints** regarding voter list manipulation have triggered the need for more thorough verification.
- The revision aims to **standardise and clean up voter rolls** ahead of upcoming state and national elections.

Historical Background: Evolution of Intensive Revisions in India

Since Independence, India has conducted **multiple intensive revisions**, including in the years **1952–56, 1957, 1961, 1965, 1966, 1983–**

84, 1987-89, 1992, 1993, 1995, 2002, 2003, and 2004.

Early Challenges: Initial revisions addressed major problems in the voter rolls used during the **1951-52 Lok Sabha elections**, which suffered from public unfamiliarity, lack of formal legal processes, and administrative shortfalls. One notable issue was the **widespread exclusion of women**, many of whom were left off the rolls because they did not reveal their names to enumerators.

Phased and Regional Approach: Over time, the ECI adopted a **phased strategy**, conducting revisions regionally and periodically to improve accuracy before elections.

Changing Focus in the 1980s: By the 1980s, the emphasis shifted to preventing **ineligible or fraudulent entries**, particularly in **border states** where concerns about the inclusion of non-citizens were frequently raised. The ECI issued new guidelines:

- No name could be deleted without **proper inquiry and adherence to procedure**.
- The **burden of proof** lay with the person challenging the entry, not the voter.
- **Introduction of EPIC:** Intensive revisions in **1993 and 1995** helped roll out the **Electors Photo Identity Card (EPIC)** system. While EPIC was not the primary goal of these revisions, the effort helped lay the groundwork for broader voter identification initiatives.
- **Shift to Summary Revisions:** As voter lists improved and resource constraints increased, **summary revisions became the norm**. However, when serious issues arose — such as large-scale migration, political disputes, or regional inaccuracies — the ECI reverted to **intensive methods** to address those specific challenges.

Conclusion: Balancing Accuracy and Inclusion

- Electoral roll revision is essential to the integrity of India's democratic system. While the ECI must keep rolls free of errors and duplications, it must also **balance this with the right to vote** and prevent unjust exclusion.

Legal safeguards developed over decades — including **judicial oversight, due process requirements**, and **respect for existing rolls** —

are critical to ensuring that voter verification drives like the **Special Intensive Revision** are fair, transparent, and non-discriminatory.

Strengthening State S&T Councils – NITI Aayog Report Overview

• **Context**

The NITI Aayog has released a report titled **"A Roadmap for Strengthening State S&T Councils"**, aiming to position these councils as innovation enablers aligned with the vision of **Viksit Bharat @2047**. Established in 1971 through a national initiative, these councils have played a key role in decentralising scientific planning and research.

Key Issues Facing State S&T Councils

• **Inadequate Funding and Utilisation Challenges**

Many councils suffer from **irregular and insufficient financial support**, with delays in disbursement impacting operational efficiency and continuity of research.

• **Shortage of Scientific Manpower**

Persistent vacancies, a lack of skilled professionals, and subpar working conditions contribute to **low research output and innovation fatigue**.

• **Weak Institutional and Industry Collaboration**

Limited **partnerships with academia and industry**, coupled with poor global engagement, hamper the transfer of technology and practical application of research.

• **Regulatory and Administrative Hurdles**

Bureaucratic inefficiencies result in **delays, lack of accountability**, and diminished impact of S&T programs at the state level.

Recommendations by NITI Aayog

• **Enhanced Financial Commitment**

- States should allocate **at least 0.5% of their GSDP** to science and technology.
- Transition from core funding by the Centre to **performance-based and project-driven grants**.

• **Strengthening Human Resources**

- Maintain a **70:30 ratio** between scientific and non-scientific staff.

- Leverage the experience of **retired central scientists** and foster **faculty exchange and secondments** to build capacity.
- **Boosting Industry and Institutional Collaboration**
 - Map **state-specific resources** and align them with suitable **institutional and industrial partners**.

Reframe existing programs to **deepen linkages and promote technology transfer** through collaborative frameworks.

Enforcement Case Information Report (ECIR)

- The Enforcement Directorate (ED) recently registered an ECIR against 29 individuals, including actors, TV hosts, social media influencers, and YouTubers, for allegedly promoting illegal betting apps.

About ECIR:

- The ECIR is an official record created when the ED receives information about a potential money laundering offence.
- It serves as the starting point for investigations and legal actions such as asset attachment and arrests.
- Notably, the Prevention of Money Laundering Act (PMLA), 2002 does not explicitly mention ECIRs, making them **non-statutory internal documents**.
- The ECIR functions similarly to a police FIR (First Information Report) but cannot be equated with it, as ruled by the Supreme Court.
- The ED is not legally required to provide a copy of the ECIR to the accused.
- Since the ECIR lacks statutory status, it cannot be legally quashed.

About Enforcement Directorate (ED):

- The ED is an Indian law enforcement and economic intelligence agency founded in 1956 and headquartered in New Delhi.
- It is tasked with enforcing economic laws and combating economic crimes like money laundering, corruption, and foreign exchange violations.
- It operates under the **Department of Revenue, Ministry of Finance**.
- The ED enforces key legislation including the **Foreign Exchange Management Act (FEMA) 1999**, the **Prevention of Money**

Laundering Act (PMLA) 2002, and the **Fugitive Economic Offenders Act (FEOA) 2018**.

Public Gambling Act, 1867: Overview

- **Core Provisions**
- The **Public Gambling Act, 1867** prohibits **betting and gambling** in India.
- **Applicability:** Enforced in several states including **Delhi** and **Uttar Pradesh**.
- **Exemptions:**
 - **Games of skill** are permitted under the law.
- **State Jurisdiction:**
 - As **gambling is a state subject** under the **7th Schedule** of the Constitution, individual states have the authority to amend or enact their own laws.

• **Current Status**

Betting and gambling remain **largely illegal** in most parts of the country, though some states have liberalized online gaming and betting regulations to varying degrees.

Autonomous District Councils (ADCs)

Context:

Governor's rule has been imposed in the Chakma Autonomous District Council (Mizoram), which operates under the Sixth Schedule of the Constitution.

What are ADCs?

- ADCs are self-governing institutions set up under the Sixth Schedule to administer tribal areas in Assam, Meghalaya, Tripura, and Mizoram.
- They aim to preserve tribal culture and identity while promoting socio-economic development in tribal-dominated regions.

Key Functions:

- Empowered to legislate on matters such as land, forests, agriculture, tribal customs, and inheritance.
- Administer local services including education, public health, and sanitation.
- Establish local courts (village/district council courts) to resolve disputes based on customary laws.

Structure:

- Generally consist of up to 30 members.
- Out of these, the Governor may nominate up to four members.

Maharashtra's Urban Maoism Bill 2024: Provisions, Concerns, and Impact

- The Maharashtra Legislative Assembly has passed the *Special Public Security Bill, 2024*, which targets "urban Maoism" and other left-wing extremist activities.
- The law criminalizes actions that disturb public peace or incite defiance of legal authority.
- A controversial provision allows property seizure even before conviction, sparking concerns about vague definitions and potential police overreach.
- The Bill is currently awaiting review by the Legislative Council and the Governor's assent.

Understanding Urban Maoism

- Urban Maoism refers to the CPI (Maoist)'s strategy to expand its influence in cities by mobilizing students, intellectuals, professionals, and minority groups.
- This expansion involves forming NGOs, leading protest movements, launching media campaigns, and infiltrating political and civil society spaces.
- Urban supporters are typically not armed rebels but are accused of providing ideological, logistical, financial, or legal support to Maoist activities.
- Such support may include coordinating legal aid, spreading propaganda, or fundraising.

The STIR Document: Maoist Strategy Blueprint

- The CPI (Maoist)'s 2004 publication *Strategies and Tactics of Indian Revolution (STIR)* serves as their operational manual.
- It directs members to establish support networks in urban areas to assist armed efforts in rural zones.
- The strategy focuses on mobilizing intellectuals and minority groups by cultivating narratives of state oppression and social injustice.
- It advocates covert alliances with political parties and civil society organizations while maintaining secrecy and compartmentalization.
- Cadres are encouraged to infiltrate legitimate institutions such as labor unions, NGOs, and academic forums.

Alleged Real-World Connections

- Intelligence and official sources suggest possible links between Maoist operatives

and groups like the Popular Front of India (PFI).

- The 2018 *Elgar Parishad-Bhima Koregaon* incident is a major case where several academics and activists were arrested under UAPA for alleged Maoist ties.
- The case was widely criticized as an example of police overreach and the misuse of anti-terror laws to suppress dissent.

Challenges and Threat Landscape

- While Maoist violence has historically been concentrated in forested areas of states like Chhattisgarh and Jharkhand, urban networks now play a crucial role in sustaining these movements.
- Authorities claim that Maoist sympathizers in cities use legal and democratic tools—such as protests, legal aid organizations, and public campaigns—to undermine state functioning.
- Urban actors often operate under the legal cover of professions like journalism, law, or academia, making identification and prosecution more complex.
- These elements are considered enablers of extremist ideology rather than direct participants in armed conflict.

Urban Naxalism as Fifth Generation Warfare

- Urban Maoism has been described as "Naxalism minus the AK-47," highlighting its reliance on psychological, ideological, and legal tools rather than weapons.
- The tactics include organized protests, media narratives, and institutional infiltration to erode public trust in state institutions.
- This approach aligns with the concept of Fifth Generation Warfare (5GW), where battles are fought over perception, information, and influence rather than conventional means.

Background and Legislative Journey of the Bill

- The *Special Public Security Bill* was initially introduced in July 2024 but lapsed due to the assembly elections.
- It was reintroduced in December after receiving approval from a legislative joint committee.
- The Bill is modeled on the *Unlawful Activities (Prevention) Act (UAPA)* but

takes a broader approach by targeting urban Maoist support systems specifically.

- It authorizes the state to declare organizations as "unlawful" and penalize individuals associated with them.

Main Provisions and Legal Mechanisms

- Defines "unlawful activity" to include public disorder, inciting disobedience to the law, violence, or aiding extremist groups.
- Prescribes imprisonment ranging from 2 to 7 years and financial penalties for those involved in managing, fundraising for, or supporting such organizations.
- Offences are classified as:
 - **Cognizable:** Police can arrest without a warrant.
 - **Non-bailable:** Bail is at the discretion of the court.
- Allows property to be confiscated even before a conviction, with a 15-day notice given to the affected party.
- Individuals have the right to challenge property forfeiture in the High Court within 30 days of notice.
- An **Advisory Board** consisting of three individuals eligible to be High Court judges must review and confirm the status of an "unlawful" organization.

Criticisms and Legal Concerns

- The Bill uses ambiguous phrases like "practising disobedience" and "disrupting communication," which critics say could be interpreted too broadly.
- Legal experts warn that peaceful protests, academic debates, or civil activism could be wrongly classified as criminal under such vague definitions.
- Unlike UAPA or PMLA, which tie property attachment to proceeds of terrorism or crime, this Bill allows pre-trial forfeiture without those safeguards.
- There is concern that this undermines constitutional protections such as:
 - **Presumption of innocence until proven guilty.**
 - **Right to protest and free expression.**

Civil society groups argue the law could be misused to suppress dissent, particularly against those critical of the state.

Blood Money under Islamic Sharia Law: Legal and Ethical Dimensions

Context

- Nimisha Priya, a nurse from Kerala, is currently on death row in Yemen for the 2017 murder of Yemeni national Talal Abdo Mahdi.
- There is potential for her sentence to be commuted through the payment of '**diya**' (**blood money**), a provision available under **Islamic Sharia law**.

Understanding Blood Money (Diya)

- **Definition and Scope:**
 - Blood money, or *diya*, is a legal mechanism under **Sharia law** where financial compensation is paid by an accused person to the victim's family in cases of severe crimes like **murder or manslaughter**.
 - Commonly applied in countries that incorporate Sharia into their legal systems, especially in cases of **unintentional killing** or when families forgo their right to retaliation (*qisas*).
- **Purpose and Ethical Justification:**
 - The intent is not to assign a monetary value to human life but to offer **relief to the bereaved family**, particularly when the deceased was a breadwinner.
 - Even if the family accepts blood money, the **state retains the authority** to impose **additional penalties**, including imprisonment, for deterrence and public order.
- **Contemporary Applications:**
 - In countries like **Saudi Arabia**, *diya* is mandated even in traffic-related deaths, alongside punitive measures such as **jail time**.
 - The amount of compensation is **not fixed** and may be **negotiated** by the victim's family. However, factors such as the **victim's gender, religion, and nationality** often influence the outcome.
- **Judicial Autonomy for Victim's Family:**
 - The structure of blood money empowers the **victim's kin to**

determine the legal fate of the offender, making it a unique blend of reconciliation and justice under Islamic jurisprudence.

India's Legal Stance on Blood Money

- **Absence in Indian Penal Law:**
 - The Indian legal framework **does not recognize diya** or any direct equivalent for homicide or grievous crimes.
- **Plea Bargaining as a Related Concept:**
 - Introduced through the **Criminal Law (Amendment) Act, 2005**, **plea bargaining** enables the accused to **negotiate with the prosecution** in exchange for a reduced sentence by pleading guilty.
 - Though **not directly analogous to blood money**, plea bargaining can result in **victim compensation**, depending on the case.
- **Limitations of Plea Bargaining:**
 - Applicable only for offences **punishable by imprisonment of less than seven years**.
 - Not permitted in cases involving **repeat offenders, offences against women or minors, heinous crimes** like murder or rape, or those affecting **socio-economic rights**.

Participation must be **voluntary**, without coercion or undue influence.

Inter-State River Water Disputes (ISRWD) Act, 1956

Context:

The central government has extended the term of the **Ravi and Beas Waters Tribunal**, which resolves water-sharing conflicts between **Punjab, Haryana, and Rajasthan**.

About the ISRWD Act, 1956:

- **Purpose:** Enacted to adjudicate disputes involving the waters of inter-state rivers and their valleys.
- **Constitutional Backing:**
 - Based on **Article 262** of the Constitution, which allows Parliament to legislate on the resolution of inter-state water disputes.

• Legal Framework:

- Once a water dispute is referred to a **tribunal, courts (including the Supreme Court)** are barred from intervening in the matter.

Example Tribunal: Ravi and Beas Waters Tribunal (established in 1986).

Sanchar Mitra Scheme

Overview

The Department of Telecommunications (DoT), Government of India, has recently launched the Sanchar Mitra Scheme nationwide with the objective of empowering youth as digital ambassadors.

Objectives and Scope

- The scheme primarily targets student volunteers, designated as *Sanchar Mitras*, who are entrusted with the responsibility of raising awareness on crucial telecommunications issues among the general public.
- Key focus areas include digital safety, prevention of cyber fraud, concerns related to electromagnetic field (EMF) radiation, promotion of responsible mobile usage, and enhancement of digital literacy.
- The scheme seeks not only to improve public awareness but also to expose participating students to advanced telecommunications technologies such as 5G, 6G, Artificial Intelligence (AI), and Cyber Security.

Implementation Strategy

- Students from relevant academic disciplines—telecommunications, electronics, computer science, and cybersecurity—are nominated in collaboration with local DoT field units.
- Sanchar Mitras receive specialized training provided by experts from the National Communications Academy-Technology (NCA-T) and DoT's Media Wing.
- These volunteers conduct grassroots-level outreach activities, engage with communities and non-governmental organizations (NGOs), and serve as catalysts promoting informed digital behavior.

- Performance evaluations are conducted periodically, assessing innovation, outreach effectiveness, and consistency.

Exemplary performers may gain opportunities including internships, involvement in national telecom initiatives, participation in forums like the India Mobile Congress, and engagement with international bodies such as the International Telecommunication Union (ITU).

e-Truck Incentive Scheme

Background and Objectives

The Union Minister of Heavy Industries & Steel inaugurated a pioneering financial incentive scheme under the PM E-DRIVE initiative aimed at promoting the adoption of electric trucks (e-trucks) in India.

Purpose

- The scheme is designed to reduce operational costs for freight transporters, encourage the uptake of clean energy vehicles within the heavy vehicle segment, and improve air quality in urban and industrial zones.
- It represents a critical step towards India's commitment to a sustainable, low-carbon future by accelerating the transition to clean, efficient freight mobility.

Key Features

- Demand-side incentives are provided for N2 and N3 category electric trucks as defined by the Central Motor Vehicle Rules (CMVR).
 - N2 category: Trucks with a Gross Vehicle Weight (GVW) above 3.5 tonnes and up to 12 tonnes.
 - N3 category: Trucks with GVW exceeding 12 tonnes and up to 55 tonnes.
- For articulated vehicles, incentives apply only to the puller tractor in the N3 category.
- The scheme mandates comprehensive manufacturer-backed warranties to ensure vehicle reliability:
 - Battery warranty: 5 years or 5 lakh kilometers, whichever occurs first.
 - Vehicle and motor warranty: 5 years or 2.5 lakh kilometers, whichever occurs first.

- Incentive amounts vary according to the vehicle's GVW, with a maximum subsidy of ₹9.6 lakh per vehicle.

Incentives are provided as an upfront reduction in purchase price and reimbursed to original equipment manufacturers (OEMs) via the PM E-DRIVE portal on a first-come, first-served basis.

'Ordinarily Resident': Electoral Inclusion and Legal Definition

Background

- The Election Commission's recent **Special Intensive Revision (SIR)** in Bihar sparked debate on voting rights for migrants, emphasizing the importance of legal clarity in electoral enrollment.

Legal Definition

- Under **Section 19 of the Representation of the People Act (RP Act)**, only a person who is **ordinarily resident** in a constituency can be listed in its **electoral roll**.
- **Section 20** clarifies that owning property alone does **not** qualify someone as an ordinarily resident.
- Individuals **temporarily away** for work, education, or travel **remain residents** of their usual place of stay.

Special Categories under Section 20:

- Armed Forces personnel
- State armed police deployed outside their state
- Central government staff posted abroad
- Holders of constitutional posts (as notified by the President in consultation with ECI)
- **Spouses** of the above are also considered ordinarily resident in the home constituency.

Section 20A (Added in 2010):

- Allows **Non-Resident Indians (NRIs)** to register and vote using the **address on their passport**, regardless of extended stays abroad.

Governing Framework

- The **Election Commission of India (ECI)** manages electoral rolls under the **RP Act, 1950**.
- The **Registration of Electors Rules, 1960 (RER)** governs voter registration, inclusion, deletion, and verification.

Why It Matters

- The criterion ensures that voters maintain a **habitual and genuine connection** with the constituency, preserving **electoral integrity** and reducing fraud.
- The **Gauhati High Court (1999, Manmohan Singh case)** held that:
 - Residency requires **habitual presence** and **intention to stay**.

A **reasonable person** must consider the individual a resident of that place.

Nominated Members of Rajya Sabha

- **Recent Development**
- The **President of India** has nominated **four new members** to the **Rajya Sabha**.
- **Constitutional Provisions**
- **Article 80 of the Constitution:**
 - The Rajya Sabha consists of **up to 238 elected members** and **12 nominated members**.
 - As per **Article 80(3)**, the President can nominate individuals with **special knowledge or practical experience** in:
 - **Literature**
 - **Science**
 - **Art**
 - **Social service**
- **Administrative Process**
- According to the **Allocation of Business Rules, 1961:**
 - The **Ministry of Home Affairs (MHA)** manages the nomination process.
 - MHA issues notifications **after the President finalises nominations**.
- **Notable Legal Case**
- In **2012**, the **Delhi High Court** upheld the nomination of **Sachin Tendulkar** under Article 80(3) in the case:

Ram Gopal Singh Sisodia vs. Union of India

Abuse of Free Speech Online: Challenges, Legal Boundaries, and the Road Ahead

- **Context**

The Supreme Court, during hearings in 2025, expressed alarm over the **growing misuse of free speech on digital platforms**, cautioning that unchecked expression could force the State to impose stricter regulations.

What is Free Speech?

- **Definition:** The right to express opinions through speech, writing, art, or digital media without unwarranted censorship.
- **Constitutional Basis:** Protected under **Article 19(1)(a)** of the Indian Constitution.
- **Restrictions under Article 19(2):**
 - Sovereignty and integrity of India
 - Public order, decency, and morality
 - Defamation, contempt of court, etc.
- **Judicial Safeguards:** In *Shreya Singhal v. Union of India* (2015), Section 66A of the IT Act was struck down for being vague and arbitrary.

Digital Age Challenges

- **Social Media Boom:** Over **800 million internet users** in India engage on platforms like X, Instagram, and Facebook—often sharing political, religious, or satirical content.
- **Forms of Abuse:**
 - **Hate Speech:** Insulting religious sentiments leading to FIRs and communal tensions.
 - **Defamatory Content:** Political satire often crosses into defamation (e.g., controversial cartoons).
 - **Anonymity & Virality:** Fake profiles spread divisive content rapidly, without accountability.

Impacts on Society and Governance

- **Communal Polarisation:** Online hate has triggered real-world violence and vigilantism.
- **Judicial Overload:** A flood of FIRs and bail pleas clogs the justice system (e.g., Wazahat Khan FIR clubbing).
- **Erosion of National Unity:** Violates **Fundamental Duties under Article 51A** (fraternity and integrity).
- **International Reputation:** India's digital rights record is under scrutiny globally.

Key Legal Cases

1. **Wazahat Khan Case (2025):**
 - Offensive religious posts sparked multiple FIRs.
 - SC urged citizens to avoid content that provokes division.
2. **Hemant Malviya Case (2025):**

- A cartoon targeting the PM and RSS stirred controversy.
- SC emphasized the need for self-restraint under Article 19.

3. **Shreya Singhal v. Union of India (2015):**

- Landmark verdict defending digital speech, while noting risks from vague or sweeping restrictions.

Proposed Solutions

- **Digital Civility Code:** Voluntary guidelines for responsible online conduct.
- **Algorithmic Accountability:** Platforms must audit how algorithms amplify hate or misinformation.
- **Horizontal Rights Jurisprudence:** Clarify how fundamental rights apply between private users online.
- **Stronger Legal Tools:** Revise the IT Act and CrPC to address online abuse swiftly and fairly.
- **Public Awareness Campaigns:** Educate users about ethical online behavior via schools and civic bodies.

Conclusion

While **freedom of speech is foundational**, its abuse threatens democracy, social harmony, and national unity. **A balance between liberty and responsibility** is essential. Citizens must exercise digital self-regulation—or risk increased State intervention, which could undermine open discourse in a democratic society.

Lok Sabha Digital Attendance

Context:

Starting from the Monsoon Session on July 21, Lok Sabha MPs will use a new digital system to mark attendance directly from their seats through Multimedia Devices (MMD).

About Lok Sabha Digital Attendance:

- **What is the system?**
- A seat-based digital attendance system that allows MPs to register presence using biometric or PIN verification on an MMD installed at each seat.
- **Development:**
Designed and implemented by the Lok Sabha Secretariat.
- **How it works:**
 - MMD terminals are installed at each MP's seat.
 - MPs can mark attendance using:
 - Biometric thumb scan

- PIN login
- Smart card tap (I-card)

- The system integrates with Parliament's internal digital portal for session agenda, documents, and voting lists.

• **Key Features:**

- Paperless attendance, eliminating manual registers.
- Real-time attendance logging.
- Reduces lobby crowding and saves time.
- MMD also provides access to agenda papers and session details.
- Manual attendance register retained temporarily during transition.

• **Significance:**

- Increases parliamentary efficiency by freeing up time for legislative work.
- Enhances transparency and accountability by accurately tracking MP attendance.
- Supports India's vision for a Digital Parliament and improved governance.

Linguistic Secularism in India: Upholding Constitutional Values and Cultural Cohesion

Introduction: Language as a Pillar of Indian Pluralism

India's unity thrives on its remarkable cultural and linguistic diversity. With 121 languages and over 270 mother tongues recorded in the 2011 Census, language is not just a means of communication but a crucial element of the nation's pluralistic identity. This diversity is safeguarded by the constitutional principle of secularism. However, emerging instances of language-based tensions and regional identity politics are challenging this delicate balance, highlighting the urgent need to reaffirm India's commitment to linguistic secularism.

Understanding Linguistic Secularism in India

Indian secularism is broader than the Western model, which typically separates religion from state. In India, secularism implies equal respect and protection for all forms of cultural identity—including language.

The Indian state does not privilege any particular religion or language. Instead, it actively promotes

inclusive coexistence, countering both religious and linguistic communalism. This framework allows individuals and communities to preserve their linguistic and cultural identities without facing marginalization or discrimination.

Constitutional Safeguards for Linguistic Diversity

India's constitutional design includes several provisions that uphold and encourage linguistic plurality:

- **Article 343:** Recognizes Hindi (in Devanagari script) as the official language of the Union but allows each state to adopt its own official language(s).
- **Eighth Schedule:** Lists 22 scheduled languages eligible for state support and development.
- **Article 29:** Ensures every community's right to conserve its distinct language, script, or culture, protecting against exclusion or discrimination on linguistic grounds.

These provisions form the backbone of India's linguistic secularism, ensuring that no single language dominates the national landscape and allowing multiple languages to coexist peacefully within the Indian Union.

Official Language vs. National Language: Clarifying the Misconception

A common misconception is that Hindi is India's national language. In reality, the Constitution does not designate any language as national—an intentional decision that reflects India's multilingual ethos.

While Hindi serves as the official language at the central level, states have full autonomy to use and promote their own official languages. This decentralized linguistic model has preserved regional autonomy and linguistic harmony, though occasional tensions still arise when communities perceive cultural or linguistic imposition.

Language Politics and the Rise of Cultural Anxieties

Recent incidents, such as violence against non-Marathi speakers in Maharashtra and longstanding resistance to Hindi in Tamil Nadu and the Northeast, underscore how language can become a flashpoint for deeper identity-based anxieties.

When political actors manipulate linguistic pride for electoral or ideological gain, it shifts from

cultural preservation to exclusionary nationalism. This undermines the secular and federal values enshrined in the Constitution and threatens national unity.

The Role of Political and Civil Institutions

Safeguarding linguistic secularism is not solely a constitutional duty—it is also a moral and political one. Political parties must avoid weaponizing language for short-term gains and instead champion India's multilingual fabric.

Civil society, the media, and educational institutions have a critical role to play in fostering mutual respect, tolerance, and inter-linguistic understanding. Celebrating all languages—not just the scheduled ones—strengthens the idea of "unity in diversity" and deepens democratic citizenship.

Conclusion: Towards a More Inclusive Linguistic Ethos

India's linguistic secularism embodies the spirit of equal respect for all languages. This commitment must extend to every dialect and mother tongue, many of which lie outside the formal structures of recognition.

Protecting linguistic rights is not just a legal necessity—it is an ethical imperative. It ensures social cohesion, encourages inclusive development, and reinforces India's democratic and pluralistic character. To preserve its cultural unity, India must continue to uphold and celebrate its linguistic diversity.

The Dangers of Regionalism: A Threat to National Unity and Constitutional Values

Context: A Supreme Court Caution

The **Supreme Court of India** has equated the political exploitation of **regionalism** with **communalism**, warning that inciting regional divisions for electoral gains is a serious threat to **national integrity**. The observation underscores the rising misuse of regional identity in politics and its potential to destabilize the constitutional fabric of the nation.

Understanding Regionalism

Regionalism is the prioritization of a particular region's interests—economic, cultural, or political—over those of the broader national community. While regional identity can be a legitimate form of cultural expression, it becomes **dangerous when used to fuel divisive politics** or erode national cohesion.

Types and Expressions of Regionalism

1. **Demands for Autonomy:** Movements like **Gorkhaland** or **Bodoland** seek political separation or greater autonomy from existing state structures.
2. **Sub-Regional Identity Campaigns:** E.g., “**Sons of the Soil**” movements in Maharashtra advocate preference for locals in employment and resources.
3. **Disparity-Based Agitations:** Regions like **Telangana** and **Vidarbha** demand statehood or special status due to perceived neglect in development.
4. **Language-Based Regionalism:** Anti-Hindi protests in **Tamil Nadu** reflect resistance to perceived linguistic domination.
5. **Employment Reservation Movements:** Laws such as **Haryana's 75% private-sector job reservation for locals** illustrate regional preferences in labor markets.

Root Causes Behind Rising Regionalism

- **Uneven Development:** Economic and social disparities between regions (e.g., **Bihar vs. Jharkhand**) fuel demands for autonomy or statehood.
- **Cultural Insecurity:** Migration and national integration policies can create fears of cultural dilution, as seen in **Marathi vs. North Indian** tensions in Mumbai.
- **Electoral Exploitation:** Political parties often **mobilize regional identity** for votes—e.g., **Shiv Sena's early campaigns**, **AIMIM's localized rhetoric**.
- **Linguistic Chauvinism:** Language becomes a tool for exclusion, as seen in the **Dravidian movement** that arose from Tamil linguistic pride.
- **Neglect of Local Grievances:** Inattention to regional concerns by the Centre or state governments may give rise to separatist or militant sentiments—e.g., pre-Article 370 abrogation tensions in **Jammu & Kashmir**.

Challenges and Consequences of Regionalism

- **Threat to National Unity:** Encourages fragmentation and undermines the vision of India as a single, inclusive nation.
- **Discrimination and Violence:** Migrants often become targets—e.g., **Bihari workers** attacked in **Assam** and **Gujarat**.

- **Erosion of Constitutional Rights:** Violates **Article 19**, which guarantees freedom to move, reside, and work across India.
- **Obstruction of National Projects:** Regional resistance can delay infrastructure and economic reforms vital to national progress.
- **Rise of Populist Politics:** Identity-based rhetoric detracts from real issues such as governance, development, and equity.

Way Forward: Managing Regionalism Within Constitutional Framework

1. **Promote Constitutional Awareness:** Citizens should be educated on **fundamental duties** and rights under **Article 19** to counter parochial mindsets.
2. **Ensure Balanced Development:** Government must reduce regional disparities through **equitable resource allocation** and targeted interventions.
3. **Strengthen National Integration Initiatives:** Programs like **Ek Bharat Shreshtha Bharat**, inter-state youth exchanges, and civil society partnerships should be expanded.
4. **Enhance Political Accountability:** The **Election Commission** must monitor political rhetoric and manifestos for divisive content based on region or community.
5. **Uphold Judicial Oversight:** The **judiciary** must continue to check unconstitutional behavior and safeguard secular, inclusive values.
6. **Foster Pluralistic Nationalism:** Regional identities should be seen as enriching the national mosaic, not opposing it. Cooperative federalism must replace competitive regionalism.

Conclusion: Regionalism Must Serve Unity, Not Division

Regional aspirations are legitimate, but they must operate within the boundaries of **constitutional nationalism**. The Supreme Court's warning is a timely reminder that **parochial politics threatens the very unity that makes India diverse and democratic**. True federalism thrives not on fragmentation but on **collaboration, inclusivity, and mutual respect** across states and regions.

Maharashtra's Urban Maoism Bill: Maharashtra Special Public Security (MSPS) Bill, 2025

Context:

The **Maharashtra Legislative Assembly** passed the **MSPS Bill, 2025** via voice vote. The legislation targets **urban Left-Wing Extremism (LWE)** and associated unlawful activities.

Key Objectives:

- To prevent and penalize activities by **Left-Wing Extremist (LWE) groups**, particularly in **urban areas**.
- To legally empower the state to **designate organisations and individuals** involved in such activities as unlawful.

Salient Features:

- **Unlawful Organisations:** The state government can declare any group supporting LWE as illegal.
- **Offences Covered:** Membership, fundraising, aiding or abetting such groups.
- **Penalties:**
 - Imprisonment: 2 to 7 years
 - Fine: ₹2–5 lakh
 - Nature of Offences: Non-bailable and cognizable
- **Definition of Unlawful Activities:** Any act that disturbs public order or incites/supports violence.
- **Investigation Oversight:**
 - Only officers of **DySP rank or above** can investigate.
 - **Advisory Board** to include a retired High Court judge and a government pleader.

Recent Amendments:

- Narrowed focus to **LWE groups only**

Increased oversight and accountability in the advisory process

Supreme Court Directions on DNA Evidence Handling

Context:

In a recent judgment, the **Supreme Court of India** issued comprehensive guidelines to standardize the **collection, transport, and custody** of DNA evidence in criminal cases.

Existing Issues in DNA Evidence Management:

- **Poor Collection Practices:** Inadequate training and lack of standardized procedures.

- **Forensic Shortage:** Limited labs and personnel causing delays.
- **Lack of Uniform SOPs:** Due to 'Police' and 'Public Order' being state subjects under **List II** of the Constitution.

Supreme Court's Key Directives:

- **DNA Sample Collection:**
 - Must be properly documented, with statute and section mentioned, along with Police Station details.
- **Timely Transportation:**
 - Samples must reach forensic labs within **48 hours** of collection.
- **Chain of Custody Register:**
 - A detailed record from collection to final judicial outcome is mandatory to ensure evidence integrity.

Legal Framework on DNA Evidence in Indian Courts

Notable Judicial Precedents:

- **Kunhiraman v. Manoj (1991):** First use of DNA in a **paternity dispute**.
- **Sharda v. Dharmpal (2003):**
 - Supreme Court allowed DNA tests in **civil and matrimonial disputes**.
 - Held it does not violate **Article 21 (personal liberty)** or **Article 20(3) (self-incrimination)**.

Recent Legal Provisions:

- **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023 – Section 51:**
 - Allows **DNA profiling** and other medical tests of apprehended persons by certified medical practitioners.
- **Criminal Procedure (Identification) Act, 2022:**
 - Empowers the **National Crime Records Bureau (NCRB)** to collect and store biological samples and measurements of convicts.

Secret Spousal Recordings Admissible: Supreme Court Reinterprets Spousal Privilege

Supreme Court Ruling: A Shift in Evidence Law
The Supreme Court of India has ruled that secretly recorded conversations between spouses can be used as admissible evidence in matrimonial

disputes, including divorce proceedings. This decision marks a significant shift in how courts interpret spousal privilege under Indian law.

Understanding Spousal Privilege in Indian Law

Spousal privilege, as outlined in Section 122 of the Indian Evidence Act, prohibits a spouse from disclosing private communications made during the marriage without the consent of the other party. This protection aims to uphold marital trust and prevent spouses from being forced to testify against each other, especially in criminal cases.

However, this privilege does not apply when the legal proceedings are between the spouses themselves—such as in divorce or matrimonial cases.

Limitations of Spousal Privilege in Divorce Cases

Unlike criminal cases, divorce proceedings often involve allegations such as cruelty, infidelity, or harassment. In such cases, courts permit a wide range of supporting evidence, including letters, photographs, witness testimony, and increasingly, digital content such as emails, text messages, and voice recordings.

Still, lower courts have previously expressed reservations about admitting secretly recorded conversations, citing concerns about consent, privacy, and the manner in which such evidence is obtained.

Landmark Decision: Supreme Court Clarifies Legal Position

Overruling a 2021 Punjab and Haryana High Court verdict, the Supreme Court held that covert recordings between spouses are legally admissible in matrimonial litigation. The Court drew upon a 1973 precedent involving police-recorded evidence in a bribery case to support its view.

It reasoned that a recording device is comparable to a third-party witness—a “digital eavesdropper”—and as long as the content is relevant, reliable, and legally obtained under existing exceptions, it can be admitted as evidence.

Balancing Privacy and Fair Trial Rights

This ruling reopens the debate on privacy rights in domestic relationships. Although the right to privacy was recognized as a fundamental right in 2017, the Court emphasized that this must be weighed against the right to a fair trial. In matrimonial disputes, where uncovering the truth

is essential, the Court ruled that the evidentiary value of such recordings can outweigh privacy concerns.

The judgment also acknowledged that covert surveillance within a marriage is often a symptom of broken trust, rather than its cause.

Gender Disparities and Digital Access

A major concern raised by this judgment is its potential to exacerbate existing gender inequalities. According to the 2025 Mobile Gender Gap Report, Indian women are 39% less likely than men to own smartphones. In an era where digital evidence is critical, women with limited access to technology may be disadvantaged in matrimonial litigation.

This digital divide may result in an uneven playing field, inadvertently reinforcing both social and technological inequalities.

Wider Legal and Social Implications

The Supreme Court's interpretation of Section 122 shifts its focus from privacy within marriage to the broader goal of protecting the institution of marriage. The ruling reflects the judiciary's attempt to align century-old laws with contemporary realities shaped by digital communication and evidence.

While the judgment promotes the discovery of truth in court proceedings, it also highlights the need for future legal reforms to define the permissible boundaries of surveillance within intimate relationships—ensuring fairness does not come at the cost of dignity and consent.

Conclusion: A New Legal Precedent in Matrimonial Law

The Supreme Court's decision on secret spousal recordings marks a critical moment in the evolution of Indian matrimonial law. By redefining the scope of spousal privilege, the judgment strengthens evidentiary mechanisms in divorce proceedings but also calls for deeper reflection on privacy, gender equity, and ethical boundaries in the digital age.

Child Adoption Crisis in India: Widening Gap Between Children and Families

Context

A recent RTI-based report reveals a deepening crisis in India's adoption ecosystem, where the number of **prospective adoptive parents vastly outnumbers children legally available for adoption**. The growing mismatch raises concerns about systemic delays, legal hurdles, and ineffective implementation of adoption laws.

Key Highlights of the Adoption Imbalance (2025)

1. Alarming 13:1 Ratio

- For every **one child legally free for adoption**, there are **13 prospective parents** waiting—a sharp rise from **11:1 in 2021**.
- Reflects mounting frustration among families and bottlenecks in the adoption process.

2. Disparity in Numbers

- Registered Families (CARA portal):** 36,381
- Children Available for Adoption:** Only 2,652
- Highlights a critical **shortage of legally cleared children**, despite large numbers in care institutions.

3. Extended Waiting Period

- Average wait time** for adoption has jumped from **1 year in 2017 to 5 years in 2025**.
- Causes include procedural delays, sluggish verification, and backlog in courts and welfare agencies.

4. Underutilized Child Care Institutions (CCIs)

- 22,000+ children** live in CCIs nationwide, but only **12% are declared legally free** for adoption.
- Legal and procedural delays prevent most of these children from entering the adoption pool.

5. Stark Regional Disparities

- Himachal Pradesh:** Just **1 child adoptable** out of **829 in CCIs**.
- Maharashtra:** Only **236 children** cleared for adoption from a total of **5,284 in CCIs**.
- Indicates inconsistent application of adoption protocols across states.

6. Age Group Challenges

- 34%** of children in the adoption pool are aged **14–18**, a group **less likely to be adopted** due to parental preferences for infants and toddlers.
- Older children remain in institutions without long-term family support.

Conclusion

India's adoption framework is struggling under **legal delays, policy inaction, and administrative inefficiencies**, despite the growing demand from families willing to adopt. With thousands of children still languishing in

care homes, the system urgently needs **reforms, faster clearances, and better inter-agency coordination**. Ensuring a nurturing family for every child must move from rhetoric to **rights-based implementation**.

Common Service Center (CSC)

Context:

CSC e-Governance Services India Limited marked 10 years of Digital India. The Minister announced free AI training for one million individuals, prioritizing Village Level Entrepreneurs (VLEs).

About CSC:

- Established in 2006 under the Ministry of Electronics and Information Technology (MeitY).
- Mission: Provide digital services nationwide, creating an ICT network reaching the grassroots.
- Expansion: From 83,000 CSCs in 2014 to over 550,000 today, covering nearly 90% of India's villages.
- Services include Aadhaar enrollment/update, PAN card processing, passport applications, banking, and insurance services.

VLEs play a crucial role in delivering these digital services in rural areas.

Government vs Social Media Platforms: The Debate Over Safe Harbour and Content Regulation

Background

The Indian government has defended its broader interpretation of **Section 79 of the Information Technology (IT) Act** before the **Karnataka High Court**, citing the need to regulate online content disseminated via intermediaries such as social media platforms. This legal defense is in response to a petition filed by **X (formerly Twitter)**, challenging the government's alleged overreach in issuing content takedown orders.

Legal Framework and the Core Dispute

Section 79 vs Section 69A – Key Legal Provisions:

- Section 79:** Provides "**safe harbour**" immunity to intermediaries from liability for third-party content, but this protection can be withdrawn if they fail to comply with takedown requests.
- Section 69A:** Empowers the government to **block access to content** under specific circumstances such as national security or public order, following due process

outlined in the **IT Blocking Rules of 2009**.

X's Argument:

- The government is allegedly **misapplying Section 79** by using it to issue blocking orders, which are exclusively permitted under Section 69A.
- X labels the government's **Sahyog Portal** as a "**copyright tool**", bypassing judicial and procedural safeguards.

Sahyog Portal and Government's Rationale

What is the Sahyog Portal?

- Developed under the **Indian Cyber Crime Coordination Centre (I4C)** by the **Union Ministry of Home Affairs**.
- By March 2025, **38 intermediaries**—including **Google, Amazon, Apple, Telegram, and YouTube**—have joined the platform; **Meta** has enabled API integration.
- **X has declined participation**, citing legal overreach.

Government's Justification:

- Claims that **algorithmic content curation** is fundamentally different from editorial oversight in traditional media and thus requires **new regulatory frameworks**.
- Algorithms can **amplify harmful or unlawful content** rapidly without human oversight.
- **Anonymity and pseudonymity** on platforms contribute to incitement and reduce accountability.
- As a result, the government argues for a **wider regulatory scope under Section 79** to address a broader range of unlawful content not covered under Section 69A.

Algorithmic Amplification vs Traditional Media Gatekeeping

Government's Position:

- Algorithmic systems **boost content visibility automatically**, without conscious editorial decisions.
- This process lacks **transparency, accountability**, and built-in quality control found in traditional newsrooms or broadcasters.
- Traditional media acted as **gatekeepers**, which is not the case with social media platforms.

Constitutional Considerations and Societal Impact

Balancing Free Speech and Regulation:

- Section 69A aligns with **Article 19(2)** of the Constitution, which allows for **reasonable restrictions** on free speech.
- The government maintains that **Section 79 enables broader action** against content that violates any Indian law, not just those specified under Article 19(2).
- The emphasis is on **protecting societal interests**, ensuring public order, and upholding national security while maintaining a balance with individual rights.

Conclusion

The Indian government is asserting an **expanded interpretation of Section 79** to strengthen its regulatory hold over digital intermediaries, especially in the context of **algorithm-driven content dissemination** and **user anonymity**. This legal battle is poised to shape the future of **safe harbour protections, freedom of expression online, platform accountability, and the State's role in digital governance**.

Swachh Survekshan 2024-25: Ahmedabad Emerges as India's Cleanest City

In a significant reshuffle of urban cleanliness rankings, **Ahmedabad** has claimed the title of **India's cleanest city** in the **Swachh Survekshan 2024-25**, the country's largest annual sanitation survey conducted by the **Ministry of Housing and Urban Affairs (MoHUA)**. This marks the first time Ahmedabad has topped the rankings, while **Indore**, the six-time consecutive leader, has been elevated to a newly introduced '**Swachh Bharat Super League 1.0**' to honour its consistent performance.

About Swachh Survekshan

- **Launched:** 2016 under the **Swachh Bharat Mission - Urban (SBM-U)**
- **Objective:** Assess urban cleanliness across Indian cities based on several key parameters:
 - **Citizen feedback**
 - **Waste segregation and processing**
 - **Open defecation-free (ODF) status**
 - **Cleanliness of public spaces**
 - **Use of digital and innovative municipal practices**

- **Scale (2024–25 Edition):**
 - Covered over **4,500 Urban Local Bodies (ULBs)**
 - Received over **12 crore citizen responses**
 - Recognized as the world's **largest participatory sanitation survey**

Key Rankings and Highlights

Top Cleanest Cities (Population >1 Lakh)

1. **Ahmedabad** (Gujarat)
 2. **Bhopal** (Madhya Pradesh)
 3. **Surat** (Gujarat)
- **Indore** entered the '**Swachh Bharat Super League 1.0**' for cities maintaining top-tier sanitation standards over time.

Cleanest Cities (Population <1 Lakh)

1. **Sasvad** (Maharashtra)
2. **Lonavala**
3. **Vita**

Cleanest Ganga Towns

- **Varanasi** (Uttar Pradesh) – Held its position for the **fourth consecutive year**
- **Prayagraj** and **Bijnor** followed closely

Top Performing States

1. **Maharashtra**
2. **Madhya Pradesh**
3. **Chhattisgarh**

Gujarat's Strong Performance

Gujarat made a remarkable impact in this year's survey:

- **Ahmedabad, Surat, and Rajkot** all ranked among the **top 10 cleanest cities**
- Key efforts by the **Ahmedabad Municipal Corporation**:
 - Scientific treatment of nearly **100% of solid waste**
 - **Door-to-door waste collection** across all city wards
 - **Citizen engagement platforms**, including mobile apps for complaint redressal and cleanliness tracking

Innovations in Swachh Survekshan 2024–25

Several new elements were introduced in this edition:

- **AI-based validation tools** to verify cleanliness parameters
- **Swachhta League** to promote **youth involvement**
- Increased focus on:
 - **Legacy waste management**
 - **Urban beautification**

- **Enhanced Garbage-Free Cities (GFC) star ratings**
- Use of **real-time data** from **Integrated Command and Control Centres (ICCCs)** for monitoring city sanitation efforts

Special Recognitions

Beyond rankings, cities and institutions were recognized for excellence in specific areas:

- **Cleanest Cantonment Board:** Mhow (Madhya Pradesh)
- **Best Citizen Feedback Response:** Chandigarh
- **Best Innovation in Sanitation:** Navi Mumbai (for circular economy initiatives)
- **Cleanest State Capital:** Bhopal

Broader Impact on Urban Governance

Swachh Survekshan has evolved into more than a ranking mechanism—it serves as a **catalyst for urban reform**:

- Drives **competitive federalism**, encouraging inter-city and inter-state competition
- Promotes:
 - **Waste segregation and recycling**
 - **Behavioural change communication**
 - **Innovation and PPP models in sanitation**
- Boosts:
 - **Employment in the waste management sector**
 - **Entrepreneurship in the circular economy**

Conclusion

The 2024–25 edition of Swachh Survekshan reaffirms its role as a transformative tool in India's urban sanitation landscape. With **Ahmedabad** rising to the top and **Indore** setting benchmarks in a new league, the focus now sharpens on **sustainability, innovation, and inclusive participation** in making Indian cities cleaner and healthier.

PAC Calls for Overhaul of UIDAI's Functioning Context:

The **Public Accounts Committee (PAC)** has recommended a thorough reassessment of the **Unique Identification Authority of India (UIDAI)** following alarming reports of:

- **Biometric authentication failures** leading to denial of welfare benefits, and

- **Potential data breaches**, raising serious security and governance concerns.

About the Public Accounts Committee (PAC):

- A **parliamentary committee** tasked with auditing the **Union Government's accounts**, primarily based on reports from the **Comptroller and Auditor General (CAG)**.
- **Composition:** 22 Members of Parliament – 15 from the **Lok Sabha** and 7 from the **Rajya Sabha**.
- **Leadership:** Traditionally chaired by a **member from the opposition**.
- **Term:** Reconstituted **annually**.
- **Key Responsibilities:**
 - Ensure **efficient and lawful use** of public funds.
 - Evaluate the performance of **autonomous bodies and PSUs** funded by the government.
 - Recently examined **UIDAI's functioning** based on the **CAG's 2021 audit report**.

Major Issues Highlighted by PAC

1. Biometric Verification Failures

- Frequent authentication errors are **excluding genuine beneficiaries** from welfare schemes like:
 - **Public Distribution System (PDS)**
 - **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**
- **Primary reasons:**
 - **Worn-out fingerprints** among manual laborers
 - **Iris mismatches** in elderly populations

2. Data Security Concerns

- Reports of **Aadhaar data leaks on the dark web** have raised alarms.
- While UIDAI asserts that its **central database is secure**, it admits that leaks **mostly occur at local enrolment centres** due to weak data handling protocols.

3. Duplicate and Inactive Aadhaar Numbers

- The **number of Aadhaar IDs exceeds India's population**, indicating issues of duplication.

- **Slow deactivation** of Aadhaar numbers after death poses a **risk of misuse** in welfare schemes.

4. Weak Grievance Redressal System

- Citizens encounter **significant delays and inefficiencies** while:
 - Correcting Aadhaar errors
 - Resolving **authentication failures** and **account access issues**

5. Access by Ineligible Entities

- Several MPs expressed concern over suspected **non-citizens** obtaining Aadhaar and **misusing welfare benefits** meant solely for Indian citizens.

Implications of UIDAI's Operational Gaps

- **Social Exclusion:** Biometric mismatches deny rightful beneficiaries access to crucial welfare schemes.
- **Security Threats:** Data leaks and duplication increase the risk of **identity theft and fraud**.
- **Erosion of Public Trust:** Frequent failures and breach reports undermine faith in **digital governance** systems.
- **Welfare Leakages:** Inactive or fake Aadhaar IDs allow **fraudulent access to subsidies**.
- **Administrative Inefficiency:** Delays in grievance redressal and post-death deactivations slow down **service delivery**.

PAC's Recommendations

1. **Scientific and Technical Audit:**
 - Conduct a **forensic review** of UIDAI's core database to identify and eliminate systemic flaws.
2. **Simplify Enrolment Procedures:**
 - Allow **flexible documentation** for residents to ensure **inclusive access**.
3. **Improve Data Security Measures:**
 - Enforce **stricter compliance protocols** at enrolment and update centres.
 - Regularly audit these facilities to prevent localized data leaks.
4. **Faster Aadhaar Deactivation After Death:**
 - Integrate UIDAI systems with **state civil registration records**

to enable **automatic Aadhaar deactivation** post-death.

5. Inclusive Authentication Alternatives:

- Introduce **facial recognition, OTP-based, and assisted authentication models** to serve people facing biometric failures.

6. Ensure Beneficiary Citizenship:

- Conduct a review to verify Aadhaar allocation among suspected **non-citizens** and prevent welfare misuse.

Conclusion

The PAC has rightly raised **critical concerns** about UIDAI's operations, particularly its role in **inclusive welfare delivery and data security**. To maintain public trust in **digital identity infrastructure**, the government must implement **technological upgrades, policy reforms, and robust accountability mechanisms**. A secure, error-free, and inclusive Aadhaar system is essential for effective governance and safeguarding citizen rights.

Poshan Tracker App

Context:

Anganwadi workers are facing **technical and connectivity issues** while using the **Poshan Tracker App** for beneficiary registration and service delivery.

About the App:

- Launched on **March 1, 2021**, by the **Ministry of Women and Child Development**.
- Developed by the **National eGovernance Division**.
- It is a **mobile-based platform** for:
 - **Anganwadi Centres (AWCs)**
 - **Anganwadi Workers (AWWs)**
 - **Registered beneficiaries**

Purpose:

- To improve the efficiency of **nutrition service delivery** under **Poshan Abhiyaan** by:
 - Capturing real-time data
 - Tracking service status
 - Enabling field-based updates

Core Features:

- Tracks nutrition indicators for **children, pregnant women, and lactating mothers**.
- Allows Anganwadi workers to:
 - Record attendance

- Distribute **nutritional supplements**

- Update health data in real time

- Government receives real-time analytics for decision-making.

About Poshan Abhiyaan (Launched 2018):

- A multi-ministerial initiative targeting **malnutrition**.
- Focuses on:
 - **Adolescent girls**
 - **Pregnant and lactating women**
 - **Children (0–6 years)**

Objectives:

- Reduce **stunting, undernutrition, anaemia, and low birth weight**.
- Improve nutrition using:
 - **Technology**
 - **Community participation**

Inter-ministerial coordination

Trade Connect ePlatform

Recent Development

The **Directorate General of Foreign Trade (DGFT)** under the **Ministry of Commerce and Industry** participated in two major B2B trade exhibitions this month to promote the **Trade Connect ePlatform** and encourage its adoption among stakeholders.

Overview

The **Trade Connect ePlatform** is a digital initiative launched by the **DGFT** aimed at reshaping India's international trade ecosystem, particularly for **Micro, Small, and Medium Enterprises (MSMEs)**.

- **Key Features**
- Acts as an **integrated information and service hub** for all international trade stakeholders.
- Facilitates connections between **Indian exporters, MSMEs, entrepreneurs, and:**
 - Indian Missions Abroad
 - Export Promotion Councils
 - Partner Government Agencies
- Offers real-time information on:
 - Global **trade events**
 - Benefits from India's **Free Trade Agreements (FTAs)**
 - Tariff structures, certifications, eCommerce, and potential buyers
- Includes **interactive training modules** across multiple languages to guide MSMEs on export procedures.

- Functions as a **single window** for issuing and validating **preferential and non-preferential certificates of origin** through a **secure, paperless process**.

- **Development Partners**

The platform is developed in collaboration with:

- **Ministry of MSME**
- **EXIM Bank**
- **Department of Financial Services (DFS)**

Ministry of External Affairs (MEA)

POSH Act (2013): Protection of Women at Workplace

Context

The **Odisha government** recently directed educational institutions to raise awareness of the **POSH Act** among faculty, staff, and students.

About the POSH Act

- Enacted to **prevent and address sexual harassment** of women at workplaces.
- Originated from the **1997 Vishaka Judgment** by the Supreme Court.

Key Provisions

- **Definition:** Sexual harassment includes unwelcome sexual behavior creating a hostile or unsafe work environment.
- **Applicability:** Covers all organizations—**government, private, NGOs, etc.**
- **Internal Committee (IC):** Mandatory in workplaces with more than **10 employees**.
- **Local Committee (LC):** Constituted by the **District Officer** for workplaces lacking ICs.

Complaint and Redressal Procedure

1. **Filing a Complaint**
 - Must be in writing by the aggrieved woman or authorized person.
 - Filed with **IC or LC** depending on the size of the organization.
2. **Timeframe**
 - Complaint must be filed within **three months** of the incident or last occurrence in a series.
3. **Committee Composition**
 - Majority must be **women**; one member from an **NGO/women's rights group** is mandatory.
4. **Inquiry and Reporting**

- **Inquiry period:** 90 days (extendable by 90 more if justified).

- **Confidentiality** is to be strictly maintained.

- Committee submits a **report with findings and recommendations**.

5. **Employer's Responsibilities**

- Must implement actions suggested by the committee **within 60 days**.
- Relief can include **compensation, transfer, counseling, or job protection**.

6. **Appeal**

- Dissatisfied parties can **appeal within 60 days** to the **Appellate Authority** designated by the State.

National Mobile Monitoring System (NMMS)

Context

The **Ministry of Rural Development (MoRD)** has flagged **manipulations** in the usage of the NMMS app under **MGNREGS**, raising concerns over **transparency**.

About NMMS

- **Launched by:** Ministry of Rural Development.
- **Function:** Captures real-time **geo-tagged, time-stamped photographs** of MGNREGS workers as proof of attendance.
- **Languages:** Available in **English, Hindi, Tamil, Telugu, Malayalam, etc.**

Concerns

- Uploading **irrelevant or repetitive photos** undermines data credibility.

Connectivity issues and **technical glitches** lead to worker **exclusion** and loss of wages.

NSCSTI 2.0: Upgrading Civil Services Training
Context

The government has launched **NSCSTI 2.0 (National Standards for Civil Service Training Institutes)**.

- **Developed By**
- **Capacity Building Commission (CBC)**
- **Objectives**
- Build **future-ready** and **digitally aligned** training institutions for civil services.
- **Key Features**

- Emphasis on **inclusive design**, **hybrid learning models**, and **streamlined evaluation** mechanisms.

About CBC

- Formed in **2021** to implement the **National Programme for Civil Services Capacity Building (NPCSCB)** aka **Mission Karmayogi**.
- Operates as an **independent body** with **executive authority**.

India Leads in Fast Payments: IMF Report Highlights UPI Dominance

- **Global Recognition**

India has been named the **world leader in real-time digital payments**, according to the **Fast Payments Report 2025**, jointly developed by the **International Monetary Fund (IMF)** and **FIS Global**. The report evaluates digital infrastructure across countries using a new **Faster Payment Adoption Score (FPAS)**.

India's Performance at a Glance

- **Top Global Rank:** India ranks No. 1 among 30 nations with an **FPAS of 87.5%**, surpassing Brazil, Singapore, the UK, and the US.
- **UPI Volume:** Over **18.39 billion transactions** were processed in **June 2025** alone—about **640 million daily**.
- **User Base:** **491 million users**, **65 million merchants**, and **675 banks** actively use UPI.
- **Transaction Efficiency:** Near-instant transfers (within **5 seconds**) at almost **zero cost**.
- **International Expansion:** UPI is now operational in **seven countries**, including **France, UAE, and Singapore**.
- **BRICS Advocacy:** India is pushing for UPI to become the **standard cross-border payment platform** within the expanded **BRICS+** group.

Key Strengths of the UPI Ecosystem

- **Interoperability:** Seamless integration across banks and platforms like **PhonePe**, **Google Pay**, and **Paytm**.
- **Inclusion-Focused:** Aadhaar-linked, USSD-enabled, and multilingual support allows rural and semi-digital users to transact easily.

- **Innovation Stack:** Built on **India Stack**—combining Aadhaar, DigiLocker, eKYC, and Account Aggregator frameworks.
- **Security Measures:** Real-time fraud prevention, **tokenisation**, and robust compliance protocols.
- **Public-Private Collaboration:** Strong synergy among **NPCI**, **fintech startups**, and **RBI** ensures scalable, secure infrastructure.

Challenges and Limitations

1. **Limited Offline Access:** UPI primarily needs internet connectivity, making it difficult to use in low-bandwidth rural areas.
2. **Cross-Border Interoperability Gaps:** Expansion abroad is hampered by **regulatory mismatches** and **infrastructure limitations** in partner countries.
3. **Data Privacy Concerns:** Weak consumer protection laws raise red flags over potential **data overreach and misuse**.
4. **Inconsistent Grievance Redressal:** Dispute resolution across different UPI apps and banks remains **fragmented and opaque**, hurting user confidence.
5. **Mobile-Centric Design:** Senior citizens, non-digital users, and those without smartphones face **barriers to access**, risking digital exclusion.

Recommendations for Improvement

- **Expand Offline Capabilities:** Roll out **USSD and NFC-based UPI Lite+** in rural, low-internet zones.
- **Align Global Standards:** Collaborate with central banks to harmonise **regulatory frameworks** for seamless cross-border transactions.
- **Legal Framework Upgrade:** Enact a **Digital Payments Consumer Protection Act** to safeguard against fraud, data misuse, and failed transactions.
- **Inclusive Tech Design:** Promote **voice-assisted UPI**, regional language interfaces, and accessibility tools for the elderly and digitally illiterate.

Centralised Complaint Portal: Build an **AI-enabled grievance redressal platform** integrated with NPCI and RBI to streamline dispute resolution.

UPSC Pratibha Setu

Context

The **Union Public Service Commission (UPSC)** has renamed its **Public Disclosure Scheme (PDS)** to **UPSC Pratibha Setu** and expanded its scope to include **private sector employers** for recruiting meritorious candidates who were not recommended in the final selection.

About UPSC Pratibha Setu

What is it?

- A **public recruitment linkage platform** that provides access to data of candidates who cleared the **written stage** of UPSC exams but were **not recommended after interviews**.
- The acronym **PRATIBHA** stands for **Professional Resource And Talent Integration – Bridge for Hiring Aspirants**.

Launched by:

- Originally launched by UPSC in **2018** as the **Public Disclosure Scheme (PDS)**.
- Renamed and revamped as **Pratibha Setu** in **2024**.

Objective:

- To bridge the gap between **skilled UPSC aspirants** and **employment opportunities** in:
 - **Public Sector Undertakings (PSUs)**
 - **Autonomous Bodies**
 - **Private Sector organizations**

How It Works:

- Willing candidates who cleared the **written exams** but missed **final selection** give consent to share their data.
- Registered employers from **government, PSUs**, and now **private organisations** receive **secure login credentials**.
- Employers can **filter candidates** based on subject and discipline using advanced search tools.
- Earlier restricted to public bodies; **now extended to the private sector** to increase employment outreach.

Examinations Covered:

- **Civil Services Examination**
- **Indian Forest Service Examination**
- **Engineering Services Examination**
- **Indian Economic Service / Indian Statistical Service**
- **Combined Medical Services Examination**

- **Combined Defence Services (CDS)**
- **Central Armed Police Forces (ACs)**
- **Combined Geo-Scientist Examination**

Key Features:

- **Merit Recognition:** Highlights talented aspirants who passed competitive written exams.
- **Voluntary Disclosure:** Only candidates who opt in are listed.
- **Digital Interface:** Operated through UPSC's official portal with a **dedicated employer login**.
- **Employment Matching:** Provides efficient candidate search tools to match skills with job openings.

Talent Pool Utilization: Prevents wastage of skilled human resources by facilitating equitable job access.

Right to Vote in India: Legal Status and Constitutional Evolution

Supreme Court's Current Review

The Supreme Court of India is presently hearing petitions challenging the **Special Intensive Revision (SIR)** of electoral rolls in Bihar. This has revived a significant legal debate: **What is the actual legal status of the right to vote in India?** While voting is fundamental to democracy, Indian legal discourse has fluctuated between classifying it as a **constitutional right** and a **statutory right**, with far-reaching consequences for electoral integrity and the enforcement of citizen rights.

Classification of Rights in India

The Indian legal framework categorises rights into various types:

- **Natural Rights:** These are inherent and inalienable, like the right to life and liberty. Though not directly enforceable, they are often interpreted through **Fundamental Rights**.
- **Fundamental Rights:** Codified in **Part III** of the Constitution, these include rights such as equality, freedom of speech, and protection against discrimination. They are enforceable via **Article 32**.
- **Constitutional Rights:** Found in the Constitution but outside Part III. Examples include the right to property and trade. These are enforceable under **Article 226** or other appropriate legal forums.
- **Statutory Rights:** These arise from laws enacted by Parliament or State

legislatures, like the **right to food** under the National Food Security Act or **right to work** under MGNREGA.

Although the right to vote stems from the Constitution, judicial interpretation has largely regarded it as a **statutory right**, forming the basis of the present controversy.

Voting: Constitutional and Legal Framework

Article 326 of the Constitution ensures **universal adult suffrage**, granting the right to vote to every citizen aged 18 and above, barring legal disqualifications. This constitutional guarantee is implemented through two main statutes:

4. Representation of the People Act, 1950:

- **Section 16:** Disqualifies non-citizens from being listed in electoral rolls.
- **Section 19:** Requires voters to be at least 18 years old and ordinarily resident on the qualifying date.

5. Representation of the People Act, 1951:

- **Section 62:** Grants voting rights to all enrolled voters unless legally disqualified or incarcerated.

These provisions form the legal basis of voting, thereby reinforcing its characterization as a **statutory, not absolute**, right.

Judicial Interpretation of Voting Rights

Judicial rulings over the decades reflect an evolving and often conflicting stance on the legal status of voting:

- **N.P. Ponnuswami (1952):** Declared voting a **purely statutory** right.
- **Jyoti Basu (1982):** Reiterated that voting is neither **fundamental** nor **common law**, but **statutory**.
- **PUCJ Case (2003):** Justice P.V. Reddy suggested that despite being statutory, voting could be considered a **constitutional** right.
- **Kuldip Nayar (2006):** The court reaffirmed the **statutory** view.
- **Raj Bala (2015):** Cited the PUCJ judgment to support **constitutional recognition** of voting.
- **Anoop Baranwal (2023):** The majority held that voting remains a **statutory right**.

This shifting interpretation reflects the judiciary's effort to balance **constitutional text** with **evolving democratic principles**.

Dissenting Opinion and the Path Ahead

In the **Anoop Baranwal** case, a dissenting judge offered a more progressive view, arguing that:

- Voting is an **expression of individual choice**, protected under **Article 19(1)(a)** (freedom of speech).
- **Free and fair elections** are essential to the **basic structure** of the Constitution.
- The **origin** of voting rights lies in **Article 326**, even if operationalised by statute.

This perspective could serve as a foundation for **future judicial reconsideration**, potentially reclassifying voting as a **constitutional** or even **fundamental** right.

Implications of Voting's Current Legal Status

- **Statutory Nature:** Allows Parliament to define or limit the right through disqualifications or procedural changes.
- **Enforceability:** Unlike fundamental rights, voting rights **cannot be enforced through Article 32**. Legal remedies lie in ordinary courts.

Need for Reform: Amid rising concerns over **voter suppression**, **digital disenfranchisement**, and **errors in electoral rolls**, the legal classification of voting has direct implications for democratic accountability and electoral transparency.

Vice President Jagdeep Dhankhar Resigns Due to Health Reasons

Resignation Announcement

On **July 21**, during the opening of the Monsoon session of Parliament, **Vice President Jagdeep Dhankhar** tendered his resignation, citing health concerns and medical advice. He submitted his resignation to **President Droupadi Murmu** under **Article 67(a)** of the Constitution.

This marks Dhankhar as the **third Vice President in Indian history** to resign mid-term, after **V.V. Giri** and **R. Venkataraman**, who stepped down to contest presidential elections.

Resignation Process: Article 67(a)

Under **Article 67(a)**, the Vice President may resign at any time by submitting a written letter to the President. Once accepted, the resignation becomes effective immediately — no approval or further procedure is required.

Dhankhar, who assumed office in **August 2022**, resigned **two years ahead** of his term's scheduled end in **2027**.

Succession Protocol

Following the Vice President's resignation, an **election must be held** to fill the vacancy. The

Constitution, however, does **not provide for an acting Vice President**.

During this interim period, the **Deputy Chairman of the Rajya Sabha**, currently **Harivansh Narayan Singh**, will preside over its proceedings, ensuring **uninterrupted functioning**.

Election Timeline and Administration

- The Constitution stipulates that the **Vice-Presidential election be conducted "as soon as possible"**, without specifying a strict timeline.
- The **Election Commission of India** is tasked with declaring the schedule.
- The election is governed by the **Presidential and Vice-Presidential Elections Act, 1952**.
- Typically, the **Secretary General of either House** serves as the **Returning Officer**, selected on a rotational basis.

Tenure of the New Vice President

A newly elected Vice President, in case of a mid-term resignation, is entitled to serve a **full five-year term** from the date of assuming office — not merely the remaining duration of the previous officeholder's term. This distinguishes it from other constitutional roles where successors may serve only the balance of an unexpired term.

Eligibility Criteria

According to **Article 66** of the Constitution, a candidate for Vice President must:

- Be an **Indian citizen**,
- Be **at least 35 years old**, and
- Be **qualified to be elected as a Rajya Sabha member**.

The candidate must **not hold any office of profit** under the central or state governments or public authorities.

Election Process

- The Vice President is elected by an **electoral college** comprising **members of both Lok Sabha and Rajya Sabha**, including **nominated members**.
- **State legislatures are not involved**.
- Voting occurs via **secret ballot**, using the **proportional representation system** with a **single transferable vote**.
- MPs rank candidates in order of preference.
- A candidate must reach a **quota** (total valid votes $\div 2 + 1$) to win.
- If no candidate meets the quota initially, the one with the **fewest first-preference**

votes is eliminated, and their votes are redistributed based on second preferences. This process continues until a candidate meets the quota.

Significance of the Vice President

The **Vice President** is India's **second-highest constitutional authority** and serves as the **ex-officio Chairman of the Rajya Sabha**. Though not a member of any legislative body, the Vice President ensures **orderly conduct of proceedings** in the Upper House.

In the event of the **President's death, resignation, removal, or incapacity**, the Vice President temporarily assumes **Presidential duties** until a new President is elected.

Parliamentary Select Committee on Income Tax Bill, 2025

Purpose

A **Parliamentary Select Committee** was appointed to review the **new Income Tax Bill, 2025**, aimed at modernizing India's outdated tax code to ensure fairness, reduce litigation, and improve clarity.

Key Recommendations

- **Upholding Tax Officials' Powers:** The Committee supported provisions allowing authorities to access **social media and private emails** during search and seizure operations, including by force if necessary.
- **Modernising Legal Definitions:** The bill proposes updated definitions for key terms like **"capital asset"**, **"infrastructure capital company"**, and **"micro and small enterprises"** to align with current laws.
- **Support for Businesses and Startups:** Recommendations include:
 - Clearer rules for **R&D deductions**
 - Tax incentives for businesses managing **biodegradable waste**
 - Clarified definitions of **"parent company"** and **"status"** for appeals

About the Income-Tax Bill, 2025

- **Replacing the 1961 Act:** The bill seeks to **replace the Income-Tax Act, 1961**, with a more streamlined and contemporary law.
- **Reduction in Complexity:**

- **283 sections** and **24 chapters** from the old Act are being removed to simplify the code.
- Simplified language, including replacing "financial year" and "assessment year" with "**tax year**."
- **Digital and Virtual Assets:** The bill introduces provisions to define and regulate "**virtual digital assets**" and "**electronic modes**" of transactions.

No Major Policy Changes: There are no changes in **tax rates** or **policy direction**, ensuring predictability and continuity for taxpayers.

Motion Submitted in Parliament for Removal of Justice Yashwant Varma

Context

Members of Parliament (MPs) from various political parties have submitted motions in both Houses of Parliament seeking the removal of **Justice Yashwant Varma**.

Parliamentary Action

- **Lok Sabha:** A total of **145 members** of the Lok Sabha have signed and submitted a motion calling for the removal of Justice Varma.
- **Rajya Sabha:** The **Chairman of the Rajya Sabha** has also received a similar motion backed by **more than 50 members** from the Upper House.

These actions collectively initiate the **constitutional process** for the removal of a sitting judge.

Constitutional Provisions for Removal of Judges

1. Article 124(4) – Removal of Supreme Court Judges

- **Grounds for Removal:** A judge of the Supreme Court can be removed only on the basis of **proven misbehavior or incapacity**.
- **Mode of Removal:** Requires a **presidential order** following an address by each House of Parliament supported by a special majority.

2. Article 124(5) – Parliamentary Power to Regulate Procedure

- Grants Parliament the authority to **establish procedures** for the

investigation and presentation of removal motions.

- This power led to the enactment of the **Judges (Inquiry) Act, 1968**, which outlines the detailed procedure for judicial removal.

3. Article 217(1)(b) – Removal of High Court Judges

- Specifies that a **High Court judge** may be removed by the President **in the same manner as a Supreme Court judge**, i.e., as provided under **Article 124(4)**.

4. Article 218 – Extension of Procedure to High Courts

- Ensures that the provisions of **Article 124(4) and 124(5)** regarding the **removal and procedural regulation** of Supreme Court judges also apply to **High Court judges**.

Step	Description
Initiation	A removal motion is signed by either: – 100 members of Lok Sabha , or – 50 members of Rajya Sabha , and submitted to the Speaker/Chairman .
Committee Formation and Investigation	If the motion is admitted, a three-member committee is formed to investigate charges. Members include: – A Supreme Court judge – A Chief Justice of a High Court – A distinguished jurist .
Parliamentary Approval	If the judge is found guilty : – The originating House must pass the motion with a special majority . – The second House must also pass it with a special majority . (<i>Special Majority = Majority of total membership + 2/3rd of members present and voting</i>)
Presidential Order	An address is presented to the President in the same session . The President issues the removal order .
Note	The term " impeachment " is not used in the

	Constitution for the removal of judges.

AI vs Copyright: Evolving Legal Perspectives on Fair Use

Recent U.S. Court Rulings on AI and Fair Use

Recent decisions in the United States—**Thomson Reuters vs Ross Intelligence**, **Bartz vs Anthropic**, and **Kadrey vs Meta**—have begun shaping legal interpretations of fair use in the context of AI. These rulings suggest that the use of **lawfully obtained text** for training AI models may fall under "**fair use**", particularly when the AI outputs are considered **transformative**.

However, the courts have not fully addressed issues such as the use of **pirated or unauthorized data**, nor the broader **economic impact on creative industries**, leaving many legal questions unresolved. This continues to fuel uncertainty regarding the legal status of AI-generated content.

Copyright Challenges in Generative AI

Generative AI sometimes produces content that closely mimics or replicates copyrighted material, triggering legal and ethical debates. The core legal issue revolves around whether:

- Training AI on copyrighted content constitutes infringement, and
- AI outputs are sufficiently **transformative** to be considered fair use.

While **U.S. law** may view such use as fair under certain conditions, other jurisdictions like the **EU** and **UK** permit it through **text and data mining (TDM) exemptions**. However, given that most AI models are trained on **large-scale internet datasets**—comprising both public domain and copyrighted materials—a **global legal consensus is lacking**, keeping the regulatory environment fragmented.

Complexities in Database Use and Generative AI

The application of generative AI to **databases and published works** raises complicated legal questions involving:

- **Copyright and IP rights**
- **Contractual obligations**
- **Privacy considerations**

There is still widespread ambiguity over whether training AI on **IP-protected content** and generating derivative outputs infringes rights. While certain countries offer **fair use, temporary copying, or TDM exceptions**, these laws differ

greatly and **have yet to be uniformly tested** in courts.

A major challenge lies in the absence of **harmonised international rules**, especially in copyright law, which traditionally requires **human authorship**—a standard AI cannot meet. This leads to ongoing debates about **ownership** and **entitlement** over AI-generated content.

Key U.S. Court Decisions: Support for Fair Use, Warnings on Piracy

Two landmark U.S. cases—**Anthropic** and **Meta**—have clarified the scope of fair use in AI training:

- In the **Anthropic case**, the court ruled that using copyrighted material to train AI can be seen as **transformative**, similar to how human writers learn by reading. However, the court allowed the trial to proceed to assess **whether pirated content** was used.
- In the **Meta case**, the court held that the plaintiffs did not prove that AI-generated outputs significantly harmed the **market value of original works**. Therefore, Meta's use was upheld under the **fair use doctrine**.

Both rulings **protect AI developers** to an extent, but they also caution against using **unauthorized or pirated materials**. They also highlight the need to **develop compensation models** for copyright holders whose works are used in AI training.

Implications for India: ANI vs OpenAI and Indian IP Law

The ongoing **ANI vs OpenAI** case is helping define how **Indian intellectual property law** applies to generative AI. Under the **Copyright Act, 1957**, creators have exclusive rights over **reproduction, adaptation, and distribution**, unless the use qualifies as **fair dealing** under **Section 52**.

Though India's copyright regime **does not explicitly address AI**, legal experts believe that existing provisions are **robust enough** to handle most AI-related issues. India also adheres to several international IP treaties and provides for **civil and criminal remedies** to enforce rights, including those protecting against **digital infringement**.

Bills of Lading Bill, 2025

Overview

- Parliament has officially passed the **Bills of Lading Bill, 2025**.

- The Bill is intended to **modernize and simplify** the legal framework governing **shipping documentation** in India.

Key Highlights

- **Replaces** the outdated **Indian Bills of Lading Act, 1856**.
- Defines the **Bill of Lading** as a document issued by a **freight carrier to a shipper**, which:
 - Serves as a **receipt** for shipped goods.
 - Specifies details such as:
 - **Type**
 - **Quantity**
 - **Condition**

Destination of goods in transit.

Meri Panchayat App

Recent Recognition

- Awarded the **WSIS Prizes 2025 Champion Award**, an internationally prestigious honor recognizing excellence in digital innovation.

About the App

- A digital platform developed for **rural governance** to strengthen the **Panchayati Raj system**.
- Jointly developed by the **Ministry of Panchayati Raj** and **National Informatics Centre (NIC)** under the **Ministry of Electronics and IT**.

Core Features

- Integrates multiple governance services and data portals into one **user-friendly interface**.
- Empowers **citizens, local officials**, and other stakeholders with **real-time access** to:
 - Panchayat **budgets, receipts, and payments**
 - **Development plans** and **GDPPs** (Gram Panchayat Development Plans)
 - Details of **elected representatives** and **functionaries**
 - Information on **public infrastructure** and **civic services**
 - **Weather forecasts** at Gram Panchayat level
 - **Social audit tools, fund utilization data**, and **grievance redressal mechanisms**

- **Geo-tagged and geo-fenced** features for accountability.
- Allows citizens to:
 - **Propose new projects**
 - **Rate and review** completed works
 - Access and engage with **Gram Sabha agendas and decisions**
- Available in **12+ Indian languages** for inclusivity.

About WSIS Prizes

Instituted by the **World Summit on the Information Society**, the prize recognizes impactful ICT projects that **advance sustainable development goals (SDGs)** globally.

SASCI Scheme

Context

- The **Ministry of Tourism** has released detailed **operational guidelines** for the **SASCI Scheme**, focusing on transforming tourism infrastructure by 2026.

What is SASCI?

- Full Form: **Special Assistance to States for Capital Investment – Development of Iconic Tourist Centres to Global Scale**.
- A **centrally funded initiative** that aims to **develop iconic Indian tourist destinations** into globally recognized sites.

Key Objectives

- Upgrade Indian tourism destinations to **world-class standards**.
- Improve **visitor experiences**, increase **international competitiveness**, and draw **tourism-related investments**.

Major Features

- **State-driven execution**: States propose and manage projects; the Centre provides capital support.
- **24-month implementation deadline** for approved projects.
- Focus on **end-to-end development**, including:
 - Infrastructure enhancement
 - High-quality tourism services
 - Immersive cultural experiences
- Strengthens the **tourism value chain**, covering:
 - Accessibility and connectivity
 - Ecological sustainability
 - Carrying capacity

- Branding and site management
- **Digital marketing campaigns** at both **domestic and global levels** to boost visibility.

Significance

- Drives **local employment** and tourism-based economic growth.
- Enhances India's global reputation as a **culturally rich, infrastructure-ready destination**.

Promotes **cooperative federalism** by encouraging States to innovate and take ownership of tourism development.

Election of the Vice President of India

Context

Following the resignation of Vice President **Jagdeep Dhankhar**, the **Election Commission of India** is required to promptly announce a new election to fill the vacancy, as the constitutional office cannot remain unoccupied.

Election Process

- The **Vice President** is chosen through an **electoral college** made up of members of **both Houses of Parliament**.
- The election follows the **proportional representation system** via **single transferable vote**, and the voting is conducted by **secret ballot**.

Composition of the Electoral College

- Includes **all members of Lok Sabha and Rajya Sabha**.
- This differs from the Presidential electoral college, which includes only **elected MPs and MLAs**.

Eligibility Criteria

To contest the Vice Presidential election, a candidate must:

- Be a **citizen of India**.
- Be **at least 35 years old**.
- Be **qualified to be elected to the Rajya Sabha (Council of States)**.
- **Must not hold any office of profit** under the Central or State Government or any local/subordinate authority.

Tenure and Vacancy Protocol

- The term of the Vice President is **5 years** from the date of assuming office.
- If a vacancy arises due to **death, resignation, or removal**, the **election must be held at the earliest possible time**.

- If the Vice President is a sitting member of Parliament or a State Legislature at the time of election, their seat is considered **vacated upon assuming office**.

Election Oversight

- The **Election Commission of India** is empowered under **Article 324** of the Constitution to conduct the election.
- The **Returning Officer** for the election is usually the **Secretary-General** of either House of Parliament, selected on a rotational basis.

Nomination Requirements

- A candidate must be **nominated by at least 20 proposers and 20 seconders**, all of whom must be Members of Parliament (MPs).
- A **security deposit of ₹15,000** is required with the nomination.

Dispute Resolution

- All **election-related disputes** are addressed exclusively by the **Supreme Court of India**.

A **five-judge bench** hears petitions concerning the Vice Presidential election, and the decision is **final and binding**.

Presidential Reference: Can the Supreme Court Clarify Its Past Rulings?

Current Development

The Supreme Court has issued notices to the Centre and all States in response to a **Presidential Reference** under **Article 143**, seeking its advisory opinion on whether **courts can compel the President or Governors to act within specific timelines** regarding bills passed by State legislatures.

A **Constitution Bench** led by Chief Justice B.R. Gavai is set to begin hearings in **mid-August 2025**.

Background: April 2025 Judgment Under Review

- In **April 2025**, the Supreme Court ruled that **Governor R.N. Ravi's delay** in assenting to 10 re-passed Tamil Nadu Bills was **illegal**.
- This was the **first time** the Court imposed **judicially enforceable timelines** on constitutional authorities like the President and Governors.
- President **Droupadi Murmu** has now raised **14 legal questions**, seeking clarity on whether **courts can instruct**

constitutional functionaries on how and when to act.

Scope of Article 143: Supreme Court's Advisory Role

- **Article 143(1)** empowers the President to seek the Court's opinion on legal or factual issues of **public importance**, even in the absence of an active case.
- This advisory power, derived from the **Government of India Act, 1935**, has been used **14 times** post-Independence.
- **Article 145(3)** mandates that such references be heard by a **Constitution Bench of at least five judges**.
- Although its inclusion in the Constitution was debated, it remains a tool for **resolving constitutional stalemates**.

Can the Supreme Court Decline a Presidential Reference?

- Yes. The Court has **discretion** to decline answering, as established in the **Special Courts Bill case (1978)** and reaffirmed in **Ismail Faruqui (1994)**.
- Past refusals include:
 - **Ayodhya-Babri Masjid (1993)** – due to an ongoing civil case.
 - **J&K resettlement law (1982)** – since the law was already passed.
- These instances highlight the Court's intent to **avoid political controversies** and maintain its **judicial independence**.

Are Advisory Opinions Binding?

- There is **legal ambiguity**:
 - **Not binding**: As per **St. Xavier's College v. Gujarat (1974)**, advisory opinions carry **persuasive, not binding** authority.
 - **Sometimes treated as binding**: e.g., in **R.K. Garg v. Union of India (1981)**.
 - **Middle ground**: In the **Cauvery Tribunal case (1991)**, advisory opinions were to be given **"due respect,"** not treated as precedent.
- Therefore, any advisory opinion from this Reference **will not override** the binding **April 2025 verdict**, but may **influence future cases**, including pending ones from **Kerala and Punjab**.

Can a Presidential Reference Modify a Final Ruling?

- **No**. The Court has consistently held that **Article 143 cannot be used to review or overturn** judicial decisions.
- Only a **review or curative petition** can alter a final verdict.
- However, under Article 143, the Court **may clarify or elaborate** on the **legal principles** of a ruling (e.g., **Natural Resources Allocation case, 2012; Collegium system, 1998**).

In this case, the Bench may **refine the April 2025 ruling** or **expand its constitutional interpretation** without disturbing the original decision.

Constitutional Dreams Before 1950 — India's Alternative Visions of the Republic Context

As India's constitutional history is re-examined, scholars are turning to lesser-known drafts created before 1950. These documents—ranging from liberal to radical, religious to socialist—offered distinct models of sovereignty, governance, and rights, reflecting the diverse ideological ferment that shaped modern India.

Five Major Constitutional Drafts Before 1950

1. 1895 Constitution of India Bill — Liberal Reform within Empire

- **Attributed to** early nationalists like Bal Gangadhar Tilak.
- Proposed **110 articles**, focusing on civil liberties, rule of law, and legal equality.
- Reflected **British constitutional ideals**, advocating a representative government under colonial rule.
- Emphasized **separation of powers** and **elite-led legal reform**, but not full independence.

2. M.N. Roy's 1944 Draft — Participatory Democracy and Radical Humanism

- Drafted by the **Radical Democratic Party**, rooted in **radical humanist philosophy**.
- Proposed **popular sovereignty**, a **strong Bill of Rights**, and even the **right to revolt**.
- Advocated **linguistic federalism**, **decentralized governance**, and **citizens' committees** for direct participation.
- Combined **civil** and **socio-economic rights** into enforceable legal guarantees.

3. Hindusthan Free State Act (1944) — Cultural Nationalism with Secular Guarantees

- Aligned with the **Hindu Mahasabha**, envisioned a **unitary state** called "Hindusthan."
- Called for **national unity** through one law, language, and culture but guaranteed **religious freedom and equality**.
- Declared a **secular state**, barred public funding for religious activities, and allowed **provincial secession**.
- Balanced **majoritarian nationalism** with **formal constitutional secularism**.

4. Gandhian Constitution (1946) — Moral Decentralism and Village Swaraj

- Authored by **Shriman Narayan Agarwal** with Gandhi's endorsement.
- Proposed a **confederation of self-reliant villages**, based on **khadi, trusteeship, and non-violence**.
- Rejected modern capitalism and centralized bureaucracy; focused on **ethical governance**.
- Ironically included the **right to bear arms**, revealing tension between pacifism and practical defense.
- Prioritized **community duties** over legal rights.

5. Socialist Party Draft (1948) — Class Justice and Economic Restructuring

- Proposed by the **Socialist Party** under **Jayaprakash Narayan**.
- Emphasized **nationalization, land redistribution, and worker-peasant control**.
- Advocated a **unicameral legislature** with **class-based representation**.
- Prioritized **economic democracy** and **material equality** over procedural liberties.

Comparative Ideological Threads

Sovereignty: Who Holds Power?

- **1895 & Socialist Draft:** Sovereignty vested in **elected legislatures**—a classical representative model.
- **M.N. Roy:** People themselves as sovereign; promoted **direct democracy** and **citizens' oversight**.
- **Gandhian Draft:** Rooted power in **moral communities**, not state institutions.

Governance Style

- **Centralized:**

- *Hindusthan Free State:* Strong unitary structure with cultural homogenization.

- *Socialist Draft:* Centralized planning for economic overhaul.

• Decentralized:

- *M.N. Roy:* Federalism with linguistic and participatory elements.

- *Gandhian:* Hyper-decentralized **village republics** as sovereign units.

Economic Vision

- **Gandhian:** Agrarian minimalism based on self-sufficiency and moral economy.
- **M.N. Roy:** Democratic socialism with enforceable socio-economic rights.
- **Socialist Party: Marxist economic vision**—public ownership, class representation.
- **1895 & Hindusthan:** Little focus on economic restructuring; focused on political/legal architecture.

Rights and Liberties

- **1895:** Classic liberal rights—speech, property, equality.
- **M.N. Roy:** Combined **civil** and **socio-economic** rights with legal enforceability.
- **Socialist Draft:** Prioritized **economic justice** over civil liberties.
- **Gandhian:** Focused on **moral duties**, not legal rights.
- **Hindusthan Free State:** Nationalist tone, but guaranteed religious freedom and equality.

Influence on the 1950 Constitution

Draft	Legacy in the Indian Constitution
1895	Legal structure, parliamentary democracy
M.N. Roy	Fundamental Rights, Directive Principles, decentralization
Gandhian	Panchayati Raj, moral tone in state duties
Socialist Draft	Article 39 (DPSPs), focus on economic justice
Hindusthan Free State	Affirmative secularism, unitary-nationalist tone

Conclusion

These early constitutional drafts embodied India's vast **pre-independence constitutional**

imagination. While the 1950 Constitution emerged from consensus, it was deeply enriched by these competing visions—ranging from **Roy's participatory democracy** to **Gandhi's ethical village model**, and **socialist calls for structural reform**. Their legacies continue to shape India's evolving democratic identity.

India Skills Accelerator Initiative

Overview

The Ministry of Skill Development and Entrepreneurship (MSDE), in partnership with the World Economic Forum (WEF), has introduced the India Skills Accelerator initiative to support workforce readiness in high-growth sectors.

Objectives

- Facilitate smooth career transitions.
- Expand access to scalable training models.
- Align education and vocational training with industry demands in areas such as artificial intelligence, robotics, advanced manufacturing, and clean energy.

Structure

The initiative functions as a public-private collaboration platform designed to promote cross-sector innovation.

Global Linkage

It is part of WEF's Reskilling Revolution, which encourages governments to invest in lifelong learning and workforce development regardless of a person's educational background or employment status.

UK-India Young Professionals Scheme

Recent Development

The United Kingdom has opened its final 2025 visa ballot under the India Young Professionals Scheme, which allows selected Indian nationals aged 18 to 30 to live, work, or study in the UK for up to two years.

Background

- The scheme was announced as part of the India-UK Migration and Mobility Memorandum of Understanding (MoU) signed in May 2021.
- It was officially launched in February 2023 following its announcement at the G20 Summit in Bali (November 2022).

Key Features

- Allows eligible Indian citizens to live and work in the UK for up to two years.
- Individuals may enter and leave the UK multiple times during the visa period.

Eligibility

- Indian citizenship and age between 18 and 30 years.
- A recognised bachelor's degree or higher qualification.
- Minimum financial savings of £2,530.
- No dependent children under the age of 18.
- Selection through a visa ballot is mandatory.
- Applicants cannot have previously held this or a Youth Mobility Scheme visa.

Conditions

- Visa holders must enter the UK within six months of issuance.
- Permitted to:
 - Study (with additional ATAS clearance if applicable).
 - Work in most sectors.
 - Be self-employed, subject to certain restrictions (e.g., rented premises, equipment worth under £5,000, no employees).

Restrictions

- The visa is not extendable.
- Visa holders are not eligible for most public benefits.
- Family members must apply separately.

Employment in sports-related roles, including coaching, is not allowed.

AI for India 2.0 Programme

Overview

Launched in 2023 on **World Youth Skills Day**, **AI for India 2.0** is a national initiative designed to democratize access to Artificial Intelligence (AI) and Machine Learning (ML) education across India, especially targeting youth from non-English and rural backgrounds.

Key Features

- **Free Online Training:** Offers AI and ML courses at no cost.
- **Multilingual Access:** Courses available in **9 Indian languages** including Hindi, Telugu, and Kannada.
- **Target Audience:**
 - College students
 - Recent graduates
 - Early-career professionals
 - Individuals from rural and non-English-speaking regions

Partnerships & Accreditation

- Joint initiative of:

- **Skill India**
- **GUVI (Grab Ur Vernacular Imprint)** – an ed-tech company incubated by **IIT Madras** and **IIM Ahmedabad**
- Recognized by:
 - **National Council for Vocational Education and Training (NCVET)**
 - **IIT Madras**

Impact

- Empowers learners with **expert-curated Python and AI content**.
- Bridges the digital divide through **vernacular tech learning platforms**.

Promotes inclusive skilling aligned with India's digital growth goals.

National Cooperative Policy 2025: Revitalising India's Cooperative Movement

Overview

Union Home and Cooperation Minister Amit Shah launched the *National Cooperative Policy 2025* in New Delhi, replacing the earlier framework from 2002. The policy marks a significant step in rejuvenating India's vast cooperative network by enhancing its capacity, outreach, and alignment with national development goals.

Guided by the principle of "*Sahkar se Samridhi*" (Prosperity through Cooperation), the policy envisions inclusive, tech-enabled, and village-centered growth for the sector over the next two decades.

Context and Significance

India's last cooperative policy was announced 23 years ago. The creation of a separate **Ministry of Cooperation in 2021** underscored the government's renewed focus on this critical sector.

Currently, India has over **8.4 lakh cooperative societies** serving more than **31 crore citizens**, especially in states like Maharashtra and Gujarat. The new policy aims to **increase this number by 30%** and expand the cooperative footprint into underserved states such as Uttar Pradesh and Bihar.

Key Pillars of the Policy

The National Cooperative Policy 2025 is built around six core pillars:

1. **Strengthening foundational systems**
2. **Revitalising existing cooperatives**
3. **Future readiness through digitalisation and innovation**

4. **Enhancing inclusivity and social outreach**
5. **Expanding into emerging and non-traditional sectors**
6. **Youth engagement and capacity building**

Targets include:

- Tripling the cooperative sector's **GDP contribution by 2034**
- Establishing at least **one cooperative in every village**
- Engaging **50 crore citizens** in cooperative activities

Expansion into New and Emerging Sectors

The policy encourages cooperatives to diversify into sectors such as:

- **Green energy**
- **Tourism and transportation** (e.g., *Sahkar Taxi* initiative)
- **Insurance**
- **Retail and public services**

Primary Agricultural Credit Societies (PACS) are being empowered to manage:

- Fuel outlets and LPG distribution
- *Jan Aushadhi Kendras* and CSCs
- Implementation of schemes like *Har Ghar Jal* and *PM Surya Ghar Yojana*

A **sector-specific roadmap** is being implemented to support these new ventures, particularly in rural areas.

Model Cooperative Villages and Rural Empowerment

One of the flagship initiatives under the policy is the development of **Model Cooperative Villages**, with five in every tehsil. These villages, in collaboration with **state cooperative banks** and **NABARD**, will serve as hubs for cooperative-led development. Focus areas include:

- Dairy and fishery
- Floriculture and agri-services
- Women and tribal empowerment (*White Revolution 2.0*)

These villages aim to foster **community ownership**, decentralised economic activity, and inclusive rural development.

Institutional Reforms and Modernisation

To improve transparency and efficiency, the policy mandates:

- **Complete digitalisation** of PACS operations
- **Technology-driven governance** across cooperatives

- **Cluster-based monitoring systems**
- **Decennial legal reviews** for continuous policy relevance

As of 2025:

- **83 intervention areas** have been identified
- **58 reforms are underway**, with **three completed**
- A **national cooperative university**, *Tribhuvan Sahkari University*, has been established to provide professional training and capacity-building opportunities

Economic and Social Impact

The cooperative sector already plays a significant role in India's economy, contributing:

- **20%** of total agricultural credit
- **35%** of fertiliser distribution
- **30%+** of sugar production
- **10%** of milk production
- **21%** of the fishing sector
- **13%** of wheat and **20%** of paddy procurement

The policy envisions a **self-reliant, member-driven cooperative ecosystem** that enhances employment, income stability, and social dignity, particularly in rural areas.

Conclusion

The *National Cooperative Policy 2025* lays a transformative roadmap to modernise and democratise India's cooperative movement. By embracing inclusivity, innovation, and decentralisation, the policy seeks to ensure that cooperative institutions are not only sustainable but are active agents of grassroots development and national prosperity.

Parliamentary Panel Recommendations for Promoting Natural and Organic Farming

The **Parliamentary Estimates Committee** under the Ministry of Agriculture and Farmers Welfare has submitted a report on enhancing climate-resilient agriculture, focusing on natural and organic farming through **Krishi Vigyan Kendras**.

Key Observations and Issues

- **Financial Security:** A major obstacle to the adoption of natural farming is inadequate financial support for farmers.
- **Farmer Income Concerns:** Income uncertainties and implementation challenges hinder sustainable farming efforts.

- **Staff Shortages:** Lack of adequate manpower affects the delivery and monitoring of farming programs.

Theme	Observations / Issues	Recommendations
Financial Allocation	Limited funding restricts climate adaptation, especially in vulnerable regions.	Substantially increase budget for National Innovations in Climate Resilient Agriculture (NICRA) . Adopt phased, rotational support to cover all vulnerable districts.
Climate-Resilient Seed Varieties	Slow uptake of new seeds, weak distribution, and poor coordination at state level.	Set up decentralized seed hubs and expand Seed Village Programs . Enhance coordination among ICAR , state governments, and seed companies.
Organic Certification	Low farmer awareness about organic certifications, particularly in rural areas.	Develop a unified organic certification label combining National Programme for Organic Production (NPOP) and Participatory Guarantee System (PGS-India) .
Transition to Organic Farming	Insufficient support for farmers switching from conventional to organic methods.	Increase financial incentives via Direct Benefit Transfers (DBT) for organic inputs. Improve local marketing infrastructure

		and expand digital outreach initiatives.
Safe Pest Management Practices	Excessive and improper use of chemical pesticides in food products.	Promote biological pest control technologies from ICAR-NBAIR as sustainable alternatives to chemical pesticides.

Conclusion

The committee emphasizes the need for increased financial support, improved coordination, awareness generation, and sustainable practices to scale up natural and organic farming across India. This will strengthen climate resilience and promote sustainable agriculture for the future.

PM Surya Ghar Muft Bijli Yojana

Overview

Launched on **15 February 2024**, the **PM Surya Ghar Muft Bijli Yojana** is a central government scheme to promote **rooftop solar energy adoption** and provide **free electricity** to households.

Objectives

- Enable **1 crore households** to receive **up to 300 units** of free electricity per month.
- Promote the use of **renewable energy**.
- Reduce government expenditure on electricity by up to **₹75,000 crore/year**.
- Lower carbon emissions.
- **Subsidy Structure**

System Capacity	Subsidy Rate	Maximum Subsidy Amount
Up to 2 kW	60% of cost	₹30,000 (for 1 kW), ₹60,000 (for 2 kW)
2–3 kW	40% for extra capacity	₹78,000 for 3 kW system
Special States	+10% additional subsidy per kW	

Eligibility Criteria

- Indian citizen
- Must own a house with rooftop space suitable for solar panels
- Must have an electricity connection

- Must not have availed a previous subsidy for rooftop solar
- **Implementation**
- **National Level:** Implemented by **National Programme Implementation Agency (NPIA)**
- **State Level:** Implemented through **State Implementation Agencies (SIAs)**, primarily **DISCOMs**
- **DISCOM Incentives:** ₹4,950 crore allocated for DISCOMs based on capacity installation targets

Additional Components

1. **Model Solar Villages:**
 - One per district
 - ₹1 crore assistance per village
 - Total outlay: ₹800 crore
2. **Incentives to Local Bodies:**
 - ₹1,000 per rooftop solar installation for **Urban Local Bodies (ULBs)** and **Panchayati Raj Institutions (PRIs)**

Total Outlay

₹75,021 crore (to be implemented until FY 2026–27)

Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989

- **Context**
- The **Madras High Court** recently ruled that upon receiving a complaint indicating a cognizable offence under this Act, the police must **immediately register an FIR—no preliminary inquiry** is required.
- **About the Act**
- **Enacted to:** Prevent atrocities against **Scheduled Castes (SCs)** and **Scheduled Tribes (STs)** by non-SC/ST individuals.
- **Administered by:** State Governments/UT Administrations with central assistance.
- **Empowered under:** The Central Government can frame rules for effective implementation.
- **Key Provisions**

Offences Covered

- Applies **only to crimes committed by non-SC/STs against SCs/STs**.
- Includes **37 listed offences** targeting social, economic, and psychological humiliation of SCs/STs.
- Covers **denial of rights, abuse of the legal system, and social exclusion**.

Investigation Protocol

- All offences under the Act are **cognizable**.
- Only officers **not below the rank of Deputy Superintendent of Police (DSP)** can investigate.
- Investigations must be completed **within 30 days**, with reports sent directly to the **State Police Director**.

Special Courts

- **Dedicated courts** are to be established for speedy trials.
- **State Governments**, in consultation with the **Chief Justice of the High Court**, must set up **Special Sessions Courts**.
- Cases are to be heard **on a day-to-day basis**.
- **Special Public Prosecutors** with at least **7 years of experience** are appointed for these courts.

Punishments

- **Minimum** punishment: **6 months imprisonment**; **maximum**: **life imprisonment or death** in severe cases.
- **Section 4**: Public servants who **neglect duties** under this Act can be imprisoned for up to **6 months**.

Victim Relief

- As per the **Rules of 1995**, **District Magistrates** or **Executive Magistrates** must provide **immediate relief** to victims and their families.

Relief includes **cash or kind support**, and essentials like **food, shelter, clothing, medical aid, and transportation**.

First Week of Monsoon Session Disrupted: Parliamentary Productivity Drops

Overview

The **first week of the Monsoon Session** of Parliament saw repeated disruptions, significantly affecting legislative business.

- In the **17th Lok Sabha**, the House functioned for only **88% of its scheduled time**.
- The **Rajya Sabha** recorded even lower productivity, operating at **73% efficiency**.

This trend reflects a growing concern about the **declining effectiveness of parliamentary functioning** in recent years.

Declining Working Days: A Long-Term Concern

- In the **1950s**, Parliament met for approximately **120–140 days annually**.

- Today, that number has **dropped to just 60–70 days**, shrinking the window for meaningful legislative debate and oversight.

Impact of Frequent Disruptions

1. Weakening Democratic Accountability

- Parliamentary sessions are vital for **holding the government accountable** through questions, debates, and discussions.
- Disruptions prevent MPs from performing this essential role, **undermining democratic norms**.

2. High Operational Costs

- Running Parliament costs the exchequer **₹2.5 lakh per minute**.
- Every stalled session results in **significant financial losses** and unproductive use of public funds.

3. Erosion of Public Trust

- Persistent disruptions give the impression of **political gridlock**, reducing citizens' faith in the institution.
- Instead of focusing on legislative duties, MPs are seen as engaging in **partisan stalling tactics**.

Potential Solutions to Tackle Disruptions

1. Dedicated Time for the Opposition

- Drawing from the **UK Parliament's model**, India could reserve **20 days annually** where the opposition controls the agenda.
- This allows **constructive engagement** and ensures diverse voices are heard.

2. Strengthen Parliamentary Ethics Committees

- These committees should be empowered to **monitor conduct**, report disruptions, and recommend disciplinary measures.
- It would promote **accountability and decorum** in both Houses.

3. Introduce an Annual Parliamentary Calendar

- An **advance calendar** with fixed session dates can:
 - Improve planning and participation.
 - **Reduce the government's discretion** over convening sessions.
 - Encourage consistent and transparent functioning.

Conclusion

The disruptions in the first week of the Monsoon Session highlight the urgent need for **parliamentary reforms** to restore trust, productivity, and accountability. If unchecked, such trends risk **weakening the foundations of representative democracy**. Implementing structural reforms can help ensure Parliament functions as a **deliberative forum** rather than a **battleground of interruptions**.

Parliamentary Committee Highlights Strategic Role of Regional Rapid Transit System (RRTS) Overview

A recent report released by the **Parliamentary Standing Committee** evaluates the effectiveness of the **Regional Rapid Transit System (RRTS)** and the **National Capital Region Transport Corporation (NCRTC)**. The committee emphasized RRTS's potential to reshape **urban mobility, regional connectivity, and equitable development** in India's rapidly urbanizing landscape.

What is the RRTS?

The **RRTS** is a **semi-high-speed, rail-based commuter transit system** designed to connect major cities with their surrounding suburbs and regional urban clusters.

- Features include **high frequency, faster transit times, and inter-city connectivity**.
- It aims to offer a reliable alternative to road congestion while promoting sustainable urban expansion.

Why India Needs the RRTS

1. Tackling Urban Congestion

- With over **40% of India's population projected to live in urban areas by 2030**, city infrastructures face growing strain.
- RRTS offers a **mass-transit solution** to ease traffic, pollution, and overcrowding in cities.

2. Enhancing Productivity Through Reduced Travel Time

- Daily commuters often face **long, unreliable travel times** between urban centres and peripheral towns.
- Faster and more predictable transit will enhance **labour productivity and work-life balance**.

3. Promoting Balanced Regional Development

- By linking **peri-urban and suburban zones** with city centres, the RRTS promotes **inclusive growth** across regions.
- It encourages **economic decentralization**, reducing migration pressures on metro cores.

4. Supporting Key National Missions

- RRTS aligns with initiatives like:
 - **Smart Cities Mission**
 - **Make in India**
 - **Atmanirbhar Bharat**: These programs require efficient infrastructure to thrive and scale.

Key Recommendations by the Committee

1. Establish Unified Metropolitan Transport Authorities (UMTAs)

- States should set up **UMTAs**, as mandated by the **Metro Rail Policy, 2017**, to enable **coordinated urban transport planning**.
- A unified body ensures better integration of metro, bus, and RRTS networks.

2. Integrate Metro Cities into a Regional Framework

- Planning for large metropolitan areas must be done within a **regional context** to ensure seamless connectivity between **urban metros and the RRTS network**.

3. Promote Multimodal Transport Integration

- The committee stressed the importance of connecting RRTS corridors with:
 - **Airports**
 - **Railway stations**
 - **Bus terminals**
- This integration is vital for creating **end-to-end mobility solutions** and improving passenger convenience.

Conclusion

The Parliamentary Standing Committee's report positions the RRTS as a transformative infrastructure project that supports India's **urban transition, economic productivity, and regional equity**. Its successful implementation depends on **state-level coordination, intermodal integration, and long-term visioning** of urban growth.

PM Viksit Bharat Rozgar Yojana (PM-VBRY)

Context

To incentivize large-scale employment generation, the government will launch **PM-VBRY** from **1 August 2025**, replacing the **Employment Linked Incentive (ELI) Scheme**.

About PM-VBRY

- **Administered By:** Ministry of Labour and Employment
- **Total Outlay:** ₹99,446 crore
- **Implementation Timeline:** 2025–2027
- **Job Creation Target:** Over 3.5 crore jobs (including 1.92 crore first-time workers)
- **Objective**
 - Promote inclusive, sustainable job creation
 - Support hiring in formal and manufacturing sectors
 - Encourage employment of new workforce entrants

Key Components

Part A: Incentives for First-Time Employees

- **Eligibility:** EPFO-registered employees earning ≤ ₹1 lakh/month
- **Benefit:** One-month EPF wage (max ₹15,000) in two instalments:
 - After 6 months of continuous service
 - After 12 months + financial literacy training
- **Savings Component:** Part of benefit deposited in a locked account to promote savings

Part B: Incentives for Employers

- **Eligible Sectors:** All sectors, with emphasis on manufacturing
- **Eligibility Criteria:**
 - Firms with <50 staff: Hire at least 2 additional employees
 - Firms with ≥50 staff: Hire at least 5 additional employees
- **Wage-Based Incentives:**
 - ₹1,000/month for wages ≤ ₹10,000
 - ₹2,000/month for wages ₹10,001–₹20,000
 - ₹3,000/month for wages ₹20,001–₹1,00,000
- **Duration:**
 - All sectors: 2 years
 - Manufacturing sector: 4 years

Disbursement Mechanism

- **For Employees:** Direct Benefit Transfer (DBT) using Aadhaar Bridge Payment System

For Employers: Funds transferred to PAN-linked bank accounts

Understanding India's Internal Complaints Committees (ICCs): Legal Foundations, Powers, and Implementation Gaps

The tragic death of a college student in Balasore, Odisha—who died by self-immolation after her sexual harassment complaint was dismissed—has brought renewed scrutiny to India's Internal Complaints Committees (ICCs). Her family has alleged institutional bias and a lack of proper training in the college's ICC, raising fundamental questions about the integrity and effectiveness of grievance redressal mechanisms under India's sexual harassment law.

Legal Origins of ICCs: From Vishaka to POSH

- **Vishaka Guidelines (1997)**
- The **Supreme Court's Vishaka Guidelines** were issued in response to the brutal gang rape of social worker Bhanwari Devi in Rajasthan.
- These guidelines formally recognized **sexual harassment as a workplace violation** and directed the creation of internal complaint bodies.
- Key features included:
 - A **woman presiding officer**
 - At least **50% women members**
 - Inclusion of an **external expert** to maintain neutrality
- However, they remained **advisory**, lacking legal enforcement.
- **Enactment of the POSH Act (2013)**
- The 2012 **Nirbhaya case** and subsequent public outrage led to the **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act**, known as the **POSH Act**.
- This law made it **mandatory** for all workplaces with over 10 employees to constitute an **Internal Complaints Committee (ICC)**.
- For workplaces with fewer employees or informal setups, the Act provides for **Local Committees**, managed at the district level.

Role, Powers, and Structure of the ICC

- **Composition of the ICC**
- Under the POSH Act, every ICC must:
 - Be chaired by a **senior woman employee** (Presiding Officer)
 - Include **two or more internal members** with knowledge of law, social work, or women's rights

- Have **one external member**—usually from an NGO or with expertise in sexual harassment issues
- Ensure **at least 50% of members are women**
- **Powers and Jurisdiction**
- The ICC has **quasi-judicial powers**, similar to a civil court:
 - Can summon individuals, collect evidence, and record testimonies
- Must complete inquiries within **90 days**
- Can recommend disciplinary action or other remedies if the complaint is proven
- Must maintain **strict confidentiality** at every stage of the process
- **Complaint Process**
- An aggrieved woman can file a **written complaint** within **three months** of the incident.
- The ICC may:
 - Initiate a formal inquiry, or
 - Facilitate a **conciliation process** (only if requested by the complainant)
- The employer must also support the woman in pursuing **criminal proceedings**, if desired

Gaps in Implementation: Ten Years of POSH, Limited Progress

- **Judicial Concerns**
 - In **December 2024**, the **Supreme Court of India** expressed alarm over the **poor enforcement** of the POSH Act.
 - The Court noted **"serious lapses"** and directed public and private institutions to ensure full compliance.
- **Structural and Administrative Failures**
 - **Training deficiencies:** ICC members often lack adequate knowledge of the law and gender-sensitive practices.
 - **Confidentiality breaches:** Many committees fail to maintain discretion, exposing survivors to social stigma.
 - **Power imbalance issues:** ICCs are frequently seen as biased in favor of senior or influential accused persons.

- **Institutional disconnect:** The Act is overseen by the **Ministry of Women and Child Development**, but enforcement depends on **Labour and Industry Ministries**, creating a gap in oversight and accountability.

• **Lack of Monitoring and Data**

- There is **no centralised system** for tracking the performance of ICCs or collecting data on complaints and outcomes.
- This creates a **"black hole" of accountability**, making it difficult to assess the effectiveness of the law.

Lessons from the Balasore Case: When ICCs Fail

The Balasore student's case is emblematic of broader systemic failures:

- The **college ICC reportedly lacked training and objectivity**
- The **power dynamic** favored the accused, who was in a senior position
- The **survivor's voice was dismissed**, resulting in a breakdown of trust in institutional redressal

Without **strong enforcement, independent oversight**, and **clear accountability**, ICCs risk becoming **symbolic rather than functional**, undermining the very purpose of the POSH Act.

Conclusion

While the POSH Act provides a robust legal framework to address workplace sexual harassment, its **real-world impact remains limited** by poor implementation and weak institutional support. Strengthening the ICC system requires:

- **Mandatory training** for committee members
- **Independent audits and monitoring**
- **Cross-ministry coordination**
- **Legal and emotional support systems** for complainants

Without these reforms, India risks allowing symbolic compliance to overshadow the pursuit of genuine justice for survivors of workplace harassment.

Indian Computer Emergency Response Team (CERT-In)

Recent Development

For the first time, the **Indian Computer Emergency Response Team (CERT-In)** has made it **mandatory** for both **private and public sector entities** that manage digital infrastructure to undergo a **comprehensive third-party cybersecurity audit** at least **once annually**.

About CERT-In

- **Full Form:** Indian Computer Emergency Response Team
- **Parent Ministry:** Ministry of Electronics and Information Technology (MeitY)
- **Nature:** National nodal agency for responding to cyber security incidents in India
- **Legal Authority:** Empowered under **Section 70B of the Information Technology Act, 2000**

Core Objectives

- Protect and secure Indian **cyberspace**
- Serve the Indian **cyber community**, including:
 - Government bodies
 - Private companies
 - Public-sector units
 - Individuals and home users

Key Functions

1. **Cyber Incident Handling:**
 - Collect, analyze, and disseminate information on cyber threats
 - Issue alerts and forecasts about cyber risks
 - Coordinate response measures during cyber incidents
2. **Policy and Advisory:**
 - Publish guidelines, vulnerability notes, advisories, and white papers
 - Prescribe best practices for information security
3. **Regulatory Powers:**
 - Can seek information and issue directives to:
 - Service providers
 - Intermediaries
 - Data centres
 - Corporates and other digital entities
4. **Global Collaboration:**
 - Works with **international cybersecurity bodies** for sharing threat intelligence and malware data

5. Legal Compliance:

- Operations adhere to the framework of the **Indian Constitution and laws**

Major Initiatives and Projects

- **Cyber Swachhta Kendra:** Botnet cleaning and malware analysis centre
- **National Cyber Coordination Centre (NCCC):** Real-time cyber threat monitoring and intelligence
- **Cyber Threat Intelligence Sharing Platform**

Cyber Abhyas Suvidha (CAS): Advanced skill development platform for cybersecurity

Judicial Pendency in India: Structural Challenges and Strategic Reforms

Context: India's judicial system is grappling with a severe pendency crisis, with over **5 crore cases** awaiting resolution across the Supreme Court, High Courts, and District Courts. This growing backlog has eroded public trust in the judiciary, a concern previously referred to by the President of India as the **"Black Coat Syndrome."**

Current Status of Pendency in Indian Courts

- **Total Pending Cases:**
 - **District Courts:** ~4.6 crore
 - **High Courts:** ~63.3 lakh
 - **Supreme Court:** ~86,700
- **Judicial Personnel Shortage:**
 - India has **only 15 judges per 10 lakh population**, falling significantly short of the **Law Commission's 1987 recommendation** of 50 judges per 10 lakh.
- **Case Disposal Rates:**
 - **Criminal cases** fare better, with **70.6%** disposed within a year.
 - **Civil cases** are significantly slower—only **38.7%** disposed within the same timeframe.
- **Judicial Vacancies:**
 - Out of **26,927 sanctioned judge positions**, **5,665 remain vacant**, with courts functioning at only **79% capacity**.

Key Structural Causes of Judicial Backlog

1. **Inadequate Judicial Strength:**
 - Persistently high vacancy rates at all levels of the judiciary compromise judicial efficiency and delay case resolution.

2. Civil Litigation Delays:

- A significant proportion of civil cases—especially property, contract, and family disputes—drag on for over five years.

3. Absence of Procedural Timelines:

- Lack of statutory deadlines for filings, hearings, and evidence collection allows frequent adjournments and fragmented proceedings.

4. Weak Infrastructure and Administrative Support:

- Shortage of courtrooms, support staff, and digital tools worsens delays, particularly in lower courts.

Government Initiatives to Address Pendency

1. e-Courts Mission Mode Project:

- **18,735 courts digitised, 99.4% WAN coverage, and 3,240 court-jail video links.**
- **Phase III (₹7,210 crore)** aims to create a **paperless, integrated digital judiciary.**

2. Judicial Infrastructure Enhancement:

- Court halls increased from **15,818 in 2014 to 23,020 in 2024**, with over **₹11,000 crore** in infrastructure investments.

3. Judicial Appointments:

- Since 2014, **976 High Court judges** and **62 Supreme Court judges** appointed; **district court strength** raised to **25,609 judges.**

4. Specialized and Fast-Track Courts:

- **866 Fast Track Courts (FTCs)** and **755 POCsO courts** operational.
- Over **2.5 lakh sensitive cases** disposed.

5. Alternate Dispute Resolution (ADR) Mechanisms:

- **Lok Adalats** have resolved **27.5 crore cases** since 2021.
- **Mediation Act, 2023** institutionalizes pre-litigation mediation.
- **Arbitration reforms** mandate strict timelines for commercial dispute resolution.

6. Legal Aid and Access Expansion:

- **90 lakh citizens** assisted via **Tele-Law.**
- **11,000 pro bono lawyers** engaged through **Nyaya Bandhu.**
- Legal literacy clubs set up in **89 law schools.**

The Way Forward: Reform Priorities

1. Judicial Capacity Building:

- **Increase sanctioned judicial strength** to match caseload demands.
- **Streamline appointments**, including reform of the **collegium system**, with transparent, time-bound processes.

2. Digital Justice and AI Integration:

- Expand e-courts, virtual hearings, automated case scheduling, and paperless workflows.
- Deploy the **FASTER system** for real-time transmission of court orders, particularly for bail and urgent matters.

3. Mandatory Alternate Dispute Resolution:

- Introduce **compulsory pre-litigation mediation** in civil and commercial cases.
- Develop a **certified national pool of trained mediators** and arbitrators to expedite resolutions.

4. Specialised Judicial Benches:

- Establish **domain-specific courts** (e.g., tax, environment, intellectual property, cybercrime) to increase efficiency and domain expertise.

5. Enhancing Legal Access and Awareness:

- Broaden access to legal aid through **mobile clinics, regional language judgments**, and **digitally accessible services.**
- Promote **legal literacy** through school curricula, **courtroom livestreams**, and public engagement initiatives.

Conclusion

India's burgeoning judicial pendency is symptomatic of deeper systemic inefficiencies—limited human resources, procedural rigidity, and

infrastructural inadequacies. Timely and affordable justice is a constitutional imperative and central to democratic governance. Through **institutional reform, digital innovation, ADR expansion, and greater access to legal services**, India's judiciary can shift from being a bottleneck of justice to a cornerstone of citizen trust and accountability.

e-Shram Portal

Recent Update

As of 22nd July 2025, over **30.95 crore** unorganized workers have registered on the **e-Shram portal**, according to the Ministry of Labour & Employment.

About e-SHRAM Portal

- Launched on **26th August 2021** by the Ministry of Labour and Employment.
- Created to support and empower the **unorganized workforce** in India.
- Aims to build the **National Database of Unorganised Workers (NDUW)**—the first-ever national registry for unorganized workers, including migrant laborers, construction workers, gig and platform workers, etc.
- The portal's language support has recently been expanded to **22 languages** through the Ministry of Electronics and Information Technology's **Bhashini project**. Earlier, it was only available in English, Hindi, Kannada, and Marathi.

Objectives

- Develop a **centralized database** for effective implementation of labor policies.
- Improve access to **social security schemes** for workers in sectors like agriculture, construction, domestic work, and street vending.
- Facilitate **job matching** and **skill development**.
- Help integrate unorganized workers into the **formal economy** to strengthen labor market resilience.
- Promote **financial inclusion** through direct benefit transfers and digital payments.

Eligibility Criteria

- Age between **16 and 59 years**.
- Employment in the **unorganized sector**, including self-employed, daily wage earners, and gig workers.

- Must have an **Aadhaar card**, a valid mobile number linked to Aadhaar, and a bank account.
- Should **not be registered** with the Employees' Provident Fund Organization (EPFO) or Employees' State Insurance Corporation (ESIC).

Key Features

- **Universal Account Number (UAN):** Each registered worker receives a UAN linked to Aadhaar for easy access to benefits.
- **Simplified Registration:** Minimal documentation required, with an option for self-registration.
- **Multilingual Access:** Portal supports multiple Indian languages to ensure inclusivity.
- **Grievance Redressal:** A dedicated helpline and support system handle worker queries and complaints.
- **Employment & Skill Linkage:** Registered workers can access job opportunities, apprenticeships, pension schemes, digital skilling, and state-specific programs.
- **Family Data for Migrant Workers:** Captures family details to facilitate benefits related to child education and women-centric schemes.
- **Data Sharing with Welfare Boards:** Construction workers' data is shared with Building and Other Construction Workers' (BOCW) Welfare Boards for scheme access.

Data Sharing Portal (DSP): Enables secure sharing of beneficiary data with state and UT governments for targeted implementation of welfare schemes.

Zonal Cultural Centres (ZCCs)

Overview

The government recently reviewed the progress in establishing **7 Zonal Cultural Centres (ZCCs)**.

About Zonal Cultural Centres

- Autonomous organizations functioning under the **Ministry of Culture**.
- Their mission is to **preserve and promote folk, tribal, and endangered art forms** across India.
- Emphasize **engaging youth** and celebrating India's cultural diversity.

Locations of ZCC Headquarters

- Patiala, Punjab
- Nagpur, Maharashtra

- Udaipur, Rajasthan
- Prayagraj, Uttar Pradesh
- Kolkata, West Bengal
- Dimapur, Nagaland

Thanjavur, Tamil Nadu

Digital Payment Index (DPI)

Context:

India's digital payment ecosystem has witnessed a significant surge, recording over **65,000 crore digital transactions** amounting to **more than Rs. 12,000 lakh crore** over the past **six financial years**.

About DPI:

- The **Reserve Bank of India (RBI)** has developed the **Digital Payment Index (DPI)** as a **semi-annual metric** to track the level of **digital payment adoption across the country**.
- The index is composed of several key parameters:
 - **Payment Enablers**
 - **Payment Infrastructure** (further divided into **demand-side** and **supply-side** factors)
 - **Payment Performance**
 - **Consumer Centricity**

According to the most recent RBI-DPI data, digital payment penetration in India has grown **over four times** since **2018**, indicating rapid expansion and deepening of digital financial services.

Skill Impact Bond (SIB)

Context:

The **Minister of State for Skill Development and Entrepreneurship** highlighted the Skill Impact Bond (SIB) as a model delivering measurable **social impact**.

About SIB:

- The **Skill Impact Bond** is **India's first development impact bond** focused on **skills training and employment**.
- **Objective:** To empower **50,000 Indian youth** with skills training over a **four-year period**, with **60%** of the targeted beneficiaries being **women**.
- **Launched in: 2021**

Implemented by: The Ministry of Skill Development and Entrepreneurship, through the **National Skill Development Corporation (NSDC)**.

Judicial Discretion in POCSO Bail: Navigating Legal Grey Areas and Evolving Trends

Recent Case Sparks Debate

A **special POCSO court in Mumbai** recently granted bail to a **40-year-old teacher** accused of sexually assaulting a minor, citing the **consensual nature of the relationship**. The ruling has reignited discussions around the **complexities of granting bail under the POCSO Act**, which is **notably stricter** than standard criminal laws.

Understanding the POCSO Act

The **Protection of Children from Sexual Offences (POCSO) Act, 2012** was enacted to **protect individuals under 18** from sexual abuse and exploitation. It provides a **comprehensive and child-sensitive legal framework**.

Key Features:

- **Gender-neutral protection:** Applies to all minors regardless of gender.
- **Covers a wide range of offences:** Includes penetrative and non-penetrative assault, sexual harassment, and child pornography.
- **Special courts:** Mandates child-friendly Special Courts for **speedy trials**.
- **Mandatory reporting:** Anyone aware of child sexual abuse is legally obligated to report it.
- **Presumption of guilt:** Unlike general criminal law, the **burden of proof lies on the accused**.
- **Confidentiality provisions:** Protects the minor's identity during investigation and trial.
- **Victim support and rehabilitation:** Ensures psychological and legal support for survivors.
- **Child-friendly procedures:** Emphasizes trauma-sensitive approaches during medical exams, court appearances, and testimony.

Bail Challenges and Judicial Discretion in POCSO Cases

Offences under the POCSO Act are both **cognizable and non-bailable**:

- **Cognizable:** Police can arrest without a warrant.
- **Non-bailable:** Bail is **not an automatic right** and is **subject to judicial discretion**.

While the Act does not define specific bail parameters, courts refer to **Section 483 of the**

Bharatiya Nagarik Suraksha Sanhita, 2023 (formerly **Section 439 CrPC**) to evaluate bail applications. Key considerations include:

- **Seriousness of the offence**
- **Prescribed punishment**
- **Risk of absconding**
- **Likelihood of evidence tampering**

Judicial Precedents Guiding Bail

- **Dharmander Singh v. State (2020, Delhi HC)**: Suggested non-binding factors like:
 - Ages of victim and accused
 - Nature of relationship
 - Age difference
 - Coercion or force
 - Conduct after the alleged incident
- **Deshraj @ Musa v. State of Rajasthan (2024, SC)**: Bail granted to an **18-year-old** in a relationship with a **16-year-old**, considering:
 - Minor age gap
 - Victim's consensual statement
 - Time already spent in custody
 - Delay in trial proceedings

These rulings show that **bail under POCSO relies heavily on case-specific facts** and **judicial balancing of liberty vs victim protection**.

Consent and Legal Ambiguities

Under POCSO, **consent from anyone under 18 is legally invalid**. As a result, even **mutual relationships between adolescents** can be prosecuted as statutory rape.

The Grey Zone:

- Courts have begun acknowledging **consensual adolescent relationships**

during bail hearings, especially when the minor confirms consent in a **magisterial statement**.

- However, in the **early investigation phase**, bail remains unlikely due to:
 - Lack of sufficient evidence
 - Need for victim's formal testimony
 - Risk of case tampering

Calls for Reform

Prominent voices like **Senior Advocate Indira Jaising** have urged the **Supreme Court to lower the age of consent to 16**, arguing that:

- Criminalizing adolescent relationships violates **individual rights**.
- It leads to **unjustified incarceration** of young people in consensual cases.

However, the **Central Government opposes this**, stating that:

- Reducing the age could **erode protections for minors**.
- It may **increase the risk of abuse** and exploitation under the guise of consent.

Conclusion

Bail under the POCSO Act continues to be a **legal and ethical tightrope**, balancing the need to **protect children** with concerns around **judicial fairness and personal liberty**. As courts increasingly grapple with **consensual adolescent relationships**, the **interpretation and application of the law are evolving**, though firmly rooted in the **child protection mandate** of POCSO.

INTERNATIONAL RELATIONS AND SECURITY

One Big Beautiful Bill: Trump's Controversial Tax and Spending Package

Overview

The U.S. Senate has narrowly advanced former President Donald Trump's "One Big Beautiful Bill"—a 940-page legislative package that proposes extensive tax reforms, major spending changes, and a significant debt ceiling hike. The Congressional Budget Office (CBO) estimates the bill could add \$3.3 trillion to the federal debt over the next decade.

Key Components of the Bill

Tax Reforms

- Extends the 2017 Trump-era tax cuts, primarily benefiting high-income earners
- Eliminates federal taxes on tips and overtime pay
- Raises the cap on SALT (State and Local Tax) deductions, benefiting residents of high-tax states

Spending Changes

- Cuts to social programs including significant reductions in Medicaid and SNAP (food assistance)
- Introduces stricter work requirements for beneficiaries of health and food aid
- Increases funding for defense (\$158 billion) and border security (\$170 billion)

Debt Ceiling

- Proposes a \$5 trillion increase to the federal debt limit to prevent a potential government default

Potential Impacts

Rising Federal Deficit

- Estimated to add \$3.3 trillion to the national debt over 10 years

Reduced Access to Social Services

- Stricter eligibility requirements could limit access to healthcare and nutrition support for low-income individuals

Political Controversy

- Democrats and moderates criticize the bill for offering tax breaks to the wealthy and making deep cuts to welfare
- Republican supporters argue the bill promotes economic growth, national security, and fiscal discipline

Conclusion

The "One Big Beautiful Bill" is a sweeping and controversial fiscal proposal. It combines extended tax cuts, major social spending reductions, and increased funding for defense and border control. While proponents view it as a transformative economic agenda, critics warn it could deepen inequality and significantly increase the federal deficit.

Ghana

- The Prime Minister will undertake a multi-nation tour from July 2 to July 9, visiting Ghana, Trinidad & Tobago, Argentina, Brazil, and Namibia to strengthen bilateral ties and global partnerships.
- **Location:** West Africa, bordered by Côte d'Ivoire (west), Burkina Faso (north), and Togo (east).
- **Geography:**
 - Lies along the Gulf of Guinea and the Atlantic Ocean.
 - Notable mountains: Mount Afadjato, Mount Djebobo, Mount Torogbani (near Togo border).
 - Major uplands: Kwahu Plateau and Gambaga Scarp.
 - Lake Volta, created by Akosombo Dam, is one of the largest artificial lakes globally.
 - The Volta River basin dominates drainage, including Black Volta, White Volta, and Oti rivers.
- **Economy:** Gold, cocoa, and oil form the backbone of the economy, fueling recent economic growth.

Capital: Accra.

Thailand (Capital: Bangkok)

- **Recent Political Update:**
 - Thailand's Constitutional Court suspended the Prime Minister over ethics violation.
- **Political Geography:**
 - Land borders: Myanmar (north), Laos (north and east), Cambodia (east), Malaysia (south).
 - Maritime borders: Gulf of Thailand (Vietnam) and Andaman Sea (Indonesia, India).
- **Geographical Features:**
 - Central Thailand known as "the rice bowl of Asia."

- India-Myanmar-Thailand (IMT) highway connects Moreh (India) to Mae Sot (Thailand) via Myanmar.
- Mekong River forms border between Laos and Thailand.
- 'Golden Triangle' (renamed 'Death Triangle' by India): confluence of Thailand, Laos, and Myanmar.
- Largest global producer of natural rubber.

Kra Isthmus (Southern Thailand) is a potential alternative route to Malacca Straits.

Operation Melon

- The **Narcotics Control Bureau (NCB)** Kochi unit busted "India's most prolific darknet drug syndicate" named **Ketamelon** in an operation called **Operation MELON**.
- **Recovered Items:**
 - LSD blots
 - Ketamine
 - Cryptocurrency
- **About the Drugs:**
 - **LSD (Lysergic Acid Diethylamide):** A potent hallucinogen affecting perception, mood, and thought.
 - **Ketamine:** Not an opioid, but an NMDA receptor antagonist, blocking certain brain neurotransmitters.
- Officials also found **TAILS OS**, an operating system used to access darknet markets securely and anonymously.

About Darknet

- The **darknet** is a hidden part of the internet accessible only through special protocols that ensure user anonymity and security.
- It is **not indexed** by standard search engines and requires tools like **Tor (The Onion Router)** to access.
- **Tor** is free software that anonymizes communication by routing data through multiple servers (onion routing), hiding the user's IP address.
- **Darknet vs. Dark Web vs. Deep Web:**
 - **Darknet:** The networks themselves that provide hidden, secure access.

- **Dark Web:** The content hosted on darknet networks.
- **Deep Web:** All content not indexed by search engines but accessible through normal browsers if the URL is known.

- The darknet also includes **friend-to-friend (F2F)** networks for secure communication among trusted users.

While darknet tech helps users bypass censorship and maintain privacy, it is often linked to illegal activities like illicit trade.

Iran Suspends Cooperation with IAEA Amid Escalating Tensions

Context:

Following joint airstrikes by the **United States and Israel** on Iranian nuclear facilities—triggered by an IAEA board resolution declaring Iran in violation of the **Nuclear Non-Proliferation Treaty (NPT)**—Iran has passed legislation suspending cooperation with the **International Atomic Energy Agency (IAEA)**.

About the IAEA's Role in the NPT Framework:

- The **IAEA** serves as the global nuclear watchdog under the NPT framework.
- It ensures **non-nuclear weapon states** comply with non-proliferation obligations by conducting inspections and monitoring nuclear programs.
- It also promotes the **peaceful use of nuclear technology** in member states.

Implications of Iran's Move:

Iran's suspension marks a serious setback to international nuclear diplomacy and reflects the broader **decline in the influence of global institutions**.

Trends Highlighting Erosion of Global Governance Structures:

- **Weakening of International Institutions:** Countries increasingly ignore or withdraw from international agreements (e.g., US exit from the Paris Agreement).
- **Crisis of Credibility:** Bodies like the UN often struggle to act decisively due to **lack of consensus** or influence from powerful states.
- **Institutional Ineffectiveness:** Many organizations lack **enforcement mechanisms, face funding constraints**, and operate under outdated frameworks.

- **Loss of Legitimacy:** The UN Security Council is criticized for its **imbalanced structure** and **veto privileges** held by just five countries.

Quad Launches Critical Minerals Initiative for Supply Chain Security

Context:

The Quad countries—India, the US, Japan, and Australia—launched the Critical Minerals Initiative to strengthen collaboration on **securing, diversifying, and recycling** critical mineral supply chains, which are essential for clean energy, electronics, and defense sectors.

Why This Matters:

1. Supply Chain Vulnerabilities:

- A handful of countries dominate the extraction and processing of critical minerals:
 - **DR Congo** supplies ~70% of the world's **cobalt**.
 - **China** refines the majority of the world's **cobalt (68%), lithium (60%), and nickel (65%)**.
- This centralization creates risks from **geopolitical tensions, export restrictions**, and market monopolies.
 - Example: In 2024, China restricted exports of **gallium and germanium**, crucial for semiconductors and defense.

2. Strategic Importance:

- **Critical minerals like lithium, cobalt, and rare earths** are essential for:
 - **Electric vehicles, battery storage, solar panels, missiles, and radar systems.**

3. Recycling and Sustainability Challenges:

- Many countries lack the **infrastructure for e-waste processing and mineral recovery**, making supply dependent on mining and imports.

Other Key Initiatives to Secure Critical Mineral Access:

India's Domestic Measures:

- **Mines and Minerals (Amendment) Act, 2023:** Allows private exploration of critical minerals.
- **National Critical Mineral Mission (NCMM)** and **National Mineral Policy (2019)** support sustainable sourcing.

International Collaborations:

- **Minerals Security Partnership (MSP):** India joined this US-led alliance in 2023.
- **KABIL (Khanij Bidesh India Ltd.):** A government JV to acquire mineral assets abroad.
 - **Example:** India's 2024 agreement with **Argentina** to jointly explore lithium reserves.

Operation MED MAX

- An operation by the Narcotics Control Bureau (NCB) targeting illegal pharmaceutical drug trade.
- **Achievements:** Dismantled a transnational drug trafficking syndicate operating across four continents.
- The syndicate used:
 - Encrypted digital platforms,
 - Drop shipping models,
 - Cryptocurrency for smuggling controlled medicines.

Highlights the convergence of digital technology, cryptocurrency, and global logistics in illicit trade.

Gaden Phodrang Trust

- **Context:** The 14th Dalai Lama reaffirmed that the Gaden Phodrang Trust will be the sole authority to recognize his reincarnation, reiterating a stance from 2011.
- **Definition & Origin:**
 - 'Gaden Phodrang' was originally the Dalai Lama's residence at Drepung Monastery, Lhasa, Tibet, evolving into the institutional base for the Dalai Lama lineage.
 - The Gaden Phodrang Trust is a registered non-profit based in Dharamshala, India, established in 2011, operating from the Dalai Lama's office.
- **Leadership:** Chaired by the 14th Dalai Lama and managed by close aides including Prof. Samdhong Rinpoche, a senior monk and former Kalon Tripa (Prime Minister) of the Central Tibetan Administration.
- **Historical Role and Mandate:**
 - Historically, from the 17th century, Gaden Phodrang was

both spiritual and political seat of the Dalai Lama in Tibet until exile in 1959.

- Post-1959, transformed into a spiritual trust supporting Tibetan exile and Buddhist continuity.
- Established formally in 2011 to oversee recognition of future Dalai Lama reincarnations and protect religious traditions from political interference.
- **Key Functions:**
 - Sole authority to recognize and validate the 15th Dalai Lama and successors per Tibetan Buddhist tradition.
 - Preservation of Tibetan spiritual heritage, rituals, teachings, and lineage.
 - Coordination with Tibetan institutions like Dalai Lama Trust (New Delhi) and Gaden Phodrang Foundation (Zurich) for charitable and outreach work.
 - Protects religious sovereignty from external interference, especially from China.
- **Process of Selecting the Dalai Lama:**
 - Spiritual and traditional process involving:
 - Signs and visions observed before and after the Dalai Lama's passing.
 - Consultations with senior lamas and oracles.
 - Divinations and rituals at sacred sites.

Final recognition decision rests solely with the Gaden Phodrang Trust, ensuring doctrinal authenticity.

Quad Nations Launch Critical Minerals Initiative to Cut Reliance on China

Quad Foreign Ministers Convene in Washington, DC:

At their second ministerial meeting in Washington, DC, the foreign ministers of India, Australia, Japan, and the United States—the Quad nations—reaffirmed their shared priorities across four strategic domains: maritime and transnational security, economic prosperity,

emerging technologies, and humanitarian cooperation.

They also strongly denounced the terror attack in Pahalgam, calling for swift justice against those responsible.

New Critical Minerals Initiative Unveiled:

One of the key outcomes of the meeting was the launch of the **Quad Critical Minerals Initiative**, a joint effort to establish secure and diversified supply chains for vital minerals and reduce dependence on China. These minerals are crucial for technologies such as electric vehicles (EVs), semiconductors, and defense equipment.

Strengthening Maritime and Logistics Cooperation:

The ministers also announced:

- The inaugural **Quad Indo-Pacific Logistics Network** field training exercise scheduled for this year.
- The launch of the **Quad Ports of the Future Partnership**, set to take place in Mumbai later in the year.

Addressing China's Dominance in Critical Minerals:

The Quad initiative is aimed at countering China's overwhelming control of the processing and refining of critical minerals. While rare earth elements are found globally, China leads in refining capabilities—particularly in producing **neodymium-iron-boron (NdFeB) magnets** used in EV motors, braking systems, and power steering.

Once led by the U.S. and Japan, the mineral processing industry has shifted to China, prompting renewed efforts by countries like Japan to rebuild their capabilities.

Supply Chain Vulnerabilities Exposed by Geopolitical Tensions:

China has previously retaliated against U.S. tariffs and global criticism by imposing restrictions on critical mineral exports, raising alarms over economic coercion and strategic vulnerabilities. Export restrictions have included requirements like end-use licenses and local government approvals, particularly limiting access for Indian companies.

India's EV Industry Faces Setbacks:

India's growing EV sector has been significantly impacted by China's export curbs on rare earth magnets. Despite repeated attempts, Indian automakers have struggled to get approvals from China for critical mineral imports.

Meanwhile, China is encouraging foreign companies to buy entire electric motor assemblies from Chinese firms instead of sourcing individual components like magnets.

Companies like Volkswagen have secured export permits after extensive lobbying—an advantage Indian firms haven't been able to replicate.

Foundation Laid by G7's Critical Minerals Strategy: The Quad's minerals initiative builds on the **G7 Critical Minerals Action Plan**, endorsed by India, which promotes partnerships with developing countries to enhance supply chain resilience and add value locally. G7 finance ministers have also backed the **World Bank-led RISE initiative**—Resilient and Inclusive Supply Chain Enhancement—to support these goals.

India's Strategic Steps: National Mission and Global Partnerships:

India's **₹16,300 crore National Critical Mineral Mission**, proposed by the Ministry of Mines, seeks external funding—potentially through RISE—for exploration, overseas acquisitions, research, and recycling.

India became part of the **Minerals Security Partnership (MSP)** in June 2023, joining G7 nations and others like Australia and South Korea.

India-US Collaboration Under the TRUST Framework

During Prime Minister Modi's February 2025 visit to Washington, India and the U.S. signed the **Transforming Relationship Utilizing Strategic Technology (TRUST)** initiative. This agreement focuses on co-developing extraction and processing technologies for critical minerals like lithium and rare earths, with an aim to build a sustainable and self-reliant mineral supply chain.

The Rise of the Global South and the Emerging World Order: India's Perspective
Context

India's Prime Minister recently emphasized that the **World Order established post-World War II** is undergoing significant transformation, largely influenced by the **emergence of the Global South** as a key player in international affairs.

Historical Background

- **Post-WWII World Order:** The global system became **bipolar**, dominated by the **United States** and the **Soviet Union**.
- **Post-Cold War Shift:** After the **Soviet Union's collapse in 1991**, the world transitioned into a **unipolar order** with the **U.S. as the sole superpower**.
- Today, the **unipolar era is fading**, giving rise to a **multipolar world**, with the **Global South** playing a pivotal role.

What is the Global South?

- The term refers to **less economically developed nations**, primarily located in the **Southern Hemisphere**, including most of **Africa, Asia, and Latin America**.
- The **Brandt Report (1980)** introduced the **North-South divide**, classifying nations based on development indicators like GDP, industrialization, and access to technology.

How the Global South is Shaping a New World Order

1. Economic Expansion

- The Global South now contributes to **40% of global trade (UNCTAD)**.
- Fast-growing economies like **China, India, Brazil**, and others are reshaping global financial and trade architectures.

2. Emergence of Alternative Institutions

- Countries of the Global South are promoting **multilateral development institutions** as alternatives to Western-led structures:
 - **New Development Bank (NDB)** by BRICS
 - **BRICS Contingent Reserve Arrangement (CRA)**

3. Assertive Global Diplomacy

- At forums like **COP27**, Global South countries successfully pushed for the **Loss and Damage Fund** to support climate-vulnerable nations.
- Growing demands for **reform of the United Nations, IMF, World Bank**, and greater representation in global decision-making platforms (e.g. G77, G20).

4. Demographic Advantage

- The Global South hosts the **majority of the world's population**.
- Many countries are entering a **demographic dividend phase**, presenting opportunities for

productivity, innovation, and market expansion.

5. South-South Cooperation

- Strengthening partnerships among developing nations in areas such as:
 - **Trade and technology transfer**
 - **Capacity-building**
 - **Humanitarian and disaster assistance**

Conclusion

The rise of the **Global South** marks a **decisive shift in international politics and economics**, challenging traditional Western dominance. As countries like **India gain influence**, they are calling for a **more balanced, inclusive, and representative world order**. This transformation signals a move toward **multipolarity**, where power is distributed more equitably across regions and voices from the Global South play a central role in shaping global norms.

Russia Officially Recognises the Taliban

Context:

- Russia became the first country to formally recognise the Taliban-led Islamic Emirate of Afghanistan since the Taliban took over in 2021.

About Russia:

- **Location:** Northern Eurasia, spanning Eastern Europe and Northern Asia.
- **Size:** Largest country in the world (~17 million sq. km) across 11 time zones.
- **Capital:** Moscow.
- **Neighbours:** Shares land borders with 16 countries (most in the world), including Norway, China, Ukraine, and Kazakhstan; maritime borders with Japan and the USA.
- **Governance:** Federal semi-presidential republic.
 - President: Vladimir Putin (Head of State)
 - Prime Minister: Mikhail Mishustin (Head of Government)
- **Geography:**
 - Mountain ranges: Ural (divides Europe and Asia), Caucasus (Mount Elbrus - highest peak in Europe), Altai, Sayan, Kamchatka.
 - Rivers & Lakes: Volga (Europe's longest river), Lena, Yenisei, Ob (Siberian rivers), Lake Baikal

(world's deepest freshwater lake), Lake Ladoga (Europe's largest lake).

- Landscapes include tundra, taiga, steppes, semi-deserts, and large permafrost areas.
- Rich in natural resources like oil, gas, metals, timber.

OPCW's 23rd Regional Meeting of National Authorities of States Parties in Asia — New Delhi

Event:

- OPCW, in collaboration with India's National Authority Chemical Weapons Convention (NACWC), hosted the 23rd regional meeting in New Delhi.

About OPCW:

- Implementing body of the Chemical Weapons Convention (CWC).
- CWC was adopted in 1992, enforced from 1997.
- First multilateral disarmament treaty eliminating a whole class of weapons of mass destruction within a fixed timeline.
- Has 193 member states, including India (original signatory).
- Awarded the Nobel Peace Prize in 2013.

India's Role:

- NACWC implements the CWC in India under the Chemical Weapons Convention Act, 2000.
- In 2024, the Indian Chemical Council (ICC) received the OPCW-The Hague Award for advancing CWC goals and enhancing chemical industry safety in India — the first chemical industry body worldwide to earn this honor.

ICC is India's oldest chemical industry association.

International Olympic Committee (IOC) Flags Issues Amid India's 2036 Olympics Bid

Context:

- IOC recently raised concerns over governance issues in the Indian Olympic Association and a rise in doping violations as India pushes to host the 2036 Olympics.

About IOC:

- Founded in 1894.
- Independent, nonprofit international organization.

- Acts as the guardian of the Olympic Games and promotes ethics and good governance in sports worldwide.
- Members represent the IOC globally, not their countries.

Fully privately funded.

Argentina

Context

The Prime Minister of India is on an official visit to Buenos Aires, aiming to strengthen bilateral cooperation in defence, energy, agriculture, and trade.

Geographical Overview

- **Location:** Situated in the southern part of South America.
- **Capital:** Buenos Aires
- **Bordering Countries:**
 - West: Chile
 - North: Bolivia and Paraguay
 - Northeast: Brazil and Uruguay
 - East: Bordered by the Atlantic Ocean

Physical Geography

- **Andes Mountains:** Stretch along Argentina's western frontier; includes Mount Aconcagua (6,959 m) — the highest peak in South America.
- **Major Rivers:**
 - Paraná
 - Uruguay
 - Pilcomayo
 - Bermejo
 - Santa Cruz

Key Landforms:

- **Pampas:** Vast fertile plains ideal for agriculture and cattle ranching.
- **Patagonia:** Located in the south; characterized by cold, dry winds, glaciers, and steppe landscapes.
- **Gran Chaco & Mesopotamia:** Subtropical lowlands with seasonal wetlands and rivers.
- **Coastline:** Stretches approximately 2,900 miles (4,700 km) along the Atlantic Ocean.

India-Argentina Relations

Diplomatic Relations

- Established in 1949

- The two countries share deepening ties in political, economic, and scientific collaboration.

Trade & Economic Cooperation

- Trade sectors include:
 - Agricultural commodities
 - Pharmaceuticals
 - Industrial machinery
- The trade volume has seen steady growth over the years.

Strategic Sectors

- **Energy & Mining:**

India is actively investing in Argentina's lithium reserves, which are vital for electric vehicle (EV) batteries and clean energy solutions.

India-Africa Relations: A Strategic Partnership

Recent Development:

- During a state visit to Ghana, the Indian Prime Minister reaffirmed India's support for Africa's development as equal partners.

Key Dimensions of India-Africa Engagement:

- **Global South Voice Amplification:** African Union included as a permanent member of the G20 during India's 2023 presidency
- **Joint Partnerships:** Example: India-Japan Asia-Africa Growth Corridor (AAGC) for sustainable development
- **Developmental Framework:**
 - India supports Africa's Agenda 2063
 - India is Africa's 4th largest trading partner with bilateral trade of US\$100 billion and investments of over US\$75 billion (June 2024)
- **Reformed Multilateralism:**
 - Advocates for greater African representation in global institutions such as the UN Security Council
 - Supports the Ezulwini Consensus
- **Renewable Energy & Climate Change Cooperation:**
 - African nations participating in the International Solar Alliance (ISA), Global Biofuel Alliance, and Coalition for Disaster Resilient Infrastructure (CDRI)

- **Capacity Building:**
 - Supports the AU's goal of "Educate an African Fit for the 21st Century" through training and skill development initiatives
- **Cultural and People-to-People Ties:**
 - e-Visa facilities extended to 33 African countries

Challenges in India-Africa Relations

- **China's Dominance:** Through aggressive financing, infrastructure diplomacy, and Belt and Road Initiative (BRI) projects
- **Project Implementation Delays:** Issues with completion timelines undermine India's credibility
- **Nuclear Policy Disagreements:** For example, South Africa supports global non-proliferation treaties, while India resists joining under current discriminatory terms

Conclusion

- India's Africa engagement is guided by **Vision SAGAR** (Security and Growth for All in the Region), now expanded to **Vision MAHASAGAR** (Mutual and Holistic Advancement of Security and Growth Across Regions)
- These efforts reflect India's sustained commitment to the Global South and Africa's development journey

AI Warfare and Multi-Domain Operations: Challenges and Opportunities for India

As the nature of warfare transforms through the integration of artificial intelligence (AI), global military dynamics are shifting rapidly. Nations like China are pioneering AI-enabled multi-domain operations, creating strategic challenges for countries like India. This article examines how AI is revolutionizing modern combat—from autonomous systems and data-driven decision-making to cyber and electromagnetic warfare—and explores the critical role of energy, particularly nuclear power, in sustaining this AI-driven defence paradigm. It also emphasizes the urgency for India to bridge its technological and energy deficits to remain competitive in this emerging landscape.

1. China's Lead in Military AI Integration

China has taken a clear lead in operationalizing AI within its military, well before the public launch of models like DeepSeek. Under its concept of "**intelligentised warfare**," the People's Liberation Army (PLA) has integrated AI into several core functions:

- **Artillery modernization** using AI to increase firing accuracy and reduce reload times.
- **Generative AI in drones**, enabling autonomous targeting and destruction of enemy radar systems.
- **DeepSeek's capabilities** are expected to further accelerate China's AI deployment across domains.

This early and rapid development places China at a significant strategic advantage.

2. The China-Pakistan AI Axis: Strategic Implications for India

China's collaboration with Pakistan in military AI is raising alarm in Indian strategic circles. Since the establishment of Pakistan's **Centre of Artificial Intelligence and Computing** in 2020, Chinese assistance has focused on:

- **Cognitive electronic warfare** and **AI-assisted decision-making systems**.
- During **Operation Sindoor**, it is suspected that Pakistan leveraged Chinese satellite data and AI analytics for real-time targeting and movement tracking.

This growing axis underscores the need for India to take urgent countermeasures in defence AI.

3. C4ISR and the Case for Civil-Military Fusion

A cornerstone of AI-driven warfare is effective **C4ISR** (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance). Mastery in virtual domains such as:

- **Cyberspace**
- **Space operations**
- **Electromagnetic spectrum control**

...demands seamless **civil-military integration**. China's fusion of its civilian tech industry with military objectives exemplifies this model, while India still lags in implementing such synergy.

To bridge this gap, India must:

- Promote private-sector collaboration in defence technology.
- Accelerate investments in indigenous C4ISR platforms.

4. Energy Infrastructure: The Hidden Pillar of AI Warfare

AI-enabled warfare operates on vast amounts of data requiring constant and massive energy inputs. From machine learning and NLP to big data analytics, the energy demand is unprecedented.

- **Nuclear energy** is increasingly seen as the only viable long-term solution to power AI infrastructure, especially data centers.
- Without a reliable and high-capacity energy grid, AI systems—no matter how advanced—cannot function optimally in real-time military scenarios.

5. India's Nuclear Energy Gap: A Strategic Vulnerability

India's current nuclear power capacity is only **7.5 GW**, about one-third of South Korea's. This poses a serious hurdle in supporting AI-intensive military systems.

Key concerns include:

- **Inadequate nuclear infrastructure** to support defence AI growth.
- **Grid instability** due to over-reliance on renewables and underinvestment in thermal backup.
- **Need for Small Modular Reactors (SMRs)** co-located with AI data centers to provide decentralized, consistent energy supply.

Strategic planners are now revisiting nuclear and private thermal options to ensure energy resilience.

6. India's Legacy in Military AI Development

India was an early entrant in military AI, having established the **Centre for Artificial Intelligence and Robotics (CAIR)** under DRDO in 1986. CAIR has worked on:

- Autonomous surveillance and reconnaissance systems.
- AI in logistics and combat support operations.

However, despite this head start, India's advancements have been incremental compared to China's aggressive AI expansion and its active support to Pakistan's military tech sector.

7. Global Case Studies: Ukraine and Israel

Recent conflicts have highlighted how AI is already shaping warfare:

- **Ukraine** has effectively used AI-enabled drones for battlefield awareness and targeting.
- **Israel's "Lavender" system** reportedly identified over **37,000 Hamas targets**, making the Gaza conflict a precedent-setting "AI war."

These examples offer valuable lessons for India in operationalizing AI for real-world combat scenarios.

Conclusion: Technology + Energy = Strategic Superiority

AI is redefining the nature of modern warfare, offering unprecedented speed, precision, and autonomy. However, its success is fundamentally tied to stable and scalable energy infrastructure. For India to emerge as a serious player in AI-driven, multi-domain operations, it must invest not only in cutting-edge defence technologies but also in the **energy ecosystems**—particularly nuclear power—that will fuel them.

India's window for strategic catch-up is narrowing. Bridging its AI, energy, and civil-military integration gaps is no longer optional—it's essential.

India Opposes Amendments to Plant Treaty over Sovereignty and Farmers' Rights

India has strongly opposed proposed amendments to the **International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)**, raising alarm over potential threats to national sovereignty, farmers' rights, and federal autonomy. As negotiations unfold in Peru, Indian officials, agricultural experts, and farmers' groups are united in rejecting proposals that could obligate the country to relinquish control over its plant genetic resources.

1. The Plant Treaty: An Overview

The **International Treaty on Plant Genetic Resources for Food and Agriculture**, adopted in 2001 under the **Food and Agriculture Organization (FAO)** of the United Nations, is a legally binding agreement aimed at:

- Conserving **plant genetic resources for food and agriculture (PGRFA)**,
- Promoting their **sustainable use**, and
- Ensuring **equitable sharing of benefits** from their use, particularly in research and development.

India ratified the treaty in 2002.

2. What's Changing? The Peru Negotiations and Annex I Amendments

The **10th Governing Body session of the Plant Treaty**, taking place in Peru from **July 7 to 11, 2025**, is reviewing a proposal to amend **Annex I** of the treaty. The key change under consideration is:

Expanding the Multilateral System (MLS) to cover *all* PGRFA—effectively requiring countries to place all plant germplasm into a shared international system.

This would replace the treaty's current scope, which only mandates access to a list of select food crops vital to global food security.

3. India's Core Objections: Sovereignty and Farmers' Rights at Stake

India's concerns are focused on how these changes would affect its **seed sovereignty** and **farmers' autonomy**. Major farmers' groups, including the **Bharath Beej Swaraj Manch** and **Rashtriya Kisan Mahasangh**, have expressed opposition, arguing that:

- The expansion of Annex I would **strip India of its right to control access** to its plant genetic resources.
- It risks **overriding national laws and benefit-sharing frameworks** in favor of a global, one-size-fits-all system.
- **Farmers' traditional rights**—to save, use, exchange, and sell seeds—would be diluted under a globally standardized **Material Transfer Agreement (SMTA)**.
- It contradicts the treaty's original mandate of restricted access for only key staple crops.

4. Institutional and Diplomatic Position

India's delegation to the Peru meeting is led by **Dr. Sunil Archak**, Principal Scientist at the **National Bureau of Plant Genetic Resources (NBPGR)** under the **Indian Council of Agricultural Research (ICAR)**. He also co-chairs the Ad Hoc Working Group negotiating the proposed changes.

ICAR has assured that India's national interests and farmers' rights will be protected, stating that Dr. Archak is well-qualified to represent the country's position.

5. Federal Concerns: States Demand Consultation

The **Kerala Government** has raised constitutional concerns, pointing out that:

- **Agriculture is a State subject** under **Schedule VII** of the Indian Constitution.
- Any treaty commitment that affects seed and biodiversity regulation must involve **State Governments and local biodiversity boards**.
- The current process lacks adequate domestic consultation and risks **centralizing control over plant genetic resources**, marginalizing State authority.

6. Broader Implications for India's Agricultural Policy

If the proposed amendments are adopted:

- India would **lose flexibility** in managing access to its **indigenous plant varieties**.
- There may be **reduced incentives** for local seed development, conservation, and community innovation.
- Foreign entities could gain **easier access to India's genetic wealth** without proportional obligations for benefit-sharing.
- The mandatory use of **SMTA** could hinder India's ability to set differential access rules based on germplasm type or origin—**weakening protection under bioprospecting and IP regimes**.

Conclusion: A Critical Moment for India's Seed Sovereignty

India's resistance to the proposed changes in the Plant Treaty reflects a larger battle for control over biological heritage and traditional agricultural practices. As the negotiations continue in Peru, India's stance sends a clear message: **international frameworks must not come at the cost of national sovereignty, farmers' rights, and constitutional federalism**.

Indian Army Unveils Comprehensive Defence Modernisation Roadmap

The Indian Army has introduced a forward-looking modernisation roadmap aimed at transforming its warfighting capabilities to meet the complex demands of future multi-domain warfare. The plan focuses on technological integration, operational synergy, and indigenous innovation.

Key Pillars of the Modernisation Strategy

1. Advanced Weapon Systems

- Focus on the development of **next-generation weapons**, including:

- Hypersonic glide vehicles and hypersonic air-breathing engines (HEBs)
- Fourth to sixth-generation missiles
- Shift from conventional munitions to **smart and precision-guided systems**, such as **loitering munitions**.
- Emphasis on **directed energy weapons** (high-energy lasers, microwaves) for:
 - Counter-drone operations
 - Missile defence
 - Anti-satellite warfare

2. Cyber and Electronic Warfare (EW)

- Drive towards **spectrum dominance** through:
 - Autonomous EW platforms
 - Advanced cyber defence tools
 - Resilient satellite-based communication and surveillance systems

3. Soldier-Centric Technological Enhancements

- Equip soldiers with **next-gen battlefield technology**, including:
 - Exoskeletons and human augmentation devices
 - Smart body armour
 - Augmented Reality (AR)-based command and control systems
 - AI-powered helmets, wearable electronics, and real-time health monitoring systems

4. Logistics and Infrastructure Modernisation

- Transition to **intelligent and sustainable logistics** by leveraging:
 - Artificial Intelligence (AI)
 - Blockchain
 - Internet of Things (IoT)
- Develop **green, cyber-resilient logistics infrastructure** capable of supporting modern warfare requirements.

5. Tri-Sectoral Synergy

- Emphasis on coordinated efforts between:
 - **Armed forces** to define precise operational requirements
 - **Policymakers** to formulate enabling frameworks
 - **Industry players** to deliver innovative, scalable, and customised solutions

National Initiatives Supporting Defence Modernisation

- **Integrated Capability Development Plan (ICDP)**: A 10-year roadmap for long-term defence planning.
- **Specialised Military Agencies**:
 - Defence Space Agency
 - Defence Cyber Agency
 - Armed Forces Special Operations Division
- **iDEX (Innovations for Defence Excellence)**:
 - Promotes startups and innovators
 - Offers financial support up to ₹1.5 crore per project
- **Atmanirbhar Bharat in Defence**:
 - Positive indigenisation lists banning import of selected items
 - **SRIJAN** portal for industry collaboration
 - **Liberalised FDI** norms in defence R&D to boost private sector participation

Conclusion

The Indian Army's modernisation roadmap reflects a decisive shift toward **tech-driven, network-centric warfare**. By investing in cutting-edge systems, soldier welfare, and seamless logistics—supported by institutional reform and public-private collaboration—India aims to build a future-ready force that is agile, autonomous, and resilient.

17th BRICS Summit

Context:

India's Prime Minister participated in the 17th BRICS Summit held in Brazil, where **Indonesia was welcomed as a full BRICS member**. The summit adopted the **Rio de Janeiro Declaration**, emphasizing global governance reforms and sustainable development.

About BRICS:

- **What is BRICS?**
 - An intergovernmental group of emerging economies initially comprising Brazil, Russia, India, China, and South Africa.
 - The acronym originated in 2001 by economist Jim O'Neill; South Africa joined in 2010.

- **Formation and Growth:**

- Established in 2009 with the first summit in Yekaterinburg, Russia.
- Transitioned from informal dialogue to a structured cooperation platform.
- Expanded in 2024-25, forming BRICS+ or Expanded BRICS.

- **Objectives:**

- Promote multipolarity and cooperation among Global South nations.
- Advocate reforms in international bodies like the UNSC, IMF, and World Bank.
- Enhance economic, technological, and developmental collaboration.
- Provide a counterbalance to Western-led groups such as the G7.

- **Membership:**

- Original members: Brazil, Russia, India, China, South Africa.
- New members (2025): Egypt, Ethiopia, Iran, UAE, and Indonesia.

- Leaders reaffirmed full support for India's BRICS Chairmanship in 2026 and the hosting of the 18th Summit in India.

Rio de Janeiro Declaration Highlights

- **Global Governance Reform:**

- Calls for urgent reforms in UNSC, IMF, WTO to better represent 21st-century realities and the Global South's voice.

- **Peace and Security:**

- Condemns terrorism, specifically referencing the Pahalgam attack in India.
- Demands global action against terror sponsors and zero tolerance for terrorism.

- **Technology & AI:**

- Advocates responsible AI governance balancing regulation and innovation.
- Proposes creating a BRICS Science & Research Repository accessible to the Global South.

- **Economic & Financial Affairs:**

- Emphasizes sustainable, demand-driven funding through the New Development Bank (NDB).
- Stresses building resilient supply chains, especially for critical minerals.

- **Indonesia's Inclusion:**

- Indonesia is the first Southeast Asian country to join BRICS, strengthening ties across Asia, Africa, and Latin America.

Prime Minister's Visit to Brazil

Context:

The visit follows stops in Argentina and Trinidad and Tobago as part of a diplomatic tour focusing on strengthening relations with Latin America and the Caribbean (LAC) region.

About the LAC Region:

- Comprises South America, Central America, and the Caribbean with 45 countries.

India-LAC Economic Relations:

- Total trade in 2023-24: USD 35.73 billion (exports: USD 14.50 billion).
- India aims to increase bilateral trade to USD 100 billion by 2027-28.
- LAC ranks 8th among India's import sources; India is 9th among LAC's export partners.

Trade Details:

- **Major Imports from LAC:** Crude and petroleum products, pearls, precious stones, vegetable oils.
- **Major Exports to LAC:** Manufactured goods such as motor vehicles, chemicals, and mineral fuels.

Trade Agreements:

- Preferential Trade Agreement with MERCOSUR.
- Comprehensive Economic Partnership Agreement with Chile.
- Ongoing Free Trade Agreement negotiations with Peru.

Strategic Cooperation:

- LAC supplies critical minerals like gold, copper, and lithium.
- India maintains strong ties with regional blocs: CELAC, SICA, and CARICOM.

BRICS Summit 2025: Advancing Global South Cooperation for Inclusive and Sustainable Governance

Introduction

The 17th BRICS Summit convened in Rio de Janeiro, Brazil, from 6–7 July 2025, under the overarching theme, "*Strengthening Global South Cooperation for a More Inclusive and Sustainable Governance*." The Summit culminated in the adoption of the *Rio de Janeiro Declaration*, reflecting a significant strategic reorientation toward greater inclusivity, expanded membership, and enhanced South-South cooperation.

Reaffirmation of the BRICS Vision and Core Principles

The Summit underscored the enduring BRICS spirit, rooted in mutual respect, sovereign equality, democratic values, and inclusiveness. Member states recommitted to cooperation under the established tripartite framework encompassing:

1. **Political and Security Cooperation**
2. **Economic and Financial Collaboration**
3. **Cultural and People-to-People Exchanges**

Furthermore, BRICS reiterated its commitment to peaceful coexistence, inclusive development, and reform of global governance institutions to better reflect the interests of emerging and developing economies.

Expansion of Membership and Strategic Partnerships

A notable outcome of the 2025 Summit was the expansion of BRICS membership, with **Indonesia** formally joining as a full member. In addition, **11 new partner countries** were welcomed: Belarus, Bolivia, Kazakhstan, Cuba, Nigeria, Malaysia, Thailand, Vietnam, Uganda, and Uzbekistan. This expansion is emblematic of an evolving multipolar international order and reinforces solidarity among Global South nations.

Key Initiatives and Declarations

The Summit launched several pivotal initiatives:

- **BRICS Leaders' Framework Declaration on Climate Finance**
- **Statement on the Global Governance of Artificial Intelligence (AI)**
- **BRICS Partnership for the Elimination of Socially Determined Diseases**

These initiatives underscore BRICS' commitment to inclusive technological innovation, equitable health systems, and climate action.

Strategic Priorities and Thematic Commitments

1. Multilateralism and Global Governance Reform

The *Rio de Janeiro Declaration* reaffirmed the necessity for equitable, accountable, and effective multilateralism. BRICS members endorsed the United Nations' *Pact for the Future*, including the *Global Digital Compact* and the *Declaration on Future Generations*, advocating for shared responsibility and equitable representation in global institutions.

2. Peace, Security, and Development

Concerns were expressed over increasing global military expenditures and persistent regional conflicts. BRICS rejected narratives linking climate change to security threats, instead advocating for development-oriented solutions addressing poverty, food insecurity, and environmental crises.

3. Economic, Trade, and Financial Cooperation

The Summit reviewed progress under the *Strategy for BRICS Economic Partnership 2025* and welcomed the development of the *Strategy for BRICS Economic Partnership 2030*. Core areas of focus include the digital economy, trade and investment facilitation, financial integration, and sustainable development. Member states reaffirmed support for a transparent, rules-based multilateral trading system.

4. Climate Action and Sustainability

BRICS reaffirmed its commitment to the Paris Agreement and the principles of the United Nations Framework Convention on Climate Change (UNFCCC), particularly *Common but Differentiated Responsibilities* (CBDR) and recognition of national circumstances. Members pledged full support for COP-30 in Brazil (Belem) and endorsed India's bid to host COP-33 in 2028.

5. Social and Human Development

The Summit emphasized inclusive development through youth empowerment, gender equity, disability inclusion, urbanization management, and migration governance. Demographic transitions were acknowledged as both developmental challenges and opportunities.

India's Role and Strategic Gains

India played a pivotal role in shaping the BRICS 2025 agenda. Prime Minister Narendra Modi unveiled India's vision for the 2026 BRICS Presidency under the acronym **BRICS: Building Resilience and Innovation for Cooperation**

and Sustainability, aligning with the G20 theme of *"People-centricity and Humanity First."*

India emerged as a key proponent on issues such as:

- De-dollarization
- Climate finance
- Digital governance
- Institutional reform

Although a unified BRICS currency was ruled out, India actively participated in discussions around **BRICS Pay** and national currency settlement frameworks. Furthermore, the **New Development Bank** launched the **BRICS Multilateral Guarantee (BMG)** mechanism to mobilize private investment in infrastructure and climate-related projects.

India-China Bilateral Engagement

A high-level bilateral dialogue between Prime Minister Modi and President Xi Jinping resulted in agreements to:

- De-escalate tensions along the Line of Actual Control (LAC)
- Resume border patrol operations

These developments could potentially restore investor confidence, particularly in strategic sectors such as electronics and manufacturing.

Geopolitical Tensions and U.S. Response

BRICS' growing geopolitical relevance, now representing **45% of the global population** and contributing **35% to global GDP**, has elicited critical responses from the United States.

Former President Donald Trump issued tariff threats:

- A **10% tariff** on nations aligning with what he termed "anti-American policies" of BRICS.
- A **100% tariff** on BRICS members reducing dollar usage in international trade.

India adopted a calibrated approach. External Affairs Minister S. Jaishankar emphasized that India's push for alternative trade settlement mechanisms is motivated by pragmatic considerations rather than anti-dollar sentiment. Notably, India resisted using the **Chinese yuan** for Russian oil imports, signaling reluctance to accept Chinese monetary dominance within BRICS.

Conclusion

The BRICS Summit 2025 represents a pivotal moment in the evolution of South-led multilateralism. The Summit reinforced BRICS'

positioning as a credible alternative to traditional Western-dominated governance institutions and illustrated the bloc's expanding influence in global decision-making.

India's assertive engagement and forthcoming 2026 Presidency underscore its growing leadership within the Global South. India's nuanced stance on financial innovation within BRICS—balancing strategic autonomy, economic risk mitigation, and the pursuit of a multipolar order—highlights its pragmatic diplomacy and emerging global stature.

UAE Nomination-Based Golden Visa Scheme Context:

The United Arab Emirates has launched a new nomination-based Golden Visa program specifically targeting Indian and Bangladeshi nationals. This visa offers lifetime residency without requiring applicants to invest in property or businesses in the UAE.

About the UAE Golden Visa

- **Definition:**

The Golden Visa is a long-term residency permit that allows foreign nationals to live, work, study, or establish businesses in the UAE without needing a local sponsor.

- **Objectives:**

- To attract global talent in areas such as science, culture, trade, and innovation.
- To enhance the UAE's stature as a global center for skilled professionals and entrepreneurs.
- To strengthen strategic relationships with key countries like India under the Comprehensive Economic Partnership Agreement (CEPA).
- To diversify the UAE economy beyond oil by fostering knowledge-driven development.

Key Features of the Golden Visa

- **Lifetime Residency:** Residency is granted indefinitely without any renewal requirements, even if assets are sold.
- **One-Time Fee:** A fixed payment of AED 100,000 (approximately ₹23.3 lakh) applies.
- **No Investment Needed:** Unlike previous schemes, there is no need for property purchase or business investments.

- **Sponsorship Benefits:** Visa holders can sponsor family members of any age and an unlimited number of domestic staff.
- **No Sponsor Requirement:** Applicants are not required to have a UAE-based sponsor, offering complete independence.
- **Flexible Residency:** Visa holders may live outside the UAE for more than six months without losing residency status.
- **Multiple-Entry Starter Visa:** A six-month multiple-entry visa is provided initially to complete formalities.
- **'One Touch' Service:** A streamlined online portal simplifies documentation and renewal processes.

New Provisions for Indian Nationals

- **Nomination-Based Eligibility:** Indians can now qualify for the Golden Visa without any property or business investments.
- **Selection Criteria:** Candidates are chosen based on their professional qualifications, social contributions, and potential in fields like science, culture, startups, trade, or finance.
- **Pilot Phase:** The initial rollout of this nomination system covers India and Bangladesh.

Significance for India-UAE Relations

- Enhances people-to-people connections between India and the UAE, benefiting the skilled Indian diaspora.
- Supports the objectives of the India-UAE CEPA (signed in 2022) by enabling greater mobility and exchange of talent.

Facilitates easier access for Indian professionals to opportunities within the UAE market.

Namibia

Context:

The Indian Prime Minister visited Namibia—the first visit by an Indian PM in 27 years—to strengthen bilateral relations, sign crucial agreements including the launch of UPI (Unified Payments Interface), and bolster ties with the Global South.

About Namibia

- **Location:** Situated in southwestern Africa, Namibia borders the Atlantic Ocean and acts as a strategic gateway to Africa's interior.

- **Capital:** Windhoek.
- **Neighbours:** Shares borders with Angola, Zambia, Botswana, South Africa, and the Atlantic Ocean.

Geographical Features

- **Major Rivers:** Kunene, Okavango, Zambezi, and Orange rivers form natural borders and support irrigation and regional cooperation.
- **Deserts:**
 - *Namib Desert:* A hyper-arid region along the west coast, famous for the Skeleton Coast and rich mineral deposits like diamonds and uranium.
 - *Kalahari Desert:* Located in the east, a semi-arid sandy region transitioning into savanna grasslands, supporting limited pastoralism.
- **Mountains:** Brandberg Mountain, at 2,573 meters, is Namibia's tallest peak and part of the western escarpment, renowned for ancient rock art.
- **Central Plateau:** This elevated area is Namibia's main agricultural zone, home to notable features such as Fish River Canyon and the saline Etosha Pan.
- **Soil Types:** Fertile soils are found mainly in the Otavi Highlands and Caprivi Strip, while much of the rest of Namibia has infertile sandy or rocky soils.

Climate: Characterized by arid to semi-arid conditions. Coastal rainfall is minimal (less than 50 mm annually), whereas the Caprivi Strip receives over 600 mm. Droughts are common in the interior.

Humanitarian Crisis in Sudan

Context:

The United Nations has raised serious concerns over the deteriorating humanitarian situation in **El Fasher**, the capital of **North Darfur province** in **Sudan**, amid ongoing conflict and instability.

About Sudan

- **Capital:** Khartoum
- **Political Attributes:**
 - Sudan is the **third-largest country in Africa**.
 - **Land Borders:**

- **North:** Egypt
- **East:** Eritrea and Ethiopia
- **South:** South Sudan
- **West:** Central African Republic and Chad
- **Northwest:** Libya
- **Geographic Characteristics:**
 - **Maritime Boundary:** Borders the **Red Sea** on the east.
 - **Major River:** The **Nile River**, along with its tributaries, flows from south to north, draining the majority of the country.
 - **Highest Peak:** **Marrah Mountains**
 - **Natural Resources:**
 - Petroleum

Small deposits of iron ore, copper, chromium ore, zinc, tungsten, mica, silver, and gold

Red Sea

Context:

Cargo ships in the **Red Sea** continue to be attacked as **Houthi rebels** from Yemen claim to have sunk another vessel.

About the Red Sea

- **Geography:**
 - A **marginal sea** located in the **northwest of the Indian Ocean**.
 - **Connects to:**
 - **Gulf of Aden** via the **Strait of Bab El Mandeb** (south).
 - **Mediterranean Sea** through the **Suez Canal** (north).
- **Bordering Countries:**
 - **Western Shore:** Egypt, Sudan, Eritrea
 - **Eastern Shore:** Saudi Arabia, Yemen
 - **Northeast via Gulf of Aqaba:** Israel and Jordan
- **Northern Division:**
 - **Gulf of Suez** (northwest)
 - **Gulf of Aqaba** (northeast)
- **Environmental Facts:**
 - Among the most saline seas globally.
 - Receives negligible precipitation.

Lacks inflow from rivers.

Jaa Mata Exercise

Context:

The Japanese Coast Guard ship **Itsukushima** docked in Chennai to participate in the **Jaa Mata** joint sea exercise with the Indian Coast Guard.

About Jaa Mata

- **Meaning:** "See you later" in Japanese
- **Nature:** Bilateral maritime exercise between **India and Japan**
- **Purpose:**
 - Strengthen **interoperability**
 - Enhance **combat readiness**
 - Improve **joint operational capabilities** between both coast guards

Central Drugs Standard Control Organisation (CDSCO)

Context:

The CDSCO has issued recommendations to dispose of **17 drugs** (including Fentanyl, Tramadol, Diazepam) by flushing them to avoid harm to pets and people.

About CDSCO

- **Authority Type:** India's **Central Drug Authority**
- **Parent Organization:** Directorate General of Health Services, **Ministry of Health & Family Welfare**
- **Legislative Framework:** Operates under the **Drugs and Cosmetics Act, 1940**
- **Functions:**
 - **Regulates drug imports** through licensing
 - **Approves** new drugs and oversees clinical trials
 - **Bans** harmful or non-compliant drugs and cosmetics
 - Convenes **Drug Consultative Committees (DCC)** and **Drugs Technical Advisory Board (DTAB)**
- **Centre-State Division:**
 - **State Governments:** Oversee manufacture, sale, and distribution

Central Authority: Responsible for **new drug approvals and import regulation**

Digital Platforms and Terrorist Financing: Insights from the **FATF Report on Pulwama and Gorakhnath Attacks**

The **Financial Action Task Force (FATF)**, in its recent publication titled "*Comprehensive Update on Terrorist Financing Risks*," draws attention to the escalating misuse of digital platforms in facilitating terrorist activities. The report specifically cites the **Pulwama (2019)** and **Gorakhnath Temple (2022)** attacks as cases where technologies such as **online payment systems, VPNs, social media, and e-commerce platforms** were instrumental in the execution of these acts.

Overview of the FATF

Established in 1989 during the G7 Summit in Paris, the FATF is an **intergovernmental policy-making body** committed to formulating strategies aimed at combating **money laundering (ML), terrorist financing (TF)**, and related threats to the global financial system. The organization operates from its headquarters within the **Organisation for Economic Co-operation and Development (OECD)** premises in **Paris, France**.

The FATF currently comprises **39 members**, including **37 jurisdictions** and **2 regional organizations** (the European Commission and the Gulf Cooperation Council). **India became a full member in 2010**, enhancing its stature in global financial governance.

Core Functions and Responsibilities

The FATF performs several critical roles:

- Establishing **international standards**, most notably its *40 Recommendations*, to combat ML and TF.
- **Monitoring compliance** by both member and non-member states with these standards.
- Conducting **mutual evaluations** to assess national frameworks and enforcement mechanisms.
- Issuing **public statements** identifying jurisdictions with significant deficiencies (commonly known as the **Grey List** and **Black List**).
- Promoting **legal, regulatory, and operational reforms** in national and international financial systems.

Misuse of Digital Platforms in Terrorist Financing

The report emphasizes a worrying trend: **increased exploitation of digital infrastructure** by terrorist entities. In both the Pulwama and Gorakhnath incidents,

perpetrators utilized tools such as **VPNs, online payments, social media, and e-commerce** to procure materials, transfer funds, and conceal identities.

- **Pulwama Attack (2019):** The attackers sourced **aluminum powder**, an explosive component, through **Amazon**, demonstrating the vulnerability of e-commerce platforms to misuse for acquiring weaponizable materials. The attack was attributed to **Jaish-e-Mohammed**, with supporting evidence pointing to cross-border involvement in explosives procurement.
- **Gorakhnath Attack (2022):** The perpetrator, radicalized by **ISIL propaganda**, employed **VPNs** to obfuscate digital footprints and used **PayPal** to transfer approximately ₹6.69 lakh (USD \$7,736) internationally. He received and sent funds linked to **ISIL affiliates**. The account was eventually flagged and suspended due to suspicious activity.

Broader Threats and Trends in Terrorist Financing

The FATF report identifies several broader and evolving methodologies in the financing of terrorism:

- **State-Sponsored Terrorism:** Without naming specific countries, the report points to instances of state actors providing direct or indirect support—including funding, training, and logistical aid—to terrorist groups. This support often involves circumventing international sanctions through **trade, smuggling**, and other covert means.
- **Commodity-Based Financing:** Complex schemes involving **oil-to-gold-to-cash transactions** across multiple jurisdictions have emerged as a mechanism to obscure financial trails.
- **Decentralized Terror Networks:** Terrorist organizations are increasingly adopting **regional and self-financed structures**, which rely on **local criminal proceeds, business investments**, and informal economies. Groups like **Al-Qaeda in the Indian Subcontinent (AQIS)** now operate with considerable

autonomy, adapting their strategies to local contexts.

- **Storage of Terror Funds:** Entities inspired by **ISIL** and **Al-Qaeda** in India reportedly use **gold and jewelry** to discreetly store small funds, reflecting an effort to bypass formal banking channels.

Alternative Financing Channels Identified

The FATF outlines a diverse range of funding mechanisms employed by terrorist actors:

- **Illicit trades** such as **human trafficking, wildlife smuggling, drug trade, and virtual assets.**
- **Donations** through **non-profit organizations, shell companies, shell accounts, and mobile applications.**
- Use of **hawala networks, crowdfunding platforms, extortion, and ransom collection.**

Implications and Regulatory Imperatives

The report underscores the pressing need for **enhanced regulatory oversight and digital monitoring mechanisms.** As terrorist groups continue to innovate and adapt to technological advancements, national and international frameworks must evolve to prevent the exploitation of **e-commerce, VPNs, and digital financial platforms.**

The **April 22 Pahalgam attack**, which the FATF condemned, further exemplifies the role of financial support in sustaining terrorist operations. In response, the FATF has initiated a **detailed analytical study** to assess global vulnerabilities in terrorist financing.

Emerging Issues in Digital Terror Financing

The proliferation of **digital financial tools and online platforms** has created complex new avenues for terror financing. The following key trends highlight the expanding threat landscape:

1. Crypto and Anonymity Tools

- The growth of **unregulated cryptocurrency markets**, especially through **mixing services and privacy coins**, poses serious challenges for tracking financial flows.
- These tools allow terrorists and radicalised actors to obfuscate the origin and destination of funds.

2. Third-Party Payment Gateways

- Online intermediaries, including digital wallets and **fintech gateways**, are increasingly used to route international

funds to terrorist groups, undermining traceability.

3. Rise of Lone-Actor Threats

- Radicalised individuals, often influenced by extremist content online, are executing **independent attacks.**
- These actors frequently receive funding via **crowdfunding platforms, gaming ecosystems, and social media donations.**

4. Trade-Based Terror Financing

- **E-commerce storefronts and digital marketplaces** are exploited for **under- or over-invoicing schemes**, facilitating covert value transfer and laundering.

5. Geographic Vulnerabilities

- **South Asia, West Africa, the Sahel, and the Middle East** remain **high-risk zones.**
- India is flagged as a **critical case study** due to documented misuse of digital tools in past attacks.

6. Global Oversight Gaps

- Many countries lack robust **Know Your Customer (KYC), Anti-Money Laundering (AML), and Counter-Terrorism Financing (CTF)** frameworks, especially for digital platforms.

7. Misuse of Crowdfunding

- Terrorist entities **disguise campaigns under social or humanitarian causes** to raise funds globally.
- The diverted proceeds are used for **radicalisation, logistics, and weapon procurement.**

Key Challenges in Combating Digital Terrorism

1. Jurisdictional Fragmentation

- Cross-border financial transactions and platform operations create **legal and investigative challenges**, especially in the absence of synchronized regulations.

2. Dark Web Activity

- The **dark web** facilitates arms procurement, encrypted communication, and anonymous crypto transactions—evading traditional surveillance mechanisms.

3. Weak KYC Enforcement

- Lax identity verification on fintech platforms allows the creation of **fake or**

layered accounts, enabling anonymous fund transfers.

4. Rapid Evolution of Terror Tactics

- Terror networks **adapt faster than regulatory bodies**, quickly exploiting emerging tools and apps for illicit purposes.

5. Data Localisation and Sovereignty Issues

- Service providers storing data overseas create barriers for **real-time access to user information**, obstructing investigation and prosecution efforts.

Policy Recommendations

1. Enhanced Digital KYC Protocols

- Enforce **rigorous, biometric-linked KYC norms** for all online financial services, marketplaces, and wallets.
- Include **periodic re-verification** and **AI-enabled fraud detection systems**.

2. AI/ML-Based Real-Time Monitoring

- Deploy **machine learning algorithms** to detect anomalous transactions, keyword-linked purchases (e.g., dual-use items), and network-based suspicious activity.

3. Cross-Border Data Cooperation

- Establish **Mutual Legal Assistance Treaties (MLATs)** and **real-time information exchange protocols** with countries hosting major digital infrastructure.
- Create **fast-track frameworks** for responding to terrorism-related data requests.

4. Crypto Market Regulation

- Mandate **reporting of suspicious transactions, maintaining audit trails, and licensing requirements** for crypto exchanges.
- Require exchanges to share **wallet metadata** and conduct **transaction risk assessments**.

5. Accountability of Online Platforms

- **E-commerce and crowdfunding platforms** must:
 - Monitor transactions involving **dual-use goods**.
 - Vet sellers and buyers rigorously.
 - Establish **content moderation mechanisms** to detect radical content or deceptive campaigns.

Conclusion

The FATF's findings offer a critical global alert on the **increasingly complex and digitalized nature of terrorist financing**. The exploitation of online payment systems, VPNs, and social media by terror groups presents significant regulatory challenges, demanding coordinated international action and proactive policy reforms.

Kerala High Court Arrests Ship Under Admiralty Law Over ₹9,531 Crore Oil Spill Claim

The **Kerala High Court** has conditionally arrested the *MSC Akiteta II*, a Liberian-flagged container vessel, currently docked at **Vizhinjam port**, in response to an **admiralty suit** filed by the **Kerala State Government**. This legal action seeks **₹9,531 crore** in compensation for extensive **environmental and economic damage** resulting from the **sinking of MSC Elsa III** on **May 25, 2025**, off the coast of **Alappuzha**. **Background: Environmental Harm from MSC Elsa III**

The *MSC Elsa III*, a vessel reportedly associated with the **Mediterranean Shipping Company (MSC)**, was carrying over **600 containers**, including cargo classified as **hazardous materials**—notably **plastic pellets and diesel**. The incident has allegedly led to significant pollution of Kerala's **marine ecosystems**, affecting biodiversity and local livelihoods, particularly those of **fisherfolk**.

Legal Framework: Admiralty Law in India

The proceedings are grounded in the **Admiralty (Jurisdiction and Settlement of Maritime Claims) Act, 2017**, which governs maritime legal disputes in India. This legislation replaced outdated colonial-era statutes—namely, the *Admiralty Court Act, 1861* and the *Colonial Courts of Admiralty Act, 1890*.

Key features of the **Admiralty Act, 2017** include:

- **Jurisdiction:** It expands admiralty jurisdiction to High Courts in **Kerala, Karnataka, Odisha, Telangana, and Andhra Pradesh**, in addition to the pre-existing jurisdictions of **Bombay, Calcutta, and Madras**. This jurisdiction extends up to **12 nautical miles** from the coastline, encompassing the **seabed, subsoil, and airspace**.
- **Scope of Claims:** Section 4 of the Act permits maritime claims involving **ship damage, ownership disputes, unpaid**

wages, environmental harm, and loss of life.

Legal Grounds for Environmental Claims

In this case, the Kerala government invoked **Section 4** and **Section 5** of the Admiralty Act:

- **Section 4:** Allows courts to adjudicate claims related to **environmental pollution caused by ships**.
- **Section 5:** Empowers the High Court to arrest a vessel even if the defendant is a **demise charterer**—a party that leases the vessel and operates it independently, effectively becoming the “owner for the time being.”

Additional legal backing comes from:

- **The Merchant Shipping Act, 1958** – holds shipowners liable for **oil spills**.
- **The Environment Protection Act, 1986** – enables enforcement actions for **environmental violations**.
- **The National Green Tribunal (NGT)** – adjudicates claims related to environmental degradation. Notably, in 2016, the NGT ordered a Panama-based firm to pay ₹100 crore for a similar oil spill incident (*M V Rak*).

Arrest of *MSC Akiteta II*: Rationale and Legal Strategy

The Kerala government argued that *MSC Elsa III* and *MSC Akiteta II* are “**sister vessels**”, despite being registered under different **shell companies**. Both entities, however, reportedly operate from the **same Geneva-based corporate address**, linking them to the **Mediterranean Shipping Company**. The government alleged that this corporate structure is a **deliberate and fraudulent device** designed to frustrate legitimate maritime claims.

The court accepted the prima facie merit of Kerala’s argument and ordered the **arrest of MSC Akiteta II** unless the shipowners deposit the compensation amount or provide **adequate security**.

Compensation Breakdown and Methodology

The total compensation of **₹9,531 crore** is categorized as follows:

- **₹8,626.12 crore:** Environmental damage arising from the sinking.
- **₹378.48 crore:** Expenses for **remediation and pollution control**.
- **₹526.51 crore:** **Economic losses** suffered by the state’s fishing community.

These figures were calculated in accordance with **Central Pollution Control Board (CPCB)** guidelines, as stated in the plaint.

Broader Implications

This case sets a significant precedent in the enforcement of **environmental accountability within maritime law** in India. The arrest of *MSC Akiteta II* under the **Admiralty Act, 2017** highlights the expanding role of Indian High Courts in addressing **transboundary corporate liability**, especially in cases involving **marine pollution** and **hazardous shipping practices**.

The case may also influence how courts treat **corporate veil-piercing arguments** in future admiralty litigation, particularly where **international shipping conglomerates** use layered ownership structures to avoid liability.

Grand Collar of the National Order of the Southern Cross

Context:

During his official visit, the Prime Minister of India was awarded Brazil’s highest civilian honour — the Grand Collar of the National Order of the Southern Cross.

What is the Grand Collar?

- The Grand Collar is Brazil’s most prestigious civilian award, exclusively conferred upon foreign dignitaries for exceptional services to Brazil.
- It is awarded by the President of Brazil, who is the Grand Master of the Order.

History and Significance:

- Established on 1 December 1822 by Emperor Pedro I to commemorate Brazil’s independence and his coronation.
- Reinstated in 1932 as a republican order by President Getúlio Vargas to honor foreign heads of state and global leaders.
- The award symbolizes Brazil’s diplomatic goodwill, particularly toward countries in the Global South.

India–Brazil Agreements Signed During the Visit:

- **Defence & Security Cooperation:** A pact for joint efforts against terrorism, transnational crime, and enhanced strategic coordination.
- **Digital Public Infrastructure:** Memorandum of Understanding (MoU) on exchanging digital solutions, including

Brazil's adoption of a UPI-like payment system.

- **Renewable Energy & Sustainability:** Collaboration in renewable energy, green technologies, and energy transition.
- **Agriculture & Food Security:** Agreement between India's ICAR and Brazil's EMBRAPA on agricultural technology, seed research, and climate-resilient farming.
- **Intellectual Property Rights (IPR):** MoU to strengthen policy exchange and innovation in IPR between DPIIT (India) and Brazil's Ministry of Trade.
- **Classified Information Exchange:** Framework for mutual protection of sensitive information across defence, science, and technology.

Bilateral Trade Monitoring Mechanism: Institutionalized ministerial-level framework to enhance trade, commerce, and investment flows.

Bulgaria's Eurozone Entry

Context:

- EU finance ministers have approved **Bulgaria's entry into the Eurozone** effective **January 1, 2026**.
- Bulgaria will become the **21st member** of the Eurozone single currency area.

About Bulgaria

- **Location:** Southeastern Europe, eastern Balkan Peninsula.
- **Capital:** Sofia.
- **Neighbours:** Romania (north), Black Sea (east), Turkey and Greece (southeast), Serbia and North Macedonia (west and southwest).

Geographical Features:

- **Danube River:** Northern border with Romania; key for transport, agriculture, trade, tourism.
- **Mountains:**
 - Balkan Mountains (Stara Planina): runs east-west, divides northern and southern Bulgaria.
 - Rila and Rhodope Ranges in the south; home to **Musala Peak**, the highest in the Balkans.
- **Black Sea Coast:** Popular tourist resorts like Sunny Beach, and cities Varna and Burgas.
- **Sofia Basin:** Fertile lowland where Sofia lies, surrounded by mountains.

Cultural Significance:

- A crossroad blending **Slavic, Ottoman, Greek, and Thracian** influences.
- Rich heritage of **Orthodox churches, Ottoman mosques, Roman ruins**.
- Known for distinctive cuisine such as **yogurt, banitsa, kebapche**.

About the Eurozone (Single Currency Area)

- **Definition:** A monetary union of EU countries that use the **euro (€)** as official currency.
- **Established:** 1999 (virtual), 2002 (physical euro notes and coins).
- **Governance:** European Central Bank (ECB), Eurogroup, and national central banks coordinate monetary policy.

Key Features:

- **Single currency:** Simplifies trade, travel, and financial integration within the EU.
- **Monetary integration:** Coordinated interest rates and inflation targets.
- **Stability mechanisms:** Bailout frameworks like the European Stability Mechanism (ESM) and fiscal oversight to ensure financial health.
- **Eligibility (Maastricht criteria):** Low inflation, stable exchange rates, sound public finances.

Members: 20 before Bulgaria's upcoming entry, with Croatia being the latest entrant in 2023.

Order of the Most Ancient Welwitschia Mirabilis

Context:

During his recent state visit to Windhoek, the Prime Minister of India was awarded Namibia's highest civilian honour, the *Order of the Most Ancient Welwitschia Mirabilis*. He is the first Indian leader to receive this prestigious accolade, marking a significant milestone in the bilateral relationship between India and Namibia.

About the Order of the Most Ancient Welwitschia Mirabilis:

- **What is it?**
A distinguished civilian award named after *Welwitschia mirabilis*, a rare and resilient desert plant native to Namibia known for its ability to live for over a thousand years.
- **Conferred by:** The President of Namibia, currently H.E. Netumbo Nandi-Ndaitwah.
- **Key Features:**

- **Symbol of Endurance:** Represents the enduring and strong nature of Namibia's diplomatic ties.
- **Rarity & Prestige:** Reserved for those with exceptional contributions to Namibia's international partnerships.
- **Cultural Symbolism:** Embodies survival, friendship, and lasting bonds—values deeply reflected in India-Namibia relations.

Significance of Namibia to India:

- **Strategic Mineral Partnership:** Namibia possesses abundant reserves of uranium, rare earth elements, oil, and copper. India is pursuing cooperation in energy and critical minerals to support clean energy transition and strategic security.
- **Defence and Security Cooperation:** Bilateral talks include security, defence manufacturing, and maritime domain awareness. Namibia is also a member of Indian-led initiatives like the Coalition for Disaster Resilient Infrastructure (CDRI).
- **Digital and Technological Collaboration:** India is aiding Namibia in fintech adoption through UPI-based technology licensing agreements.
- **Health and Human Development:** MoUs focus on healthcare, medicines, and entrepreneurship growth.

Conservation Efforts: Namibia played a crucial role in *Project Cheetah*, helping India relocate cheetahs to Kuno National Park, symbolizing strong environmental cooperation.

Dholera Special Investment Region (SIR)

Context:

The Ambassador of Japan to India, Mr. Keiichi Ono, led a high-level business delegation to Dholera SIR to explore strategic partnerships in semiconductors and smart city development.

About Dholera Special Investment Region:

- **What is Dholera SIR?**
 - India's first greenfield smart industrial city, developed as a Special Investment Region under the Delhi-Mumbai Industrial Corridor (DMIC).

- Designed as a self-sustaining ecosystem focused on advanced manufacturing, digital governance, and sustainable urban living.

- **Location:**

- Approximately 100 km southwest of Ahmedabad, Gujarat.
- Spans 920 sq. km across 22 villages in Dholera taluka, Ahmedabad district.

- **History & Governance:**

- Established under the Gujarat SIR Act, 2009.
- Managed by the Dholera Special Investment Region Development Authority (DSIRDA).
- Developed by Dholera Industrial City Development Ltd. (DICDL), a joint venture between the NICDC Trust (Central Govt) and the Government of Gujarat.

- **Key Features:**

- **Smart infrastructure & digitization:** Integrated Command & Control Centre (ICCC), plug-and-play industrial zones, e-governance, and utility integration.
- **Connectivity:** Linked to Ahmedabad by a 6-lane expressway and MRTS corridor; Dholera Greenfield International Airport is under construction.
- **Economic focus:** Hosts India's first semiconductor fabrication plants by Tata Electronics and Taiwan's PSMC under the Semicon India Programme.
- **Urban planning:** Six Town Planning Schemes (TPS) guide phased development.
- **Sustainability & livability:** Platinum-rated industrial smart city promoting non-polluting industries; targets creation of over 800,000 jobs with high quality of life and environmental stewardship.

- **Significance:**

- Supports India's Vision 2047 for a self-reliant and innovation-driven economy.
- Serves as a model for future smart, sustainable cities.

Enhances India-Japan strategic collaboration in industrial corridors and high-tech sectors.

European Commission Chief Calls for Alternative to WTO

The **President of the European Commission** has proposed establishing a **new trade cooperation framework** between Europe and Asian countries, suggesting a potential alternative to the **World Trade Organization (WTO)** due to its persistent inefficiencies.

About the WTO

- **Established:** In **1995**, replacing the **General Agreement on Tariffs and Trade (GATT)** of 1947.
- **Mandate:** Oversees global trade rules in **goods, services, and intellectual property**.
- **Membership:** 166 countries, including India
- **Decision-Making:** Based on consensus

Challenges Facing the WTO

1. Dispute Settlement Crisis:

- Since 2016, the **US has blocked appointments** to the WTO's Appellate Body, leaving the dispute resolution system inoperable.

2. Inequities in the System:

- The WTO is often criticized for **favoring developed nations**, with developing countries facing hurdles like:
 - High trade barriers
 - Weak infrastructure
 - Limited resources

3. Lack of Transparency:

- Decision-making processes are often seen as **non-inclusive**, leading to mistrust from developing members.

4. Proliferation of Trade Blocs:

- Regional and bilateral pacts (e.g., **EU, CPTPP, AfCFTA**) are rising, undermining WTO's authority and leading to fragmented global trade norms.

5. Geopolitical Tensions:

- **US-China trade conflicts**, including unilateral tariffs and retaliations, are straining WTO's role as a neutral platform.

India's Role

As a leading voice of the **Global South**, India has a critical opportunity to:

- Push for **WTO reforms**
- Advocate for **equitable trade rules**

Bridge gaps between developed and developing economies

India Calls on IMO for Global Maritime Safety Reforms

- **Background**

India has formally urged the **International Maritime Organization (IMO)** to conduct a **comprehensive investigation** and initiate a **global review of maritime safety protocols**, particularly in light of recent incidents involving **undeclared hazardous cargo** on foreign ships entering Indian waters.

- **Key Concerns**

- Rising maritime incidents raise alarms over **inadequate safety measures** in **global container shipping**.
- India has specifically highlighted the need to strengthen international regulations for:

- **Packaging**
- **Declaration**
- **Stowage**
- **Monitoring of hazardous materials**, including **lithium-ion batteries**, under the **International Maritime Dangerous Goods (IMDG) Code**.

- **About the IMO (International Maritime Organization)**
- **Established:** 1948
- **Headquarters:** London, United Kingdom
- **Membership:** 174 countries (including India)
- **Mandate:** Ensure **maritime safety, security, and prevention of marine and atmospheric pollution** from ships

Convention	Objective
International Convention for the Safety of Life at Sea (SOLAS), 1974	Establishes minimum safety standards for ships including construction, fire protection,

	navigation, and operational safety.
International Convention for the Prevention of Pollution from Ships (MARPOL), 1973	Aims to prevent and minimize pollution from ships by oil, chemicals, sewage, garbage, and other harmful substances.
International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) & OPRC-HNS Protocol (2000)	Requires countries to develop contingency plans and cooperate internationally for oil and hazardous substance spill response.
International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention)	Regulates the use of harmful anti-fouling systems to prevent toxic substances from harming marine life.
Ballast Water Management Convention	Prevents the spread of harmful aquatic organisms and invasive species through ships' ballast water discharge.
Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships	Ensures ship recycling practices do not pose risks to human health or the environment and promotes safe and environmentally sound ship dismantling.

Intensified Crackdown on the 'Donkey Route' Human Trafficking Network

- **Escalation of Investigations:** The Enforcement Directorate (ED) and the National Investigation Agency (NIA) have intensified operations targeting human trafficking networks exploiting the so-called "Donkey Route" — a clandestine migration path predominantly used by Indian nationals to unlawfully enter the United States.
- **Unveiling a Transnational Web:** The ongoing investigations are exposing a sophisticated network involving traffickers, fake visa agents, fraudulent

consultancies, and transnational conduits. These activities have significant implications for national security, human rights, and India's diplomatic standing.

Recent Enforcement Actions

- **Operations in Punjab and Haryana:** ED has conducted raids in these states to investigate financial transactions potentially linked to money laundering within illegal immigration operations.
- **Key Arrests by NIA:** Several traffickers associated with Gagandeep Singh — a central figure in the network — have been apprehended. Singh is accused of facilitating the illegal migration of over 100 Indian nationals to the U.S. via Latin America, reportedly charging up to ₹45 lakh per individual.

Understanding the 'Donkey' or 'Dunki' Route

- **Definition and Popular Awareness:** This term refers to protracted, illicit migration journeys that often involve traversing multiple national borders. It gained wider public attention following the 2023 film *Dunki* featuring Shah Rukh Khan.
- **Typical Migration Path and Risks:** The route usually begins in India and continues through the UAE to Latin American countries such as Ecuador, Guyana, and Bolivia (due to relaxed visa policies), then onward to Colombia, Panama (via the treacherous Darién Gap), Costa Rica, Nicaragua, Mexico, and ultimately the United States. Migrants face severe hazards including assault, extortion, wild animal attacks, and dangerous crossings through dense jungles or underground tunnels at the US-Mexico border (e.g., Ciudad Juarez to El Paso).
- **Criminal Cartels' Role:** Organized criminal groups along the Mexico-US border have increasingly transitioned from narcotics to human trafficking. They demand as much as \$6,000 per person for illegal border crossings.

Economic Dynamics of Trafficking Networks

- **High Financial Burden on Migrants:** Migrants typically pay ₹30–60 lakh, with some instances reporting amounts as high as ₹1.25 crore, depending on the

complexity of the route and documentation involved.

- **Structure of Smuggling Syndicates:** Local agents within India collaborate with international networks to produce fake documents, arrange fraudulent visas, and coordinate illegal border movements.

India's Role in Global Irregular Migration

- **Migration Trends:** In 2023, nearly 97,000 Indian nationals were apprehended or deported at the US border — a sharp increase from approximately 30,000 in 2021. According to Pew Research (2022), India ranks third in the number of undocumented migrants in the US, with an estimated population exceeding 700,000.
- **Deportation Statistics:** Since 2009, 15,756 Indians have been deported from the US, with the highest annual figure being 2,042 in 2019. As of mid-2025, 104 deportations have occurred, according to External Affairs Minister S. Jaishankar.

Alternative Illegal Migration Routes

- **Student Visa Exploitation via Canada:** Unscrupulous agents enroll clients in non-operational or dummy colleges in Canada, facilitating eventual illegal entry into the US. The cost per migrant ranges from ₹50–60 lakh.
- **Enforcement Response to Canada Route:** Investigations have revealed that at least 260 Canadian institutions may be complicit in issuing student visas for irregular migration purposes. A tragic case involving a Gujarati family freezing to death at the US-Canada border prompted ED inquiries into the network and its financial links.

Broader Implications for India

- **National Security Threats:** The participation of transnational crime syndicates in human trafficking introduces risks related to terrorism and large-scale financial crimes.
- **Diplomatic Repercussions:** India's growing association with undocumented migration could strain diplomatic ties, particularly with countries like the United States and Canada.

- **Human Rights Violations:** Migrants endure severe hardships including death, sexual violence, and extortion, constituting serious violations of human dignity and international human rights standards.

Policy Recommendations

- **Legal and Institutional Reforms:** Strengthen regulations governing emigration and private visa consultancies.
- **Enhanced International Cooperation:** Bolster bilateral and multilateral partnerships to dismantle trafficking networks and streamline deportation protocols.
- **Public Awareness and Preventive Measures:** Launch educational campaigns to inform potential migrants of the risks, and establish monitoring systems to detect and prevent illegal recruitment activities.

Conclusion

The "Donkey Route" reflects deeper socio-economic challenges and regulatory loopholes rather than a mere pathway for migration. While law enforcement actions by the ED and NIA are crucial, a comprehensive strategy incorporating legal reform, international collaboration, and grassroots awareness is vital to effectively counter this multifaceted issue.

Operation Fire Trail

Context and Objectives

Operation Fire Trail is an intelligence-driven enforcement campaign by the Directorate of Revenue Intelligence (DRI) targeting the smuggling of banned Chinese firecrackers into India. The operation aims to curb environmental hazards, ensure legal compliance, and prevent safety risks associated with illicit imports.

Key Details

- Launched by the DRI, a premier anti-smuggling agency under the Central Board of Indirect Taxes and Customs (CBIC).
- Seized over ₹35 crore worth of banned Chinese firecrackers across multiple Indian ports.
- Intercepted 100 metric tonnes of firecrackers concealed under shipments

labeled as "Mini Decorative Plants" and "Artificial Flowers."

- Detected misuse of Special Economic Zones (SEZs), involving fraudulent export-import code (IEC) holders, to divert restricted fireworks into domestic markets without required licenses.
- Enforcement measures included the arrest and judicial remand of key suspects.
- The seized firecrackers contained banned toxic substances such as lithium, red lead, and copper oxide, posing explosion and pollution hazards.
- The operation reinforced adherence to the Import Trade Control (ITC) (HS) policy, under which fireworks are classified as 'Restricted' items requiring approvals from the Directorate General of Foreign Trade (DGFT) and the Petroleum and Explosives Safety Organisation (PESO).

This crackdown also enhanced port safety by preventing potential disasters and protecting critical logistics infrastructure.

Operation SHIVA

Context and Purpose

Operation SHIVA 2025 is a high-altitude security operation conducted annually by the Indian Army to ensure the safe conduct of the Shri Amarnath Yatra pilgrimage in Jammu & Kashmir amid rising security threats from Pakistan-backed terrorist groups.

Operational Framework

- Coordinated by the Indian Army in collaboration with the civil administration, Central Armed Police Forces (CAPFs), and disaster response units.
- Recognized as one of the most complex military-civilian coordination efforts in India, focused on religious tourism safety.

Objectives

- Prevent terrorist activities and drone attacks targeting the Yatra.
- Maintain real-time surveillance, medical readiness, and infrastructure support.
- Strengthen coordination among military, paramilitary, disaster relief agencies, and local authorities.

Key Components of Operation SHIVA 2025

- Deployment of over 8,500 troops across the Baltal and Pahalgam pilgrimage routes, supported by a layered counter-terrorism security grid.
- Utilization of advanced drone and aerial surveillance, including 50+ counter-unmanned aerial system (C-UAS) devices, pan-tilt-zoom (PTZ) cameras, electronic warfare tools, and unmanned aerial vehicle (UAV) patrols.
- Infrastructure preparedness with army engineers engaged in repairing bridges, widening pathways, and mitigating landslide risks.
- Deployment of signal companies, Quick Reaction Teams (QRTs), bomb disposal squads, and real-time drone convoy tracking from Jammu to the shrine.

Logistical arrangements encompassing emergency rations for over 25,000 individuals, tent cities, standby helicopters, water stations, bulldozers, and rescue equipment.

WHO Pandemic Agreement

Background

WHO member states convened the inaugural meeting of the Intergovernmental Working Group (IGWG) to discuss the WHO Pandemic Agreement.

Purpose

The agreement aims to enhance international coordination for pandemic prevention, preparedness, and response. It focuses on equitable and timely access to vaccines, therapeutics, and diagnostics worldwide.

Guiding Principles

- Upholding international humanitarian law.
- Promoting equity and solidarity.
- Respecting human dignity, human rights, and fundamental freedoms for all individuals.

Trans Fat: Expert Concerns Over UN Ban

What Are Trans Fats?

- Unsaturated fatty acids produced industrially (through hydrogenation) or naturally present in animal-based foods like meat and milk.

Health Risks

- Increase levels of harmful cholesterol types (VLDL and LDL), which can clog

arteries, raising the risk of heart attacks and strokes.

- Associated with inflammation, obesity, high blood pressure, diabetes, and certain cancers.

Expert Warning

Experts caution that a total ban on trans fats by the UN may inadvertently harm nutritional outcomes in developing countries.

Trade and Economic Partnership Agreement (TEPA) between India and EFTA

Recent Development

Switzerland has completed ratification of the trade deal signed between India and the European Free Trade Association (EFTA), enabling TEPA's implementation.

About EFTA

- Consists of Switzerland, Liechtenstein, Norway, and Iceland.

About TEPA

- A trade agreement between India and the four developed EFTA nations.
- Includes a commitment to generate \$100 billion in investments and create one million direct jobs over 15 years.

Intellectual Property Rights (IPR) provisions align with the WTO's TRIPS agreement.

AI Alliance Network (AIANET) and Pakistan Membership Controversy

About AIANET

- An informal, voluntary network that facilitates exchange of knowledge and expertise among members to promote AI technology for sustainable economic and social progress.
- Currently has 17 members.
- Administered by AI Alliance Russia.

Recent Issue

The Digital India Foundation (DIF), a founding member, has opposed the application of Pakistan's AI Technology Centre (AITeC) for membership in AIANET.

Trump's Tariff Threats and the BRICS Grouping

Overview of Tariff Threats

In the wake of the 2025 BRICS Summit in Rio de Janeiro, U.S. President Donald Trump threatened to impose a 10% tariff on all BRICS member countries. This continues a pattern of trade aggression under his administration, aimed at

penalizing what he sees as opposition to U.S. global economic dominance.

Perceived Threat of BRICS

Trump has labeled BRICS as an "anti-American" alliance, particularly criticizing the bloc's efforts to establish a common currency and alternative cross-border payment systems that bypass the U.S. dollar. These initiatives gained momentum after the West imposed sanctions on Russia following the Ukraine conflict, prompting BRICS countries to seek financial autonomy.

Tariff Escalations and Political Motives

Beyond general tariff threats, Trump has already imposed:

- **50% tariffs on Brazil**, citing anti-Bolsonaro bias.
- **30% tariffs on South Africa**, citing unresolved trade disputes and human rights concerns.

He is also pushing for the **Sanctioning Russia Act of 2025**, which would impose up to **500% tariffs** on Russian oil and other sanctioned products. Such a move could significantly impact India and China—both major importers of Russian oil.

BRICS' Response to De-Dollarisation Claims

- BRICS leaders have dismissed Trump's accusations, clarifying that the push to use local currencies is aimed at enhancing trade efficiency among member nations—not at dismantling the global role of the U.S. dollar. The group maintains that de-dollarisation seeks to reduce economic vulnerability and dependence, not to challenge or replace the dollar outright.
- The 2025 BRICS Rio Declaration emphasizes improving interoperability among payment systems, carefully avoiding any language that directly challenges the U.S. dollar or targets U.S. policies. While some leaders within the bloc have used anti-West rhetoric, official BRICS communications have steered clear of provocative language.

India's Position Within BRICS

- India has officially distanced itself from any anti-U.S. positioning within BRICS. In a parliamentary statement, the government clarified that while discussions on alternative currencies have occurred, they were not collectively

endorsed. External Affairs Minister S. Jaishankar reaffirmed that India has no intent to replace the U.S. dollar in its global transactions.

- This highlights the ideological diversity within the bloc, with countries like India advocating for a more neutral stance on global financial reform.

The Broader BRICS Agenda

- BRICS was formed in 2009 following the global financial crisis, aiming to amplify the voice of emerging economies in global governance. The bloc now includes ten countries—Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Indonesia, Iran, and the UAE—with more expressing interest in joining.
- Despite their differences, BRICS nations share a common belief that current global power structures disproportionately favor the U.S. However, countries like India are cautious about portraying BRICS as anti-Western.

At the Rio summit, BRICS leaders criticized unilateral tariffs and expressed concern over attacks on Iran's civilian infrastructure. These positions were carefully worded to avoid direct confrontation, underscoring the bloc's diplomatic balancing act.

International Financial Services Centres Authority (IFSCA)

• Recent Development

CTBC Bank, the largest private bank in Taiwan, has applied to establish an IFSC Banking Unit (IBU) at GIFT City, under the regulatory purview of the International Financial Services Centres Authority (IFSCA).

• Overview

IFSCA is a statutory regulatory body established under the International Financial Services Centres Authority Act, 2019. It serves as a unified authority for overseeing financial products, services, and institutions within India's International Financial Services Centre (IFSC).

The primary objectives of the IFSCA include fostering international financial integration, catering to the evolving requirements of the Indian economy, and providing a globally competitive platform for financial operations.

Prior to the formation of IFSCA, financial regulation in IFSCs was undertaken by domestic

regulators such as the Reserve Bank of India (RBI), the Securities and Exchange Board of India (SEBI), the Insurance Regulatory and Development Authority of India (IRDAI), and the Pension Fund Regulatory and Development Authority (PFRDA).

• Institutional Structure

Headquartered at GIFT City in Gandhinagar, Gujarat—the country's first operational IFSC—the Authority comprises nine members appointed by the central government. These include:

- The Chairperson,
- One representative each from RBI, SEBI, IRDAI, and PFRDA,
- Two representatives from the Ministry of Finance,
- Two additional members recommended by a selection committee.

Each member serves a term of three years, with the possibility of reappointment.

BRICS Grouping

• Recent Tensions

U.S. President Donald Trump recently threatened to impose 10% tariffs on countries affiliated with the BRICS bloc, following the 2025 summit in Rio de Janeiro. The move underscores growing geopolitical friction surrounding the group's initiatives to reduce dependence on the U.S. dollar.

• Background and Objectives

BRICS—originally formed by Brazil, Russia, India, and China, with South Africa joining in 2010—aims to promote inclusive global governance, economic cooperation among developing nations, and reform of institutions like the UN, IMF, and WTO.

• Expansion and Influence

The group has expanded to include Egypt, Ethiopia, Iran, Indonesia, and the UAE. Together, BRICS nations now account for 45% of the global population and 28% of global GDP.

• New Development Bank (NDB)

The NDB was established in 2015 following the 2014 BRICS summit in Fortaleza. Headquartered in Shanghai, the bank finances infrastructure and sustainable development projects in developing countries. Membership is open to all UN states, though BRICS nations must retain a minimum 55% voting share, and no country holds veto power.

Why India Must Support CIMMYT and IRRI: Repaying the Green Revolution Debt

Introduction: A Legacy of Global Agricultural Collaboration

The term "Green Revolution" was first coined in 1968 by William S. Gaud of USAID, recognizing initiatives like India's rapid adoption of high-yield wheat varieties to combat hunger. These advances—spearheaded by institutions such as the International Maize and Wheat Improvement Center (CIMMYT) and the International Rice Research Institute (IRRI)—transformed India's food landscape and helped avert famines.

However, the closure of USAID under the Trump administration on July 1, 2024, has jeopardized the funding of these critical research organizations. With the U.S. withdrawing support, institutions like CIMMYT are turning to nations like India—longtime beneficiaries of their innovations—for financial backing.

CIMMYT and IRRI: Pioneers of the Green Revolution

- **CIMMYT** (headquartered in Mexico) has been central to global wheat and maize research. It developed semi-dwarf wheat varieties such as *Lerma Rojo 64A* and *Sonora 63*, first introduced in India during 1964–65. These varieties laid the foundation for India's Green Revolution.
- **IRRI**, based in the Philippines and founded in 1960 by the Rockefeller and Ford Foundations, played a parallel role in rice research.

Both institutions were integral to the U.S. Cold War strategy of using food security to prevent the spread of communism by stabilizing politically fragile regions through agricultural self-sufficiency.

India's Green Revolution Gains

India's Green Revolution was built on CIMMYT and IRRI breeding lines. Indian scientists localized and improved these materials:

- Wheat varieties like **Kalyan Sona** and **Sonalika** (1967–68) were developed from CIMMYT strains.
- Subsequent successes included **HD 2285**, **HD 2329**, and **HD 2967**, pushing Indian wheat yields above 7 tonnes/hectare.
- On the rice front, Indian breeders created mega varieties such as **Swarna** and **Samba Mahsuri**.

- The **Pusa Basmati** series (developed at IARI) now dominates India's premium rice exports, contributing \$5.94 billion in 2024–25.

Norman Borlaug, the father of the Green Revolution, credited India's success to institutions like IARI and the visionary leadership of MS Swaminathan.

The Urgent Need for Continued Collaboration

Despite decades of domestic progress, India remains deeply reliant on global research inputs:

- In 2024–25, **six of India's top 10 wheat varieties**—covering over **20 million hectares**—used **CIMMYT germplasm**.
- India's last widely adopted home-bred wheat variety, **HD 2967**, peaked several years ago.
- Most new varieties since then have depended heavily on CIMMYT's genetic resources.

The same is true for rice, where IRRI's material continues to underpin varietal development in India.

India's Minimal Support to Global Research Institutions

In 2024, despite its status as a major beneficiary:

- India contributed only **\$0.8 million to CIMMYT**
- And **\$18.3 million to IRRI**

These figures pale in comparison to the billions in economic gains and food security benefits derived from their research.

What India Should Do

With USAID funding withdrawn, institutions like CIMMYT are at risk. India has both the **moral responsibility** and **strategic incentive** to step up.

India should:

- Increase core funding for CIMMYT and IRRI.
- Prioritize joint research on:
 - **Heat and drought resilience**
 - **Nitrogen-use efficiency**
 - **Gene editing**
 - **AI in crop breeding and precision farming**
- Ensure this global support **complements**, not replaces, investments in Indian research bodies like IARI and state agricultural universities.

Conclusion: Repaying the Green Revolution Debt

India owes much of its food security and agricultural prosperity to the foundational work of CIMMYT and IRRI. Now, with these institutions facing funding shortages, it is time for India to return the favor. Supporting them is not charity—it's strategic, sustainable investment in the nation's future food security.

India's Sovereignty and the Threat of Digital Dependence

- **Vice President's Warning:**

India's Vice President recently cautioned that modern threats to national sovereignty no longer stem from military invasions but from increasing dependence on foreign digital infrastructure. He emphasized a rising danger of "digital colonialism" — a new era of dominance, not by armed forces, but by algorithms and data.

Understanding Digital Colonialism

- **Definition:**

Digital colonialism refers to the control and exploitation of digital infrastructure, data, and platforms of developing nations by powerful multinational technology corporations, primarily based in developed countries.

- It reflects a form of neo-colonialism where the Global North dominates the digital landscape of the Global South.

- **Example:**

American tech giants such as Google and Amazon routinely extract vast amounts of data from users in developing countries. This data is used to reshape markets, influence consumer behavior, and control technological ecosystems.

Major Concerns Around Digital Colonialism

1. Loss of Digital Sovereignty:

Big tech companies and developed nations increasingly dictate terms of engagement in the digital world.

- *Example:* In 2024, WhatsApp threatened to withdraw from India over the traceability requirement under the 2021 IT Rules, highlighting tensions between national regulation and foreign platform policies.

2. Cultural Imperialism:

Global platforms often promote the values, content, and narratives of developed countries, pushing local cultures, languages, and traditions to the margins.

3. Surveillance Capitalism:

Tech companies collect, analyze, and monetize user data—often without informed consent—

posing a serious risk to privacy, civil liberties, and democratic control.

India's Strategy to Counter Digital Colonialism

1. Strengthening Digital Sovereignty:

India is actively building indigenous digital frameworks such as:

- **India Stack** – a unified digital identity and payments infrastructure.
- **ONDC (Open Network for Digital Commerce)** – an open-source alternative to dominant e-commerce platforms.

2. Data Localization Efforts:

- India refused to join the **Osaka Track**, which promotes unrestricted cross-border data flows.
- Enacted the **Digital Personal Data Protection (DPDP) Act, 2023**, aiming to localize and regulate personal data within national boundaries.

3. Reducing Strategic Tech Dependence:

- Programs like **Make in India** and **Chips to Startup (C2S)** seek to increase domestic manufacturing and self-reliance in key technology sectors such as semiconductors, defense, and space.

4. Policy Adaptation:

UNCTAD's 2021 report advised nations to routinely revise data policies to ensure a balance between economic growth, public interest, and global integration.

India's Growing Influence in a Multipolar World

Recognition of India's Role:

India's evolving strategic importance was acknowledged by Singapore's Foreign Minister during his recent engagement with India's External Affairs Minister. This comes as global power dynamics increasingly shift toward multipolarity.

What is a Multipolar World Order?

- **Definition:**

A multipolar order is characterized by the presence of multiple influential powers, unlike bipolar (e.g., Cold War-era US-USSR) or unipolar (e.g., post-Cold War US dominance) systems.

- In this structure, various regions and countries pursue independent policies, collaborate selectively, and compete across different domains like security, trade, and technology.

Rise of Multipolarity in Global Affairs

- **Geopolitical Shift:** The world is gradually moving away from post-WWII power structures dominated by the US and USSR.
- **Institutional Relevance Questioned:** Traditional institutions like the **UN, IMF**, and **World Bank** are being scrutinized for their relevance in today's context.
 - *Example:* The **New Development Bank** (established by BRICS) serves as an alternative to the World Bank.
- **Growth of Plurilateral Platforms:**
 - Bodies like **BRICS+**, **Quad**, and **SCO** represent a flexible, issue-based approach to international cooperation, unlike rigid Cold War blocs such as NATO or the Warsaw Pact.

India's Role in Shaping the Multipolar Landscape

1. From Non-Alignment to Multi-Alignment:

India has moved from its historic non-aligned stance to a pragmatic policy of engaging across diverse groupings—balancing ties with both Western and Eurasian powers:

- Western blocs like **Quad** and **IPEF**
- Eurasian platforms like **SCO** and **BRICS**

2. Focus on Mini-laterals:

India increasingly participates in smaller, purpose-driven alliances:

- **Quad** (Indo-Pacific security)
- **I2U2** (India-Israel-UAE-USA)
- **IPEF** (Indo-Pacific Economic Framework)

3. Vision of a Multipolar Asia:

India supports a global multipolar order built around a similarly diverse and multipolar Asia.

Challenges in Pursuing Multipolarity

1. Resurgence of Cold War-Like Blocs:

The **Ukraine conflict** has deepened geopolitical divides—reviving bipolar dynamics with:

- US-led Western bloc vs.
- Russia-China alliance

This resurgence restricts the space India needs to exercise strategic autonomy.

2. Growing Pressure to Take Sides:

As global tensions increase, India's policy of balancing between **QUAD** and **SCO**, or **BRICS** and **Indo-Pacific alliances**, becomes harder to maintain.

3. Declining Russian Influence:

Russia's increasing reliance on China reduces its strategic independence, which in turn narrows India's options in Eurasian geopolitics.

Conclusion

India stands at a pivotal crossroads in both digital and geopolitical domains. Protecting digital sovereignty from external control is as vital today as guarding territorial integrity. Simultaneously, India's nuanced diplomacy and leadership are crucial in steering the global order toward genuine multipolarity. Both efforts require sustained investment in domestic capacity, resilient institutions, and bold international engagement.

Singapore – Key Highlights

- **Diplomatic Engagement**
- **India's External Affairs Minister** met with his **Singaporean counterpart** to boost bilateral relations.
- **Country Overview**
- **Capital:** Singapore (same as the country)
- **Geography:**
 - A **city-state** located at the **southern tip of the Malay Peninsula**.
 - Consists of a **main island** and **60+ smaller islets**.
 - Lies about **137 km north of the Equator**, with a **humid equatorial monsoon climate**.
- **Borders:**
 - Separated from **Malaysia** by the **Johor Strait** (north).
 - Faces **Indonesia** across the **Singapore Strait** (south).
- **Economy & Ports:**
 - Home to **Southeast Asia's largest port**, among the **busiest in the world**.
 - Strategic position on the **Strait of Malacca**, linking the **Indian Ocean to the South China Sea**, drives its economic success.

New Caledonia Autonomy Agreement Context

- **France** has agreed to grant **greater autonomy to New Caledonia**, creating a new administrative unit called the **"State of New Caledonia"** within the French Republic.

About New Caledonia

- A French overseas territory in the South Pacific.

Historical Background:

- Indigenous people were **forcibly taken** for slavery and plantation labour in the 1800s.
- Annexed by **France in 1853**.

Current Issue:

- There are **deep political and ethnic divides**, particularly between the **indigenous Kanak people** and **European settlers**, with long-standing demands for **full independence**.

India-Saudi Arabia Fertilizer Agreement Context

Three Indian fertilizer companies have entered a five-year agreement with Saudi Arabia's Ma'aden to annually import **3.1 million metric tonnes (MMT)** of **DAP fertilizer** starting in **2025-26**.

Overview of the Agreement

- **Parties Involved:**
 - Indian: IPL (Indian Potash Limited), KRIBHCO, Coromandel International
 - Saudi: Ma'aden (Saudi Arabian Mining Company)
- **Term:** Five years beginning FY 2025-26, extendable through mutual agreement.
- **Annual Volume:** 3.1 MMT of DAP fertilizer, raising Saudi exports to India to 30 LMT.

Key Features

- **Long-Term Assurance:** Provides a secure and consistent supply of DAP to India.
- **Collaborative Research:** Focus on developing India-specific alternative fertilizers aimed at improving soil and crop productivity.
- **Investment Opportunities:** Encourages Indian public sector investment in Saudi Arabia and vice versa in agri-inputs.
- **Strategic Coordination:** Establishes a bilateral platform for policy, research, and investment coordination in fertilizers and mining.

Importance for India

- **Enhancing Food Security:** Ensures nutrient-rich fertilizer access crucial for high crop yields.

- **Supply Chain Stability:** Reduces dependency on volatile global markets.
- **Strategic Partnership:** Strengthens India-Saudi cooperation in energy and agriculture.
- **Tailored Innovation:** Enables the creation of fertilizers suited to India's diverse agro-climatic conditions.

India Loses ₹1,000 Crore Monthly to Southeast Asia-Based Cyber Frauds

According to estimates from the Ministry of Home Affairs (MHA), over ₹7,000 crore has been lost to cybercrime in India between January and May 2025, with more than half of this amount traced back to fraud rings based in Southeast Asian countries.

Nations such as Myanmar, Cambodia, Vietnam, Laos, and Thailand have emerged as major sources of these fraudulent activities. These operations are believed to be run from heavily secured compounds reportedly under the control of Chinese crime syndicates. The Indian Cyber Crime Coordination Centre (I4C) reports that these centers exploit trafficked workers, including Indian nationals, forcing them to participate in these illegal activities.

Stock Market and Investment Fraud

These scams revolve around deceptive promises of high returns through investments in stocks, cryptocurrencies, or other financial instruments. Victims are typically approached via platforms like social media, WhatsApp, or through fraudulent investment applications.

Scammers pose as legitimate financial advisors or representatives of investment firms. They convince individuals to deposit funds into bogus accounts or apps that simulate profits using fake dashboards. Once the victim has invested a substantial amount, the scammer vanishes.

Fake Arrest and Government Impersonation Scams

This type of scam involves convincing victims that they are the subject of a government investigation by agencies such as the CBI, Police, or Income Tax Department. The scammers initiate contact through fake phone or video calls, often dressed in official uniforms, and claim that the victim's name or bank account has been linked to serious crimes like drug trafficking or money laundering.

The victim is then threatened with imminent arrest unless they pay a "fine" or "security

amount” immediately. The pressure tactics used often lead to panic and compliance.

Task-Based and Investment-Driven Employment Scams

These scams typically begin with fake offers of freelance work or part-time jobs. Victims are first assigned simple tasks—like liking YouTube videos or rating apps—and are initially paid small sums, building credibility and trust.

As the scam progresses, victims are asked to invest money in order to receive larger commissions. After a significant amount is invested, the scammers cut off all contact and disappear with the funds.

Southeast Asia as the Operational Hub

The MHA's data shows that over half of the ₹7,000 crore lost to cyber scams during the first five months of 2025 originated from organized criminal networks operating out of Myanmar, Cambodia, Vietnam, Laos, and Thailand. According to the I4C, this equates to a staggering ₹1,000 crore in losses each month for India.

Chinese-Controlled Scam Compounds and Forced Labour

These scams are believed to be coordinated from secure facilities managed by Chinese operators. The compounds reportedly hold thousands of trafficked individuals—including over 5,000 Indians—who are coerced into working under harsh conditions to run online fraud schemes.

The trafficked population also includes people from other regions, such as Africa, East and Southeast Asia, Central Asia, West Asia, Europe, and the Americas.

Identified Scam Locations

Based on intelligence gathered from rescued individuals and other sources, Indian authorities have pinpointed several active scam locations:

- 45 centers in Cambodia
- 5 centers in Laos
- 1 center in Myanmar

Primary Categories of Scams

Investigative findings have identified three major categories of fraud being perpetrated:

1. Stock trading and investment fraud
2. Impersonation and digital arrest scams
3. Task-based and investment job scams

Recruitment of Indians into Cyber Fraud Networks

Indian agencies have identified multiple individuals acting as recruiters for these scam

operations. These agents have been traced to various Indian states, including:

- Maharashtra
- Tamil Nadu
- Jammu & Kashmir
- Uttar Pradesh
- Delhi

Trafficking Routes Used to Smuggle Victims

Interviews with rescued victims have helped trace the international routes used to transport Indians to these scam centers. Routes include:

- Dubai → China → Cambodia
- Tamil Nadu → Cambodia
- Maharashtra → Thailand → Cambodia
- Delhi → Bangkok → Cambodia
- Kerala → Singapore/Vietnam → Cambodia
- Kolkata → Vietnam → Cambodia (via road)

Government Measures and Legal Action

To address this growing issue, the Indian government has formed an inter-ministerial committee that is working to identify and address vulnerabilities across banking, immigration, and telecom systems.

Additionally, the CBI has filed FIRs against point-of-sale (PoS) agents who have issued fraudulent SIM cards that were later used in executing these scams.

Sierra Leone World Heritage Site

Context:

Tiwai Island and Gola Rainforest in Sierra Leone have been recognized as UNESCO World Heritage Sites, marking the first such designation for the country.

Details about the Sierra Leone World Heritage Site:

- **Components:**
 - *Tiwai Island Wildlife Sanctuary*
 - *Gola Rainforest National Park (GRNP)*
- **Location:**

Positioned in the southern part of Sierra Leone, along the Moa River close to the border with Liberia.
- **Distinctive Characteristics:**
 - *Tiwai Island:*
 - Although only 12 square kilometers in size, it supports 11 primate species, including the endangered western

chimpanzee, Diana monkey, and king colobus monkey.

- Functions as a major center for biodiversity research and a model for ecotourism in West Africa.
- *Gola Rainforest:*
 - The largest tropical rainforest found in Sierra Leone.
 - Home to species such as pygmy hippopotamuses, African forest elephants, and a diverse array of bird and insect species.
 - Plays a vital role in carbon capture, climate regulation, and the preservation of genetic biodiversity.

About Sierra Leone:

- **Capital City:** Freetown, situated on the Sierra Leone Peninsula, which boasts one of the world's largest natural harbors.
- **Neighboring Regions:** Borders Guinea, Liberia, and the Atlantic Ocean.
- **Geographical Features:**
 - *Rivers:* Major rivers such as the Moa, Sewa, Mano, and Rokel flow southwest from the Fouta Djallon highlands in Guinea.
 - *Mountains:* The highest elevation is Mount Bintimani (also called Loma Mansa), standing at 6,391 feet (1,948 meters). Other notable highlands include the Tingi Hills, Sula Plateau, and Kambui Schists.
 - *Plains and Coastal Areas:* Characterized by mangrove swamps, lateritic soils, and seasonally flooded Bolilands. The climate is tropical with significant rainfall and dry season Harmattan winds.

Natural Wealth: Rich deposits of diamonds, gold, bauxite, and rutile are found here, with agriculture and mining as primary economic activities.

BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation)

Context

The **Union Minister of Ports, Shipping & Waterways** inaugurated the **second edition of the BIMSTEC Ports Conclave**.

About BIMSTEC

- **Founded:** In 1997 through the **Bangkok Declaration**.
- **Purpose:** Strengthen **economic and technical cooperation** among countries bordering the **Bay of Bengal**.
- **Member Nations:**
 - **South Asia:** Bangladesh, Bhutan, India, Nepal, Sri Lanka
 - **Southeast Asia:** Myanmar, Thailand
- **Significance:** Serves as a **bridge** between **South Asia and Southeast Asia**.

Secretariat Location: Dhaka, Bangladesh
South China Sea

Context:

The United States Navy is set to build two military boat repair facilities in Palawan, Philippines, facing the South China Sea, to bolster maritime security amid increasing tensions with China over the disputed region.

About the South China Sea:

- **Definition:**
The South China Sea is the largest marginal sea of the western Pacific Ocean. It is strategically and economically critical due to its rich marine biodiversity, vast oil reserves, and vital international shipping routes.
- **Geographical Location:**
It lies between Southeast Asia and China, linking the Pacific Ocean via the Luzon Strait and the Indian Ocean through the Strait of Malacca. Key features include the deep China Sea Basin (~5,000 meters deep), Palawan Trough, and Sunda Shelf.
- **Neighboring Countries:**
The main claimants or stakeholders are China, Vietnam, the Philippines, Malaysia, Brunei, and Taiwan. The sea borders the Philippines to the east, Vietnam to the west, Malaysia and Borneo to the south, and China to the north.

- **Disputes & Strategic Importance:** China asserts control over nearly 90% of the sea through its "Nine-Dash Line," overlapping with the Exclusive Economic Zones (EEZs) of ASEAN nations. Notable conflict areas include the Spratly Islands, Paracel Islands, and Scarborough Shoal, where Chinese and Philippine vessels often clash. The sea serves as a crucial global trade corridor and is a central front in the U.S.-China strategic rivalry.

Rivers Flowing Into the Sea: Major rivers draining into the South China Sea include the Mekong River (Vietnam), Red River, and several smaller rivers originating from Malaysia, the Philippines, and China.

Israel's Airstrikes on Syria

Context:

Israel conducted multiple airstrikes targeting Damascus and Suwayda in Syria, citing the protection of the Druze minority. Syria condemned the attacks as a blatant violation of sovereignty.

Background:

- Israel has escalated military operations in southern Syria and Damascus amidst violent clashes in Suwayda, a region predominantly inhabited by Druze communities.
- The conflict stems from sectarian violence involving Druze militias, Sunni Bedouins, and Syrian government forces.
- Israel claims its actions are aimed at protecting the Druze minority and preventing hostile entities from gaining ground near its border, especially around the Golan Heights.

Who Are the Druze?

- The Druze are an Arabic-speaking ethno-religious group with origins linked to Shia Islam, though their beliefs are distinct and secretive.
- Global population is approximately 1 million, with the largest concentrations in Syria (~50%), Lebanon, Israel, and the Golan Heights.
- In Israel, Druze are integrated and serve in the military, recognized as loyal citizens.
- In Syria, they historically maintained local autonomy through militias and resisted integration into central forces.

Targets of the Strikes:

1. Central Damascus
2. Suwayda Province in southern Syria

Causes of the Israeli Airstrikes:

- Clashes between Druze and Sunni Bedouin groups began with kidnappings, escalating into broader fighting involving Syrian military intervention.
- Syrian forces reportedly targeted Druze civilians, prompting Israeli military response.
- Israel's strategic goals include:
 - Preventing Islamist and pro-Iranian factions from expanding influence in southern Syria.
 - Establishing a buffer zone near the Golan Heights.
 - Expanding influence among Syrian minorities after the fall of Assad's regime in 2024.
- A brief ceasefire collapsed, reigniting hostilities and providing further justification for Israeli strikes.

Geopolitical Importance:

- Suwayda's location at the Syria-Jordan-Israel border crossroads makes it critical for regional security.
- Instability here threatens broader regional peace and invites foreign interventions.

Syria (Capital: Damascus)

Political and Geographical Features:

- Syria is located in the Middle East, part of the Levant region.
- It borders Iraq, Israel, Jordan, Lebanon, and Turkey, with the Mediterranean Sea to the west.
- The Euphrates River is an important geographical feature.

The country includes territory in the Golan Heights, occupied by Israel since 1967.

University of Southampton's Campus in India

Context: The University of Southampton has become the first global university to establish a campus in India under the new University Grants Commission (UGC) regulations.

Details:

- The campus is located in Gurugram and follows the UGC's 2023 regulations for foreign higher educational institutions operating in India.

- Previously, Australian universities Deakin and Wollongong had opened campuses in GIFT City, approved by the International Financial Services Centres Authority (IFSCA).

UGC Regulations 2023:

- Objective:** Facilitate entry of top Foreign Higher Educational Institutions (FHEIs) into India, aligning with the National Education Policy 2020.
- Eligibility:** Only universities ranked in the top 500 globally overall or in specific subjects, or those with exceptional expertise in a particular field, qualify.

Restrictions: Online or distance learning is largely prohibited, but up to 10% of lectures may be conducted online.

Group of Friends (GoF) – UN Peacekeepers Context

India reaffirmed its commitment to justice for crimes against UN peacekeepers at a **high-level GoF meeting** at the **UN Headquarters**, calling **accountability a strategic necessity**.

About GoF

- An **informal coalition** of about **40 UN member states**, co-chaired by **India** and nations from Asia, Africa, and Latin America.
- Launched in **December 2022**, during India's **UNSC Presidency**.

Goals

- Advocate for legal/policy mechanisms to prosecute crimes against peacekeepers.
- End impunity and protect mission integrity.
- Support **UNSC Resolution 2589 (2021)**, which mandates accountability.

Functions

- Encourage intergovernmental and expert dialogues.
- Strengthen investigation and legal tracking mechanisms.
- Promote reports from the **UN Secretary-General**.

Significance

- Safeguards peacekeepers in volatile areas.
- Highlights India's contribution of over **300,000 troops** and **182 martyrs**.

Upholds the interests of **Global South personnel** in peacekeeping.

Russian Sanctions Act, 2025: India Pushes Back Against Proposed U.S. Penalties on Russian Oil Trade

India has strongly opposed a proposed U.S. congressional bill—the **Russian Sanctions Act, 2025**—which seeks to penalize countries that continue importing Russian energy. The legislation proposes **massive tariffs of up to 500%** on nations like India that have maintained oil trade with Russia, despite Western sanctions.

Overview of the Proposed Legislation

Introduced by **Senator Lindsey Graham** with bipartisan support in the U.S. Congress, the bill aims to:

- Intensify pressure on Russia over its ongoing war in Ukraine
- Deter third countries from circumventing Western sanctions by continuing trade in **Russian-origin oil, gas, coal, and petrochemicals**

Key Features of the Russian Sanctions Act, 2025:

- Section 17:** Imposes **500% ad valorem tariffs** on Russian-origin energy imports by non-compliant countries
- Secondary sanctions:** Targets countries like **India, China, and Brazil** that continue energy ties with Russia
- Presidential waiver clause:** Allows a **6-month delay** in sanctions for strategic reasons at the U.S. President's discretion
- Enforcement timeline:** Urges the imposition of sanctions within **50 days**, emphasizing swift action

India's Response and Concerns

Petroleum Minister's Statement

India's **Petroleum Minister Hardeep Singh Puri** reiterated India's commitment to a **diversified energy portfolio**, importing oil from **over 40 countries**. He asserted that India would navigate any future challenges, emphasizing its sovereign right to secure affordable energy.

MEA's Position

India's Ministry of External Affairs (MEA) rejected what it called "**double standards**," stressing that national interest guides India's energy policy. India remains committed to **market-based sourcing** and affordable energy access for its citizens.

Trade Data and Exposure

- In **FY 2024–25, India-Russia bilateral trade** surged to **\$68.7 billion**, nearly **six times** its pre-pandemic level.
- India's major imports include **crude oil, fertilizers, coal, and petroleum products**.
- In **May 2025 alone**, India imported **\$4.42 billion worth of crude oil** from Russia.

While the threat of sanctions looms, Indian officials emphasize their **ability to pivot** to alternative suppliers and question the feasibility of such steep penalties.

Geopolitical Reactions and Western Tensions Trump's Renewed Stance on Russia

U.S. President **Donald Trump**, now adopting a tougher line on Russia, has threatened **secondary sanctions** if Moscow doesn't end the Ukraine war within **50 days**. His administration has signaled that countries aiding Russia economically—like India—may face **direct consequences**.

NATO Pressure

NATO chief **Mark Rutte** echoed similar concerns, urging **India to pressure Russia** toward peace negotiations to avoid possible sanctions and economic fallout.

Mixed Signals in the West

Trump's approach has generated **divided opinions** in Western circles:

- Some view it as a **positive shift** from his earlier reluctance to support Ukraine
- Others worry the 50-day deadline could **backfire**, allowing Russia to **gain ground militarily** before any diplomatic talks
- Critics also cite a **lack of clarity and timelines** in Trump's enforcement plan
- His **core MAGA base** feels alienated, seeing this as a **departure from his anti-interventionist promises**

Should India Be Worried?

Despite the aggressive posture from Washington, several factors may temper the threat of sanctions:

1. **Energy Diversification:** India has **broad supplier options** and claims it can **shift purchases** if needed.
2. **US-India Trade Talks:** A major **trade deal is under negotiation**, and sanctions could jeopardize it.
3. **China's Position:** Russia's **largest trade partner is China**—any sanctions against

major economies could spark **wider geopolitical fallout**.

4. **Energy Market Stability:** Penalizing Russian oil buyers could **disrupt global markets**, potentially backfiring on the **U.S. and its allies**.

Conclusion

The **Russian Sanctions Act, 2025** reflects growing Western impatience over the limited impact of current sanctions on Russia's economy. India, with its rising oil imports from Russia, finds itself in the crosshairs but has made clear that **national energy security** remains its top priority. As global tensions escalate, the bill raises critical questions about **sovereignty, economic diplomacy**, and the evolving **rules of international engagement** in a multipolar world.

India-Bolivia Cooperation

Context

India delivered **300,000 Measles-Rubella vaccine doses** to **Bolivia** to support its response to an ongoing **health emergency**.

Bolivia Overview

- **Location:** Landlocked country in west-central South America.
- **Capitals:** La Paz (administrative), Sucre (constitutional)
- **Borders:** Brazil, Paraguay, Argentina, Chile, Peru

Geographical Features

- **Andes Mountains:** Cordillera Occidental & Oriental; Mt. Sajama (6,542 m)
- **Altiplano:** High plateau (~12,000 ft), includes Lake Titicaca
- **Uyuni Salt Flats:** World's largest (~10,400 sq.km)
- **Amazon Drainage:** Rivers like Mamoré and Beni
- **Lowlands:** Chaco (hot south), Oriente (tropical north)

India-Bolivia Relations

- **Health Diplomacy:** India supports Bolivia under **South-South Cooperation**.
- **Strategic Cooperation:** Includes ties in **multilateral platforms** (G77, NAM).

Energy: Bolivia's **lithium reserves** make it a key partner in energy tech.

SIMBEX Naval Exercise

Upcoming Participation

The **Indian Navy** is set to participate in the **32nd edition** of the **Singapore-India Maritime Bilateral Exercise (SIMBEX)** in Singapore.

About SIMBEX

- **Inception:** Originally started as **Exercise Lion King** in 1994.
- **Nature:** Annual bilateral naval exercise between the **Indian Navy** and the **Republic of Singapore Navy**.
- **Significance**
- One of **India's longest-running uninterrupted naval exercises**.
- Reflects India's commitment to:
 - **Vision SAGAR (Security and Growth for All in the Region)**
 - **Act East Policy**

U.S. Designates The Resistance Front (TRF) as a Global Terrorist Organization: What It Means

Overview of the U.S. Designation

The United States has officially designated *The Resistance Front (TRF)* as both a **Foreign Terrorist Organization (FTO)** and a **Specially Designated Global Terrorist (SDGT)**. This decision follows the group's involvement in a deadly attack in Pahalgam, South Kashmir, on April 22, 2025, which resulted in the deaths of 26 people. The designation enables the U.S. to freeze TRF's assets, ban U.S.-based support, and restrict its international activities.

What is The Resistance Front (TRF)?

TRF emerged in October 2019, shortly after India revoked Article 370, which granted special status to Jammu and Kashmir. Although it claims to be an "indigenous resistance movement," TRF is widely recognized as a **proxy of Lashkar-e-Taiba (LeT)**—a Pakistan-based terror group.

- **Announcement & Positioning:** TRF announced its formation on Telegram, aiming to portray itself as secular and locally-rooted, steering away from overt Islamic or jihadist symbolism.
- **Leadership:** The group is currently led by **Sheikh Sajjad Gul**, with **Ahmad Khalid** serving as its spokesperson. Its founder, **Muhammad Abbas Sheikh**, was killed in 2021.

Links to Lashkar-e-Taiba

TRF is essentially a **rebranded front for Lashkar-e-Taiba**, created to sidestep international scrutiny, particularly from the

Financial Action Task Force (FATF). The group operates under the guidance of Pakistan's **military and intelligence agency (ISI)** and depends on LeT for funding, weapons, and strategic support. Most of its leadership and infrastructure are based in Pakistan.

Terror Activities and Operations

TRF has been actively involved in high-profile attacks across Jammu and Kashmir, with a concentration in areas like Srinagar. Key incidents attributed to the group include:

- **April 2025:** Attack in Pahalgam killing 26 tourists
- **October 2024:** Ganderbal killings, where seven civilians were shot
- **June 2024:** Bus attack in Reasi
- **2020:** Assault in Srinagar's Lal Chowk that killed six

Despite its attempts to appear as a homegrown movement, TRF's activities remain deeply linked to **Pakistan-based terror networks**.

Use of Digital Propaganda

TRF operates an extensive online propaganda network:

- **KashmirFight:** A digital platform that promotes separatist and extremist ideologies under the guise of a human rights blog.
- **Jhelum Media House (JMH):** A media wing working in tandem with KashmirFight to disseminate terrorist narratives and coordinate attacks.

These platforms are used for **recruitment, psychological warfare, and operational coordination**, often masking their true intentions under misleading narratives.

India's Response

India designated TRF as a terrorist group under the **Unlawful Activities Prevention Act (UAPA)** in January 2023, citing national security concerns. The Ministry of External Affairs continues to raise awareness of TRF's connections to groups like LeT and Jaish-e-Mohammed (JeM).

In 2024, India submitted comprehensive reports to the **UN's 1267 Sanctions Committee**, a body established to enforce sanctions on groups linked to Al-Qaida and ISIL. These efforts aim to push for international action against TRF.

Global Implications of the U.S. Terror Designation

Under **Section 219 of the U.S. Immigration and Nationality Act**, the FTO designation enables the U.S. government to:

- **Criminalize material support:** U.S. individuals or organizations are prohibited from providing any support to TRF.
- **Freeze assets:** All U.S.-linked financial assets of TRF are blocked.
- **Impose secondary sanctions:** Foreign entities doing business with TRF could also face U.S. sanctions.

As a **Specially Designated Global Terrorist (SDGT)** group under the **U.S. Treasury's Office of Foreign Assets Control (OFAC)**, TRF will face further restrictions that significantly limit its ability to operate internationally.

Conclusion

The U.S. designation of TRF as a terrorist entity marks a significant step in isolating and dismantling Pakistan-backed terror networks operating in Kashmir. It also adds international weight to India's long-standing position that TRF is not an indigenous group but a rebranded extension of Lashkar-e-Taiba, designed to manipulate perceptions and avoid global accountability.

INS Nistar and INS Nipun: Advancing India's Maritime Rescue and Deep-Sea Capabilities

- **Introduction: Strengthening Maritime Self-Reliance**

India has inducted two cutting-edge **Diving Support Vessels (DSVs)**—INS Nistar and INS Nipun—marking a major step in the nation's push toward self-reliance in maritime defense. Built indigenously by **Hindustan Shipyard Limited (HSL)**, Visakhapatnam, these vessels will significantly enhance the Indian Navy's capacity for **underwater rescue, salvage missions, and deep-sea operations.**

Key Capabilities and Features

1. Indigenous Design and Construction

- These are the **first DSVs fully designed and constructed in India**, showcasing technological advancement under the **'Aatmanirbhar Bharat' (self-reliant India)** initiative.
- Developed by **HSL**, these vessels reflect India's growing shipbuilding capabilities and reduce dependence on foreign platforms.

2. Advanced Diving and Rescue Systems

- **Integrated Saturation Diving System (ISDS):** Supports diver operations up to **300 meters** for underwater repair, recovery, and rescue.
- **Remotely Operated Vehicles (ROVs):** Allow deep-sea surveillance and mission-critical recovery without human exposure.
- **Side Scan Sonar:** Assists in detecting submerged vessels or wreckage.
- **Integrated Platform Management System (IPMS):** Digitally manages ship systems, improving efficiency and coordination.
- **Submarine Rescue System:** Enables timely extraction of personnel from distressed submarines—a vital capability for modern naval forces.

3. Strategic and Humanitarian Applications

- **Disaster Relief:** Effective during maritime natural disasters and emergencies.
- **Search and Rescue (SAR):** Supports operations involving shipwrecks or downed aircraft.
- **Offshore Exploration:** Assists in deep-sea inspections and safeguarding underwater infrastructure.

Significance for the Indian Navy

1. Enhanced Submarine Rescue Capability

- With rising submarine activity in the region, these vessels are crucial for **independent and immediate submarine rescue**, ending India's earlier dependence on foreign support for such missions.

2. Flexible Deployment Across Maritime Zones

- Suitable for both **coastal and deep-sea operations**, the DSVs offer strategic flexibility and extend India's operational reach in the **Indian Ocean Region (IOR).**

3. Boost to Indigenous Defence Industry

- The construction of these ships contributes to the **local defence ecosystem**, supporting the shipbuilding sector and encouraging **technological self-sufficiency.**

Commissioning and Symbolic Significance

INS Nistar: Honoring a Legacy

- Named after a ship involved in a **1971 submarine crew rescue**, the new INS

Nistar carries forward this legacy with **modern rescue capabilities and advanced equipment.**

INS Nipun: Symbol of Expertise

- "Nipun," meaning **"expert"** in Hindi, represents precision, operational readiness, and cutting-edge engineering essential for deep-sea missions.
- Both vessels were **commissioned in Visakhapatnam**, reflecting the city's growing importance as a hub for naval operations and shipbuilding.

Looking Ahead: Regional Maritime Security Role

As strategic tensions rise in the **Indian Ocean Region**, INS Nistar and INS Nipun are poised to play key roles in:

- **Monitoring underwater threats and securing critical sea lanes**
- **Supporting friendly nations with rescue and recovery missions**
- **Conducting deep-sea inspections and ensuring infrastructure security**

These additions strengthen India's ambitions of building a **blue-water navy** and assert its role as a **regional maritime security provider**, particularly in the Indo-Pacific.

West Bengal: First Conviction in ₹100 Crore Digital Arrest Scam

Case Overview

West Bengal has delivered the **first conviction** in a major **digital arrest scam**, involving a gang that **extorted over ₹100 crore** from more than **100 victims** across India.

What Is a Digital Arrest Scam?

A **digital arrest scam** is a **cyber-enabled fraud** that preys on victims' fear and confusion. Scammers impersonate officials and manipulate victims into transferring money under false pretenses.

How It Works:

- **Initial Contact:** Victims receive a **call, email, or message** claiming they are under investigation for crimes like **money laundering** or **identity theft**.
- **Fear Tactics:** Imposters issue **threats of immediate arrest**, pushing victims into panic and irrational decision-making.
- **Financial Extortion:** Victims are told to transfer money to fake accounts for:
 - "Clearing their name"

- "Security deposits" (claimed to be refundable)

Legal and Administrative Framework State and Central Roles

- **'Police' and 'Public Order'** fall under **State jurisdiction** according to the **Seventh Schedule** of the **Indian Constitution**.
- The **Central Government** supports States and Union Territories by:
 - Issuing advisories
 - Providing financial assistance
 - Strengthening capacity-building programs

Measures to Combat Digital Arrest Scams

1. Indian Cyber Crime Coordination Centre (I4C)

- Nodal agency under the **Ministry of Home Affairs** to address cybercrime comprehensively.

Key Units Under I4C:

- **Cyber Fraud Mitigation Centre (CFMC):** Coordinates responses among **banks, telecom providers, and law enforcement**.
- **Samanvaya Platform:** A **centralized data-sharing system** for tracking **interstate cybercrime linkages**.
- **Suspect Registry:** Developed with banks to maintain a **database of cybercriminals** using identifiable markers (phone numbers, account details, etc.).
- **Report and Check Suspect Tool:** Citizens can **verify suspicious callers or accounts** on cybercrime.gov.in.

Public Advisory by CERT-IN

The **Indian Computer Emergency Response Team (CERT-IN)** provides safety tips to avoid falling victim to digital arrest scams:

- **Verify** the identity of any caller claiming to be a law enforcement officer.
- **Do not panic** or act under emotional pressure.
- **Avoid sharing** personal or financial information over the phone or online.
- **Never transfer money** to unknown accounts under duress.

Don't hand over your phone or allow access to your device to strangers.

Quantum Cybersecurity: Building India's Post-Quantum Future

Context

A whitepaper titled “**Transitioning to Quantum Cyber Readiness**” has been released jointly by:

- The **Ministry of Electronics and Information Technology (MeitY)**
- The **Indian Computer Emergency Response Team (CERT-In)**
- Cybersecurity firm **SISA**

This marks a strategic step in preparing India’s digital infrastructure for the **quantum computing era**, which threatens to break current encryption systems.

What Is Quantum Cybersecurity?

Quantum cybersecurity focuses on two main approaches:

1. Post-Quantum Cryptography (PQC)

- Development of new encryption algorithms resilient to quantum computing attacks.
- These remain compatible with current classical computer systems.

2. Quantum Cryptography

- Leverages the laws of **quantum mechanics**, especially **Quantum Key Distribution (QKD)**.
- Offers **theoretically unbreakable encryption**, ensuring maximum security for sensitive data.

Why Is Quantum Cyber Readiness Crucial?

Emergence of HNDL Attacks

- **Harvest Now, Decrypt Later (HNDL)** tactics involve collecting encrypted data today to decrypt it later when quantum capabilities are available.
- Threatens security of:
 - **Digital certificates**
 - **Blockchain-based systems**
 - **Cryptocurrencies**
 - **Personal and institutional data**

Obsolescence of Classical Encryption

- Algorithms like **RSA**, widely used today, are expected to be **broken by quantum computing** within the next few years.

India’s Roadmap for Quantum Cybersecurity Readiness

1. Foundational Assessment and Planning

- Identify vulnerable digital assets that need quantum-resilient solutions.

2. Technology Readiness and Capability Building

- Assess existing infrastructure.

- Plan upgrades for quantum-safe technologies.

3. Phased Implementation

- Roll out solutions in **multiple phases**, tailored to an organisation’s:
 - Architecture
 - Strategic goals
 - Resource availability
 - Risk profile

4. Resilience and Monitoring

- Adopt cutting-edge technologies like **QKD**.
- Ensure ongoing threat monitoring, compliance, and adaptability.

Conclusion

With quantum computing on the horizon, India’s move toward **quantum cyber readiness** is both timely and necessary. Through strategic planning and innovation, the country can secure its digital assets while fostering technological self-reliance under the **Digital India and Cyber Suraksha initiatives**.

Sharm el-Sheikh Dialogue

Context

The Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA-6) has **welcomed the 2024 report** of the Sharm el-Sheikh Dialogue and supported the continuation of **inclusive and transparent workshops** into 2025.

What Is It?

- A **formal ongoing dialogue** under the Paris Agreement, launched through **Decision 1/CMA.4 (Paragraph 68)**.
- Aims to facilitate **structured discussions among countries and stakeholders** to align global finance flows with climate goals.

Structure & Membership

- Conducted under the **UNFCCC** framework.
- Led by **two co-chairs**: one from a **developed** and one from a **developing country**.
- Includes a wide range of actors: **Parties to the Paris Agreement, financial institutions** (e.g., GCF, GEF), **NGOs, private sector entities, and observer organizations**.

Core Objectives

- Enhance understanding of **Article 2.1(c)**, which emphasizes aligning **financial**

flows with **low-emission, climate-resilient pathways**.

- Maintain **complementarity with Article 9**, which mandates **climate finance support from developed to developing countries**.
- Foster **consensus** on how to implement Article 2.1(c) in a **fair, just, and non-disruptive manner**, respecting existing finance commitments.

2024–2025 Key Features

- A minimum of **two workshops annually**, coordinated by the UNFCCC Secretariat.
- Co-chairs are responsible for ensuring **balanced, participatory, and transparent dialogue** between the Global North and South.
- **Annual reports and documentation from each workshop** will be submitted to the CMA.
- An **open submission process** allows **Parties, financial institutions, private sector actors, and NGOs** to shape the agenda.
- Aims to foster **trust, clarity, and a clear roadmap** for aligning finance with net-zero and resilience goals.

Significance

- Directly contributes to **Paris Agreement objectives** by encouraging **systemic reform in global finance**.
- Promotes greater **private sector involvement** in climate finance.

Ensures that **equity and climate justice**, especially for developing nations, remain **central to climate finance implementation**.

Port of Eilat

Context

The **Port of Eilat** is on the verge of **shutting down**, following a **>90% collapse in maritime activity** due to **repeated Houthi attacks** in the Red Sea.

Overview

- Israel's **only commercial port on the Red Sea** and its **southernmost trade gateway**.
- **Established in 1952**, became operational in **1957**.
- Supports maritime trade with **Asia, East Africa, and Australia**.

Location

- Situated at the **northern tip of the Gulf of Aqaba**, adjacent to **Jordan and Egypt**.

Key Characteristics

- **No rail connectivity**: Nearest rail station is in **Dimona**, over 100 km away.
- Manages **50% of Israel's vehicle imports**, primarily from **China and the Far East**.
- Features dedicated terminals for **potash and phosphate exports** by **Israel Chemicals Ltd (ICL)**.
- Acts as a **transshipment point**, with containers moved via feeder ships to **Aqaba, Jordan**.

Strategic Importance

- Provides **direct access to Indian Ocean trade routes**, bypassing the **Suez Canal**.
- Historically significant in **Arab-Israeli conflicts**, notably the **Suez Crisis** and **Six-Day War**.
- Previously used for **energy imports** through the **Eilat-Ashkelon pipeline**.

A shutdown would represent both a **logistical setback** and a **symbolic victory** for the Houthis, impacting Israel's **maritime trade security**.

Sudan: Recent Clashes and Overview

Current Situation

Numerous casualties have occurred following **violent clashes between rival military factions** in **Kordofan**, a region in **Sudan**.

Political Geography

- Strategically located between **Sub-Saharan Africa** and the **Middle East**, with access to the **Red Sea**.
- **Borders**:
 - North: **Egypt**
 - East: **Eritrea, Ethiopia**
 - South: **South Sudan**
 - West: **Central African Republic, Chad**
 - Northwest: **Libya**

Geographic Features

- **Highest point: Jebel Marra** (also known as the **Marrah Mountains**).

Nile Rivers: The **White Nile** and **Blue Nile** converge at the capital, **Khartoum**, to form the **Nile River**.

International Criminal Court (ICC)

Recent Development

The **International Criminal Court (ICC)** has officially welcomed **Ukraine** as the **125th State Party** to the **Rome Statute**.

About the ICC

- The **first permanent international court** designed to prosecute individuals for **genocide, war crimes, crimes against humanity**, and the **crime of aggression**.
- Established under the **Rome Statute**, which was adopted in **1998** and came into force in **2002**.
- **Headquarters:** The Hague, Netherlands.

India is not a signatory to the Rome Statute.

Pact for the Future

Context

India has reiterated its support for the '**Pact for the Future**' during a **UN dialogue**.

What Is It?

- Adopted during the **2024 Summit of the Future**.
- Encompasses two major components:
 - **Global Digital Compact:** The first comprehensive international framework for digital cooperation.
 - **Declaration on Future Generations.**

Key Features

- Establishes **clear commitments and tangible deliverables** across diverse global challenges.
- Prioritizes **human rights, gender equality**, and **sustainable development**.

Areas of Focus

- **Sustainable development** and **development financing**.
- **Global peace and security**.
- **Science, technology, innovation**, and **digital governance**.
- Empowering **youth** and securing the rights of **future generations**.

Transforming **global governance** mechanisms for more equitable and effective multilateralism.

India-EU Free Trade Agreement (FTA): Progress in Digital Trade, Services, and Investment

India and the European Union (EU) have advanced significantly in the 12th round of negotiations on their proposed Free Trade Agreement (FTA). Marking a major breakthrough, the two parties have **finalised the digital trade chapter in principle**, while also achieving **notable progress in the areas of**

services and investment. These developments are pivotal in moving the India-EU FTA closer to completion—an agreement poised to redefine bilateral economic cooperation, cross-border digital governance, and global trade architecture.

1. Digital Trade Chapter – A Landmark Step Forward

- **Key Focus:** The digital trade chapter encompasses provisions for **cross-border data flows**, which are fundamental to modern e-commerce and the global digital services ecosystem.
- **Importance for India:** This milestone lays the groundwork for India's **information technology and digital economy** to expand internationally and better integrate into global service networks.
- **Transparency Note:** Although the chapter has been agreed upon in principle, **the detailed textual commitments by both India and the EU have not yet been publicly disclosed**.

2. Services and Investment – Growing Synergy Services Sector Integration

- **EU's Goal:** The EU aims to **dismantle barriers** that it perceives as "discriminatory and disproportionate" to its service providers operating in India.
- **India's Potential Gains:** India stands to benefit significantly due to its **rapidly growing IT and financial services industries**, which are likely to attract increased EU investment and collaboration.
- **Economic Relevance:** Services dominate the EU's global foreign direct investment (FDI), comprising over **70% of its total FDI portfolio**. Enhanced cooperation in this sector could **significantly boost India's service export capacity**.

3. Cross-Border Data Flow – A Complex but Strategic Frontier

Balancing Global Trends and National Interests

- **Global Context:** In the era of Artificial Intelligence (AI)—a key driver of the Fourth Industrial Revolution—**free flow of data across borders is increasingly crucial**.

- **India's Position:** India has remained **cautious about loosening its data localisation policies**, prioritising national sovereignty, privacy concerns, and regulatory control.

Policy and Regulatory Developments

- **WTO Stance:** India has **consistently opposed efforts to liberalise cross-border data rules** in plurilateral negotiations at the World Trade Organization (WTO), underscoring the need to protect its policy autonomy.
- **RBI's 2018 Mandate:** The **Reserve Bank of India** required that all payment data pertaining to Indian users (processed by firms like Mastercard and Visa) **must be stored exclusively within India**.
- **UNCTAD's 2018 Report:** The United Nations Conference on Trade and Development (UNCTAD) recognised the **strategic value of data**, endorsing data localisation as essential for development, innovation, and effective regulation.
- **Global Parallels:** Other countries like **Vietnam and the Philippines** have implemented data localisation policies to **nurture domestic digital infrastructure and safeguard emerging industries**.

4. Investment Protection and Dispute Settlement Mechanism

Recent Developments

- **Progress Achieved:** Negotiators have reported **substantial convergence** on the mechanisms for **state-to-state mediation and dispute resolution**, a critical aspect of the investment framework.
- **Historical Tensions:** The EU has harboured concerns since **India unilaterally terminated Bilateral Investment Treaties (BITs)** in 2016, citing the need to establish a more balanced and transparent framework.

Current Negotiating Approach

- **India's Strategy:** India is pursuing **new bilateral investment agreements under a revised legal structure**, aiming to balance investor protection with domestic regulatory rights.

- **EU's Perspective:** The EU advocates for a **Multilateral Investment Court** system and views the current investment chapter as a **precursor to deeper and more stable trade relations** with India.

Conclusion

The 12th round of FTA negotiations between India and the EU represents a significant turning point, particularly in the domains of **digital trade, services, and investment**. India's approach seeks to strike a **delicate balance between economic liberalisation and the preservation of regulatory sovereignty**. This balance is vital not only for sustaining domestic policy space but also for leveraging global trade to fuel national growth in an increasingly digital and interconnected world.

European Free Trade Association (EFTA): FTA with India from October

FTA Implementation

India's **Free Trade Agreement (FTA)** with the **European Free Trade Association (EFTA)** will come into effect on **October 1**, as confirmed by the **Union Minister of Commerce and Industry**.

About EFTA

- **Established:** 1960 via the **Stockholm Convention**
- **Purpose:** Promote **free trade and economic integration** both within Europe and globally.

Current Member States

- **Iceland**
- **Liechtenstein**
- **Norway**
- **Switzerland**

Originally included Austria, Denmark, Portugal, Sweden, and the UK, many of which later joined the **European Union**, leaving EFTA.

Key Features

- **Not a customs union:** Member states can set **independent tariffs** and trade agreements with non-EFTA countries.
- **Extensive FTA network:** Includes agreements with over **60 countries and territories**, including the EU.
- **Part of the European Economic Area (EEA):** Iceland, Liechtenstein, and Norway participate (Switzerland does not).

Governance Structure

- **EFTA Council:** The highest governing body, meets **8 times a year** at

ambassadorial level, and twice at ministerial level.

- **EFTA Secretariat:** Based in **Geneva**, oversees negotiations and internal coordination.
- **EFTA Surveillance Authority (ESA):** Ensures compliance with EEA rules (except Switzerland).
- **EFTA Court:** Located in **Luxembourg**, mirrors the role of the **Court of Justice of the EU** in resolving EEA-related disputes.

India's Voting Behaviour at the United Nations: Strategic Shift Reflected in Rising Abstentions

Introduction

India's voting patterns at the United Nations have experienced a marked transformation, culminating in a record-high rate of abstentions in 2025. A review of more than 5,500 resolutions from 1946 to June 2025 shows India's 'yes' vote share has dropped to 56%—the lowest level since 1955—while abstentions have climbed to 44%. This trend highlights a significant shift in India's foreign policy, rooted in the complexities of multilateral diplomacy and its evolving role as a middle power in a polarised world order.

Historical Evolution of India's UN Voting Patterns

India's voting behaviour at the UN has shifted across distinct periods:

- **1946-Late 1960s:** Marked by volatility, with 'yes' votes ranging between 20% and 100%, and abstentions varying from 0% to 40%.
- **1970-1994:** Greater consistency emerged. 'Yes' votes stabilized between 74% and 96%, with abstentions reduced to 8%-19%.
- **Mid-1990s-2019:** Further stabilization saw 'yes' votes between 75% and 83%, and abstentions narrowing to 10%-17%.
- **Post-2019:** A clear departure from earlier trends began, with abstentions steadily rising and 'yes' votes declining. This culminated in 2025's unprecedented 44% abstention rate.

These shifts mirror both global geopolitical changes and India's ambition for enhanced strategic autonomy.

Factors Behind the Strategic Realignment

1. Intensifying Global Polarisation

India's increasing abstentions can be partially attributed to growing divisions among major global powers. As per a former Indian diplomat to the UN, this polarisation has reduced room for consensus and heightened pressure to take sides—something India prefers to avoid in favour of non-alignment.

2. Complex Nature of Resolutions

Modern UN resolutions often resemble "Christmas trees," as described by a former Permanent Representative of India to the UN. These documents tend to bundle conflicting provisions, making it challenging for India to support or oppose them outright. Abstention, therefore, becomes a pragmatic middle path.

3. Assertion of Diplomatic Sovereignty

Far from being passive or indecisive, abstaining is increasingly viewed as a conscious assertion of India's sovereign judgment. It enables India to maintain a nuanced position, steering clear of rigid bloc affiliations—whether with the West, the China-Russia alliance, or others. For a middle power like India, abstentions offer flexibility in navigating contentious issues without compromising broader strategic interests.

Global Repercussions and Interpretations

- **Signal of Independence:** India's frequent abstentions highlight its intent to uphold strategic autonomy and its legacy of non-alignment while adjusting to contemporary global dynamics.
- **Strain on Alliances:** However, this approach could create ambiguity or frustration among traditional allies, particularly when India abstains on high-stakes votes related to human rights or international security.
- **Diplomatic Tightrope:** The challenge for India lies in preserving its autonomy while still projecting itself as a credible and responsible international player.

Case Studies of Abstention

Though the analysis does not identify individual resolutions, India's recent abstentions commonly relate to:

- **The Russia-Ukraine conflict**
- **Human rights issues** in countries like Myanmar and China
- **Israel-Palestine disputes**

In such instances, abstaining allows India to protect its bilateral relationships while subtly signaling its positions and concerns.

Looking Ahead: India's UN Strategy

India is expected to continue favouring strategic abstentions, particularly as it pursues greater influence in global institutions (e.g., seeking permanent membership in the UN Security Council) and manages ties with competing powers. In an increasingly volatile world, India's approach reflects a recalibrated diplomacy where abstention is not withdrawal but a deliberate stance as a balancing power.

Indian Army's AI Integration Plan: Transforming Warfare by 2026-27

Overview

The Indian Army has charted a detailed strategy to incorporate **Artificial Intelligence (AI)**, **Machine Learning (ML)**, and **Big Data Analytics** across its operations by 2026-27. The primary objectives are to enhance **real-time situational awareness**, **accelerate decision-making**, and **modernise warfare capabilities** across combat, logistics, and training domains.

The plan prioritises cutting-edge technologies such as **drone swarming**, **real-time surveillance**, **combat simulations**, **information warfare tools**, and **data-driven command systems**, aiming to boost both operational efficiency and strategic agility.

Strategic Benefits of Military AI

1. **Accelerated Decision-Making:** AI tools process sensor data at machine speed, offering commanders a **"decision advantage"** by recommending actions in real-time.
2. **Force Multiplication:** Autonomous systems can execute repetitive or hazardous tasks, enhancing efficiency in areas like logistics, surveillance, and threat response with reduced personnel.
3. **Soldier Safety:** AI-enabled drones and robotics can handle high-risk operations such as **reconnaissance**, **mine clearance**, and **casualty evacuation**, reducing human exposure to danger.
4. **Cost-Effectiveness:** AI platforms, especially drones and software, are **cheaper and more scalable** than traditional systems—delivering military value at lower operational cost.
5. **Precision and Minimised Collateral Damage:** With accurate AI-assisted targeting, precision strikes are possible—helping reduce unintended

civilian harm, provided systems are thoroughly validated.

6. **Strategic Advantage:** AI enhances **wargaming capabilities** and **scenario planning**, deterring adversaries through advanced simulation and predictive modelling.

Risks and Concerns of AI in Warfare

1. **Autonomy vs. Human Oversight:** Fully autonomous systems could act without human approval, potentially triggering unintended escalation—particularly dangerous in **nuclear or high-stakes** scenarios.
2. **Cybersecurity Threats:** AI systems are susceptible to **spoofing**, **hacking**, or manipulation, risking misidentification, system shutdowns, or even adversaries taking control of weapons.
3. **Civilian Casualties from AI Errors:** In complex battle environments, AI may misinterpret situations due to its **"black box"** nature, leading to accidental targeting of civilians.
4. **Bias and Ethical Misuse:** AI models trained on biased data can misidentify threats or be weaponised for **authoritarian purposes**, including surveillance and extrajudicial actions.
5. **AI Arms Race:** A competitive global race for AI dominance may result in **rushed deployments**, instability, and poor regulation—heightening the risk of accidents and conflict escalation.

Post-Operation Sindoor Push for AI

The drive for AI integration accelerated following **Operation Sindoor**—a targeted military operation in **May 2025** against terror bases in **Pakistan and PoK**. The lessons from this operation highlighted the need for **faster intelligence processing** and **more autonomous combat support**, prompting the Indian Army to expedite AI adoption.

Immediate Priority: Enhancing Battlefield Awareness

Key technologies being prioritised include:

- **Large Language Model (LLM)-based text summarisation**
- **AI-powered chatbots and voice-to-text systems**
- **Facial recognition and anomaly detection algorithms**

- **Data fusion systems** to integrate feeds from drones, satellites, aircraft, and ground sensors for real-time intelligence

Comprehensive AI Applications

The roadmap targets AI deployment at multiple operational levels:

- **Combat and Surveillance:** AI for counter-intelligence, drone monitoring, and mapping adversary activity.
- **Decision Support Systems:** Enhanced planning, automated threat analysis, and wargaming.
- **Open-Source Intelligence (OSINT):** Monitoring adversary movements and public sentiment through social media and open data.
- **Logistics and Maintenance:** Predictive maintenance, supply chain optimisation, and GPS-independent navigation systems.

Modernisation, Equipment Integration, and Collaboration

- **General Staff Qualitative Requirements (GSQRs)** will now include AI features, ensuring all new military equipment is AI-ready.
- **Legacy platforms** will be selectively retrofitted with AI capabilities.
- An **AI lab** under the **Directorate General of Information Systems (DGIS)** is being established for model development and cross-service coordination with the Navy and Air Force.
- The Army will also **partner with industry and academia** to accelerate innovation and field-readiness.

AI Task Force Formation

A specialised **AI Task Force** is being created under DGIS, consisting of experts from various Army branches. This task force will:

- Manage AI technology rollouts
- Lead training and capability development
- Oversee system integration and data sharing
- Facilitate R&D and maintenance

Ensure AI is embedded into procurement processes

Who Are the Bedouins?

Context

Over **300 individuals have been killed** due to violent clashes in **southern Syria**, particularly in

and around **Sweida**, between the **Druze minority** and **Sunni Bedouin tribes**.

About the Bedouins

- **Definition & Origin:**
 - Bedouins are **traditionally nomadic Arab tribes**, historically known for traversing and inhabiting the **deserts of the Middle East and North Africa**.
 - The term "**Bedouin**" originates from the Arabic word "**badawi**", meaning "**desert dweller**."
- **Livelihood:**
 - Traditionally relied on **livestock herding** (camels, sheep, and goats) and **seasonal migration** across arid regions.
 - Their classification often depends on the **type of animals** they rear.
- **Presence in Syria:**
 - Predominantly located in the **Al-Badia desert** region covering **southern and eastern Syria**, including provinces such as **Sweida, Homs, and Deir ez-Zor**.
- **Social Structure:**
 - Bedouin society is **tribal and patriarchal**, organized into **extended families** that are:
 - **Patrilineal** (inheritance through male line)
 - **Endogamous** (marrying within the tribe)
 - **Polygynous** (men having multiple wives)

Leadership rests with a **sheikh**, the head of the family or tribe, who is supported by a **council of male elders**.

M23 Rebels

Context

The **Democratic Republic of Congo (DRC)** and the **Rwanda-backed M23 rebels** have agreed to a **permanent ceasefire** in the conflict-ridden **eastern DRC**.

About M23 Rebels

- **Full Form: March 23 Movement (M23)**
- **Ethnic Composition:** Primarily composed of **ethnic Tutsis**.
- **Origins:**
 - Named after the **March 23, 2009** peace agreement between the

- **Congolese government** and **CNDP**, a Tutsi-led rebel group.
- Formed in **2012** when ex-CNDP members accused the government of **failing to implement the 2009 accord**.
- **Primary Demands:**
 - **Protection of minorities**
 - **Equitable distribution** of the DRC's **natural resources**, especially in the **mineral-rich eastern regions**.

India-Taliban 2.0 Engagement: A Strategic Recalibration

Background and Diplomatic Developments

India has recently engaged in **high-level talks** with the Taliban, including a conversation between **EAM S. Jaishankar** and Taliban's **Amir Khan Muttaqi**, and meetings involving India's **Foreign Secretary**. This comes amid **Russia's formal recognition** of the Taliban, indicating a shift in regional dynamics and encouraging deeper Indian engagement.

Geopolitical Context of India-Afghanistan Relations

1. **Shift from Hostility to Opportunity:** During the Taliban's first rule (1996–2001), India faced direct hostility and threats from Pakistan-backed terror outfits operating from Afghanistan. However, **post-2021**, the Taliban appears more **open to engaging with India**, partly due to deteriorating relations with Pakistan.
2. **Humanitarian Diplomacy:** India has invested over **\$3 billion** in Afghanistan through infrastructure, education, and health projects, including building the Parliament. It was among the first to send **humanitarian aid** post-U.S. withdrawal, earning trust and goodwill.
3. **Pakistan-Taliban Rift:** The Taliban's refusal to act against the **Tehrik-e-Taliban Pakistan (TTP)** has created friction with Islamabad. India is leveraging this rift to **expand its strategic space** in Afghanistan.
4. **Multi-Ring Strategy:** According to **Shafiee's theory**, Afghanistan lies within India's '**first**

ring'—its immediate neighbourhood—where India seeks strategic primacy to **counter Pakistani and Chinese influence**.

India's Strategic Objectives with Taliban 2.0

- **Counter-Terrorism:** Engagement allows India to **prevent Afghan soil from being used** for anti-India activities, thereby **limiting Pakistan's influence**.
- **Access to Central Asia:** Afghanistan provides a crucial land bridge to Central Asia. With Pakistan **blocking overland routes**, India is focusing on alternatives like **Chabahar Port** and the **Zaranj-Delaram highway**.
- **Energy and Connectivity:** Central Asia's energy reserves are vital for India. Strengthened routes through Afghanistan can support India's **energy diversification** strategy.
- **Check on China-Pakistan Axis:** A strong India-Taliban relationship **reduces Pakistan's strategic depth** and counters China's growing presence via the **Belt and Road Initiative (BRI)**.
- **Regional Security Framework:** Drawing on **Barry Buzan's theory**, a stable Afghanistan aligned with Indian interests can reinforce a **South Asia-centric security order**.

Challenges in India-Taliban Engagement

- **Diplomatic Legitimacy:** The Taliban lacks international recognition and remains under **UN sanctions**, making full formal recognition a sensitive issue for India.
- **Human Rights Violations:** The Taliban's regressive policies on **women's rights and minorities** pose significant ethical and diplomatic hurdles.
- **Proxy Conflicts with Pakistan:** India's active role in Afghanistan could provoke **Pakistani retaliation** through proxies.
- **Chinese Influence:** China's investments and growing stake in Afghanistan could pose **economic and security challenges** to Indian interests.
- **Internal Taliban Divisions:** Factionalism within the Taliban impedes cohesive policymaking, complicating India's engagement strategy.

Strategic Calculations: India's Post-2021 Approach

Objective	India's Approach
Prevent terror spillover	Intelligence and security cooperation with Kabul
Counter Pakistani influence	Humanitarian aid, infrastructure projects, alignment with anti-TTP stance
Improve access to Central Asia	Investment in regional connectivity (e.g., Chabahar, Zaranj-Delaram)
Assert regional leadership	Active participation in platforms like SCO, Quad, Moscow Format
Secure past investments	Continued project-based diplomacy and support for civil society

Policy Recommendations and Way Forward

- **Engage Without Recognising:** Maintain **de facto engagement** through aid and dialogue, while delaying formal recognition until global consensus emerges.
- **Layered Diplomacy:** Engage Taliban officials while supporting **civil society**, women's rights, and education through multilateral and **non-governmental channels**.
- **Regional Coordination:** Deepen strategic cooperation with **Iran, Russia, and Central Asia** to mitigate Taliban unpredictability and counter the **China-Pakistan axis**.
- **Boost Chabahar Corridor:** Accelerate infrastructure development to enable **unhindered access to Afghanistan and beyond**.
- **Prevent Radicalisation Spillover:** Strengthen **intelligence-sharing** and border surveillance to block extremist infiltration into Indian territory.

Conclusion

India's recalibrated approach toward **Taliban 2.0** reflects a move from idealistic diplomacy to **realpolitik**. Despite ongoing challenges—ranging from human rights concerns to geopolitical rivalries—India is crafting a strategy that secures its **security, economic, and regional leadership interests**. As Afghanistan becomes a pivotal crossroads in Asian geopolitics, India must engage the Taliban with

strategic caution, calculated diplomacy, and consistent resolve

Bitra Island: Defence Acquisition Sparks Controversy

Context

- The **Lakshadweep administration** has issued a **notification to acquire Bitra Island** for **defence purposes**, leading to strong resistance from local communities and political leaders.

Key Details about Bitra Island

- **Smallest inhabited island** in the Lakshadweep group
- **Land area:** 0.105 sq. km
- **Lagoon area:** 45.61 sq. km
- **Cultural Landmark:** Home to the **shrine of Malik Mulla**, a revered Arab saint

Location and Jurisdiction

- Coordinates: **11°36'N, 72°11'E**
- About **483 km west of Kochi**
- Falls under the **Union Territory of Lakshadweep**, governed by the Lakshadweep Administration

Geographical and Climatic Features

- **Coral reef-protected lagoon** keeps waters calm even during monsoons
- **Tropical and humid climate** similar to Kerala
- **Annual rainfall:** ~1600 mm
- **Population (2011 Census):** 271 people across 105 households

Strategic and Defence Significance

- **Geopolitical Importance:**
 - Proximity to key **international shipping routes**
 - Near the **Strait of Hormuz** and **Malacca Strait**, crucial for maritime surveillance
- **Defence Proposal:**
 - Conversion into a **defence outpost** to enhance maritime domain awareness
 - Would complement **INS Dweepakshak (Kavaratti)** and **INS Jatayu (Minicoy)**
- **Justification:** The government cites **logistical and strategic challenges** in maintaining civilian habitation on an island of such sensitivity

Local Opposition and Legal Framework

- **"Save Bitra Island" Campaign:** Mass mobilization by locals via public protests and social media
- **Legal Process:**
 - Acquisition under the **Land Acquisition, Rehabilitation and Resettlement Act, 2013**
 - **Social Impact Assessment (SIA)** ordered; survey to be completed within two months

Wider Significance

- Raises important questions about the **balance between national security and indigenous rights**
- Reflects India's **growing maritime assertiveness** in the **Indian Ocean Region (IOR)**

Third instance of **defence-related land acquisition** in Lakshadweep, amplifying local tensions

Codex Alimentarius Commission (CAC)

India's Recent Role

- During the **88th Executive Committee session** of the Codex Alimentarius Commission (CCEXEC 88) at **FAO headquarters in Rome**, India's contributions to global food standards development were appreciated.

About CAC

- The **Codex Alimentarius Commission (CAC)** is the **international food standards-setting body**.
- Established in May 1963 by:
 - **FAO (Food and Agriculture Organization)**
 - **WHO (World Health Organization)**
- **Headquarters:** Rome

Mandate

- To **protect consumer health** and **ensure fair practices** in international food trade.
- **Structure of CAC**
- **Commission**
- **Executive Committee**
- **Codex Secretariat**
- **Subsidiary Bodies**

Membership

- Open to all Member Nations and Associate Members of FAO and WHO.
- **Current members:** 189 (188 countries + European Union)

- **India joined in 1964.**
- The Commission meets **annually**, alternating between **Rome and Geneva**.

Funding

- Financed by the **regular budgets of WHO and FAO**.
- All activities are subject to approval by the governing bodies of FAO and WHO.

What is Codex Alimentarius?

- Also known as the **"Food Code"**.
- A **compilation of international standards, guidelines, and codes of practice** for food safety and trade.
- Recognized by the **WTO** under the **Agreement on the Application of Sanitary and Phytosanitary (SPS) Measures**.
- Ensures:
 - **Health safety** of food for consumers.
 - **Harmonization** of national food safety standards.
 - **Confidence** for importers and traders in food quality.

India and Codex

- **National Codex Contact Point (NCCP)** under **FSSAI** coordinates Codex-related activities.

Works with the **National Codex Committee** to provide India's input via a structured consultation process.

Lesotho: India's Growing Bilateral Engagement

Political & Geographical Profile

- **Landlocked country**, fully surrounded by **South Africa**.
- Known as the **"Kingdom in the Sky"**, as it's the **only country entirely above 1,000 m elevation**.
- **Mountains** cover two-thirds of the area.
 - **Highest Peak:** Thabana Ntlenyana (3,482 m)
 - Major ranges: **Drakensberg** (eastern boundary), **Maloti Mountains**

Natural Resource: Water, referred to as **"white gold"**

International Seabed Authority (ISA)

Recent Developments

- Despite two weeks of intense negotiations, **ISA** has yet to finalize **rules for deep-sea mineral extraction**, even

as global pressure — notably from the US — mounts.

About ISA

- An **autonomous international organization**.
- **Established under:**
 - **UNCLOS (1982)**
 - **1994 Agreement** related to Part XI of UNCLOS
- **Operational since:** 16 November 1994
- **Headquarters:** Kingston, Jamaica

Mandate

- Regulate **mining and related activities** in the **international seabed area**, which lies **beyond national jurisdiction**.
- Area covers around **54% of global ocean floor**.
- Activities must:
 - Be conducted **for the benefit of humankind**
 - Ensure **protection of the marine environment**

Membership

- **169 members:** 168 countries + **European Union**
- Membership is open to **all UNCLOS signatories**.
- **Organizational Structure**
- **Assembly:** Supreme body; sets policies, budgets, elects Council.
- **Council:** Executive authority (36 members); approves contracts, regulates mining.
- **Secretary-General:** Nominated by Council, elected by Assembly (4-year term).

United Nations Convention on the Law of the Sea (UNCLOS)

- Also called **Law of the Sea Convention**.
- Came into effect on **16 November 1982**.
- Provides legal rules for:
 - **Maritime zones** (territorial sea, EEZ, continental shelf)
 - **Coastal and flag state responsibilities**
 - **Marine resource management**
 - **Environmental protection**

Peaceful dispute resolution

Bharat NCX 2025 (National Cybersecurity Exercise)

Overview

- **Officially launched in 2025.**

- Conducted by the **National Security Council Secretariat (NSCS)** in collaboration with **Rashtriya Raksha University (RRU)**.

Objectives

- Strengthen India's **cyber defence preparedness**.
- Enhance **national resilience** against cyberattacks.

Key Features

- **Live-fire cyber simulations.**
- **AI-integrated cybersecurity training.**

Aims to improve real-time **response strategies** to cyber threats.

Gaza Hunger Crisis: A Man-Made Famine Context

The humanitarian crisis in Gaza has deteriorated into a full-blown hunger emergency. Over **2 million people** are **food insecure**, with reports of deaths due to starvation. Both **UN agencies** and **Palestinian health authorities** confirm that this crisis is man-made, exacerbated by military conflict, aid blockades, and attacks near food distribution points.

Nature of the Crisis

This is a **man-made famine** resulting from:

- Ongoing **military operations**,
- **Blockade of humanitarian aid**, and
- The **collapse of food distribution systems**.

Key Statistics

- **2.1 million** people face food insecurity (UN)
- **70,000 children** show symptoms of malnutrition
- **900,000 people** face severe hunger (Gaza Health Ministry)
- **Over 1,000 civilians** have died attempting to access food since May (UN)
- **10%+ of children** are acutely malnourished
- **20%+ of pregnant and breastfeeding women** are undernourished (WHO)

Impact and Implications

1. Overburdened Hospitals:

- Children suffering from acute starvation are sharing limited hospital beds.
- Hospitals lack resources to treat severe malnutrition.

2. Aid Convoys Under Attack:

- Food distribution sites are frequently targeted.
- Humanitarian convoys operate under **constant armed threat**.
- 3. **Violation of International Law:**
 - UN and WHO have flagged **systematic starvation** as a breach of international humanitarian norms.
- 4. **Criminalisation of Aid-Seeking:**
 - Civilians attempting to access food are surveilled, harassed, or attacked.
 - Aid-seeking is being treated as a criminal activity.
- 5. **Socio-Political Breakdown:**
 - The crisis intersects with broader issues:
 - **Health collapse**
 - **Security breakdown**
 - **Human rights violations**
 - Famine is accelerating the disintegration of civil infrastructure and social cohesion.

Conclusion

The Gaza hunger crisis is a humanitarian catastrophe with no precedent in scale or severity in recent years. It represents a deliberate dismantling of food and aid systems in breach of international law. Urgent global intervention is required to prevent further civilian deaths, ensure unhindered aid access, and uphold human rights and humanitarian obligations.

Tayfun Block-4: Turkey's First Hypersonic Missile

Context

Turkey has officially unveiled the **Tayfun Block-4**, its first-ever **hypersonic ballistic missile**, developed by **Roketsan**, a leading Turkish defense firm.

Key Features

- **Type:** Hypersonic ballistic missile (Mach 5+ speed capability)
- **Length:** 6.5 meters
- **Weight:** Approximately 2,300 kilograms
- **Warhead:** Equipped with a **fragmentation warhead**
- **Range:** Operates up to **800 km**, with a planned upgrade to **1,000 km**

Guidance System

- Utilizes **GPS** and **GLONASS**, integrated with an **Inertial Navigation System (INS)**
- Delivers **high precision**, with a maximum deviation of just **5 meters**

Propulsion and Purpose

- Powered by **solid composite fuel**
- Designed for rapid and high-impact strikes against **strategic targets**, such as:
 - **Air defense systems**
 - **Command centers**
 - **Critical infrastructure**

Etruscans: Ancient Civilization of Italy

Recent Discovery

Archaeologists have uncovered a **well-preserved Etruscan tomb** in central Italy, offering new insights into this pre-Roman civilization.

Who Were the Etruscans?

- The **Etruscans** (also called **Tyrrhenians**) were a Mediterranean civilization that **flourished between the 8th and 3rd centuries BCE**.
- Their territory, **Etruria** (modern-day Tuscany and surrounding regions), was bounded by:
 - **West:** Tyrrhenian Sea
 - **North:** Arno River
 - **East and South:** Tiber River

Cultural and Technological Contributions

- **Urban Planning:** First in the region to build cities using a **grid layout**, influencing Roman military camps and city planning.
- **Maritime Power:** Maintained a **strong navy**, dominating the western Mediterranean.
- **Iron Resources:** Controlled the largest iron reserves in the western Mediterranean.

Social Structure

1. **Aristocracy** – Powerful noble class
 2. **Middle Class** – Craftsmen, merchants, sailors
 3. **Lower Class** – Enslaved individuals
- **Women enjoyed higher status** compared to Greek and Roman societies.
 - Etruscan women were often **literate and educated**.

Religious Beliefs

- The Etruscans believed that **gods controlled both natural and human-made worlds**.
- They interpreted divine will through natural events like **lightning**.
- Though their mythology was distinct, over time their deities became **similar to Greek and Roman gods** like **Zeus, Hermes, and Athena**.

Decline and Legacy

- Decline began in the **late 6th to early 5th century BCE**.
- In **509 BCE**, Etruscan kings were expelled from Rome.
- **Naval defeat by the Greeks** in 474 BCE weakened their influence.
- By the **mid-3rd century BCE**, Rome had absorbed Etruria.

Latin replaced Etruscan, and by the **1st century BCE**, the Etruscans had been fully integrated into the **Roman Empire**, ending their identity as a distinct culture.

United Nations Educational, Scientific and Cultural Organization (UNESCO)

Context

The United States, under President Donald Trump, announced its decision to withdraw from **UNESCO**, citing a broader policy of disengagement from global institutions.

About UNESCO

- **Established:** In 1945, after World War II
- **Predecessor:** International Committee on Intellectual Cooperation
- **Headquarters:** Paris, France
- **Parent Body:** United Nations Economic and Social Council (ECOSOC)
- **Membership:** 194 member states and 12 associate members

Mission and Focus Areas

UNESCO works to promote **global peace and security** by encouraging international cooperation in:

1. **Education**
2. **Natural Sciences**
3. **Social and Human Sciences**
4. **Culture**
5. **Communication and Information**
 - Promotes literacy and supports free education initiatives
 - Serves as a platform for the exchange of ideas and knowledge

- Partners with NGOs and private sector organizations
- Maintains the **World Heritage Sites list** — identifying and protecting places of **universal cultural and natural value**

Key Publications by UNESCO

- *Global Education Monitoring Report*
- *United Nations World Water Development Report*
- *World Trends in Freedom of Expression and Media Development*

UNESCO also operates within the framework of the **United Nations Sustainable Development Group**, aligning with global development goals.

United Kingdom (UK)

Context

India's Prime Minister visited the **United Kingdom** to boost bilateral ties, with key discussions on the **India-UK Free Trade Agreement**, **extradition**, and **counter-extremism efforts**.

About the United Kingdom

Geography & Composition

- A **sovereign island nation** comprising:
 - **England**
 - **Scotland**
 - **Wales**
 - **Northern Ireland**
- Located **northwest of mainland Europe**, surrounded by:
 - **Atlantic Ocean**
 - **North Sea**
 - **Irish Sea**
 - **English Channel**

Capital: London — global center for finance, culture, and politics

Government: Parliamentary constitutional monarchy

Neighbours

- **Land Border:** Only with the **Republic of Ireland**
- **Maritime Neighbours:** France, Belgium, Netherlands, Norway

UK vs. England

- **England** is one of the four constituent parts of the UK.
- **UK** refers to all four: **England, Scotland, Wales, and Northern Ireland**.

Physical Features

Mountains

- **Ben Nevis (Scotland)** – UK's highest peak (1,345 m), part of the **Grampians**

- **Cambrian Mountains (Wales)** – Volcanic origin, rich in biodiversity
- **Pennines (England)** – Known as the "Backbone of England"

Rivers

- **Thames** – Vital to London's growth and trade
- **Severn** – Longest river in the UK; supports hydropower
- **Clyde** – Central to Glasgow's shipbuilding industry

Strategic Importance

- **Former colonial empire** with global cultural and political influence
- **Brexit:** First country to leave the **European Union (2020)**
- Founding member of:
 - **NATO**
 - **G7**
 - **UN Security Council (P5)**
 - **Commonwealth**

India-UK Relations

- **Comprehensive Strategic Partnership (2021)** established
- Cooperation in:
 - Trade and defence
 - Health, innovation, fintech
 - Climate change

FTA Negotiations underway to boost **\$20+ billion bilateral trade**

India-UK Free Trade Agreement 2025: Key Highlights, Benefits, and Strategic Impact Introduction

India and the United Kingdom have signed a landmark **Comprehensive Economic Trade Agreement (CETA)** during Prime Minister Narendra Modi's official visit to the UK. Alongside the agreement, both countries launched the **India-UK Vision 2035**, replacing the previous *Roadmap 2030*. This new strategic framework aims to deepen cooperation across key areas including trade, defence, technology, education, clean energy, and climate action.

The agreement marks a significant shift in India's global trade posture, reflecting a growing focus on strengthening economic partnerships with advanced economies.

Key Features of the India-UK Free Trade Agreement (Signed July 24, 2025)

1. Market Access and Tariff Reduction

- **India's Gains:** 99% of Indian exports to the UK will be duty-free.

- **UK's Gains:** Tariffs on 90% of UK goods reduced, with 85% reaching zero-duty within 10 years.
- **Benefiting Sectors:** Textiles, processed foods, base metals, chemicals, and marine products.
- **Examples:** Tariffs on processed foods reduced from 70% to zero; improved access for spices, rubber, and plastic goods.

2. Agriculture

- **Zero-Duty Access:** Over 95% of Indian agricultural exports to the UK.
- **Covered Products:** Fruits, vegetables, pulses, millets, organic herbs, pickles.
- **Expected Outcome:** 20% increase in agri-exports within three years; support for India's \$100 billion agri-export goal by 2030.
- **Protected Items:** Sensitive sectors such as dairy, oats, apples, and edible oils excluded from liberalisation.

3. Marine Products

- **Tariff Elimination:** Duty-free access for shrimp, tuna, fishmeal, and other seafood.
- **Current Status:** India holds a 2.25% share in UK marine imports.
- **Potential:** Significant growth opportunity for India's coastal economy.

4. Textiles and Apparel

- **Coverage:** 1,143 product categories included for duty-free access.
- **Key Exports:** Readymade garments, home textiles, carpets, handicrafts.
- **Competitive Edge:** Enhanced parity with countries like Bangladesh and Cambodia; potential 5% market share gain in the UK.

5. Engineering Goods

- **Current Exports:** \$4.28 billion to the UK.
- **Tariff Reductions:** Up to 18% duty eliminated.
- **Forecast:** Potential to double exports to \$7.5 billion by 2030.

6. Pharmaceuticals and Medical Devices

- **Duty-Free Access:** For generic medicines and medical devices.
- **Products Covered:** ECG and X-ray machines, surgical instruments.
- **Market Scope:** The UK imports \$30 billion in pharmaceuticals; India currently accounts for just \$1 billion.

7. Chemicals and Plastics

- **Chemical Sector:** Export growth projected at 30–40% to \$650–750 million in FY26.
- **Plastics:** Targeted growth in films, sheets, kitchenware; 15% export increase expected.

8. Toys, Sports Goods, Gems and Jewellery

- **Competitive Edge:** Improved market access over Chinese and Vietnamese exports.
- **Jewellery:** Potential to double exports within two to three years; targeting the UK's \$3 billion jewellery market.

9. Leather and Footwear

- **Tariff Reduction:** 16% duties eliminated.
- **Export Target:** Exceeding \$900 million.
- **Beneficiaries:** MSME hubs including Agra, Kanpur, Kolhapur, and Chennai.

Services, Professionals, and Labour Mobility

- **Social Security Relief:** 75,000 Indian workers in the UK will be exempt from British social security contributions for three years.
- **Market Access:** 36 services sectors opened without requiring an Economic Needs Test.
- **Professional Mobility:** Indian professionals can work in 35 sectors in the UK for up to two years.
- **Cultural Exchanges:** 1,800 professionals including chefs, yoga instructors, and artists to be admitted annually.
- **Double Contribution Agreement:** Indian workers will no longer be required to contribute to both Indian and UK social security systems.

Strategic and Economic Impact For India

- Major export gains in agriculture, processed food, engineering goods, seafood, footwear, textiles, and pharmaceuticals.
- Improved mobility and recognition for Indian professionals and service providers.
- Greater integration into global value chains and enhanced competitiveness in UK markets.

For the UK

- Increased access for exports such as whisky, automobiles, and advanced machinery to the Indian market.
- Potential for UK exports to India to grow by 60%, adding £15.7 billion in trade value by 2040.

Bilateral Trade Impact

- Overall bilateral trade expected to increase by 39%.
- Additional trade worth £25.5 billion annually, compared to a no-FTA scenario.

Strategic Context: A Post-RCEP Pivot

India's exit from the Regional Comprehensive Economic Partnership (RCEP) in 2019 prompted a shift in trade strategy toward high-income markets. The India-UK FTA is part of this broader approach to building deeper commercial ties with developed economies such as the UK and European Union.

India-UK Vision 2035

The **India-UK Vision 2035** serves as a long-term strategic framework guiding bilateral relations through to the year 2035. It replaces the previous **Roadmap 2030** and outlines an ambitious agenda for cooperation built around a **BRISK partnership**—focusing on **Business, Research, Innovation, Science and Technology, and Knowledge**.

Key Pillars of Cooperation

1. Trade and Economic Growth

- Formalisation of the **India-UK Comprehensive Economic and Trade Agreement (CETA)**.
- Commitment to negotiate a **Bilateral Investment Treaty (BIT)**.
- Enhanced engagement through platforms such as the **Joint Economic and Trade Committee (JETCO)** and the **Economic and Financial Dialogue**.

2. Technology and Innovation

- Establishment of a **UK-India Research & Innovation Corridor** to foster collaboration in emerging technologies.
- Promotion of joint R&D and support for start-up ecosystems in both countries.

3. Defence and Security

- Joint development of advanced defence technologies, including:
 - **Jet Engine Advanced Core Technologies (JEACT)**.
 - **Electric Propulsion Systems**.
- Increased defence cooperation through:

- Strategic alignment in the **Indo-Pacific and Indian Ocean Region**.
- Regular bilateral defence exercises:
 - *Exercise Konkan* (Navy)
 - *Exercise Cobra Warrior* (Air Force)
 - *Exercise Ajeya Warrior* (Army)

4. Climate and Clean Energy

- Joint efforts in:
 - **Energy storage solutions.**
 - **Grid modernisation.**
 - **Offshore wind energy projects.**
- Alignment with shared climate goals and net-zero ambitions.

5. Education and People-to-People Ties

- Initiatives to **establish UK university campuses in India** to enhance academic exchange.
- Expansion of scholarships, cultural cooperation, and professional mobility.

6. Multilateral and Global Governance

- Joint advocacy for:
 - **Reform of the United Nations Security Council (UNSC).**
 - Modernisation of international institutions including the **WTO, WHO, IMF, and World Bank.**
- Emphasis on **rules-based international order** and shared democratic values.

India-UK Bilateral Relations: Current Snapshot

Trade and Investment

- **Total Bilateral Trade (2024–25):** £39.7 billion.
- **India's Exports to the UK:** £23.1 billion, resulting in a trade surplus for India.
- The UK is India's **6th largest source of Foreign Direct Investment (FDI).**

Institutional Engagement

- **JETCO:** Addresses trade and investment issues.
- **Economic and Financial Dialogue:** Facilitates macroeconomic and financial cooperation.

Defence and Strategic Engagement

Regular **joint military exercises** across all service branches reflect growing defence interoperability and strategic trust.

Microsoft SharePoint Cyberattack: From Espionage to Ransomware Deployment Overview

Microsoft has disclosed a significant cybersecurity threat involving its SharePoint server software. Originally exploited for cyber espionage, the vulnerability is now being used to carry out ransomware attacks. The escalation marks a dangerous shift in the nature of cyber operations—combining intelligence gathering with direct financial and operational disruption.

Understanding Cyber Espionage

Cyber espionage involves the covert and unauthorized access to digital systems for the purpose of extracting sensitive or classified information. These operations are typically carried out by state-sponsored or well-resourced non-state actors and are motivated by political, strategic, or economic interests.

The SharePoint Exploit: Details of the Attack

- **Nature of Exploit:** Attackers targeted an unpatched vulnerability in **Microsoft SharePoint Server**.
- **Attribution:** The operation is attributed to a hacker group known as **Storm-2603**, reportedly linked to **Chinese state-sponsored entities**—though China has denied any involvement.
- **Tactics Used:**
 - Initially leveraged for **cyber espionage**—covert data extraction.
 - Recently escalated to **ransomware deployment**, with systems being locked or frozen until payment is made.
- **Impact:**
 - Over **400 organizations** have been confirmed affected, according to Dutch firm **Eye Security**.
 - The actual scale of the breach is likely larger and still under investigation.

Strategic and Security Implications

- **National Security Risk:** The breach poses threats to critical sectors, including government systems, defense, healthcare, and infrastructure.
- **Blurring of Boundaries:** The case reflects a **convergence of espionage and cybercrime**, with attackers moving

from passive surveillance to active extortion.

- **Organizational Vulnerabilities:**
 - Highlights widespread deficiencies in **patch management**.
 - Points to inadequate **incident response protocols** across affected entities.
- **Call for Global Action:**
 - Underscores the need for **international cooperation** on cybersecurity standards.
 - Reaffirms the importance of **digital sovereignty** and better cross-border coordination on cyber threats.

Conclusion

The exploitation of Microsoft SharePoint represents a dangerous evolution in cyber threat dynamics. By shifting from espionage to ransomware, attackers are blurring traditional lines between state-backed operations and financially motivated cybercrime. The incident underscores the urgent need for improved cyber hygiene, global cybersecurity norms, and proactive threat mitigation strategies.

Syros Island (Greece)

Background

A cruise ship carrying Israeli passengers recently diverted from **Syros Island** to Cyprus following **local protests** linked to the ongoing Gaza conflict.

Geographical and Cultural Significance

- **Location:** Part of the **Cyclades island group** in the **Aegean Sea**, around **144 km southeast of Athens**.
- **Area:** 83.6 sq. km
- **Elevation:** Up to **442 metres**
- **Population (2021):** ~21,124
- **Major Towns:** Ermoupoli (capital), Ano Syros, and Vari
- **Capital of Cyclades and South Aegean region**
- **Notable for:**
 - Picturesque beaches and villages
 - Annual cultural festivals

Maritime trade and **shipbuilding** as key economic drivers

Preah Vihear Temple: Heritage and Dispute Location & History

- An ancient **Hindu temple** dedicated to **Lord Shiva**, located in **Preah Vihear Province, northern Cambodia**, on the **Cambodia-Thailand border** in the **Dangrek Mountains**.
- Built during the **Khmer Empire** by Kings **Suryavarman I and II** (11th–12th century).
- Recognised as a **UNESCO World Heritage Site**.

Architectural Highlights

- Constructed along an **800-metre-long axis** with interconnected sanctuaries.
- Features **five gopuras (entrance towers)** linked by elevated walkways and staircases.
- Distinct multi-tiered platforms and a mix of stone and wooden roofs, some of which are partially in ruins.

The Territorial Dispute

- **Thailand and Cambodia** have long disputed ownership of the temple and the land around it.
- **1962:** The **International Court of Justice (ICJ)** awarded the temple to Cambodia.
- **2008:** Tensions reignited when Cambodia listed the temple as a World Heritage Site.
- **2011:** Armed clashes killed at least 15 people.

2013: ICJ reaffirmed Cambodia's sovereignty, including the disputed 4.6 sq.km. area — a decision still contested in Thailand.

Cambodia: Geopolitical Overview

Context

Tensions have reignited between **Cambodia and Thailand** over territorial disputes along their shared border.

Country Overview: Cambodia

Political Geography

- **Location:** Located in **mainland Southeast Asia**.
- **Regional Bloc:** Member of **ASEAN (Association of Southeast Asian Nations)**.
- **Land Borders:** Shares boundaries with **Thailand, Laos, and Vietnam**.
- **Maritime Boundary:** Lies along the **Gulf of Thailand**.

Physical Geography

- **Major Rivers:**

- **Mekong River**
- **Tonle Sap River and Lake**
- **Mountain Ranges:**
 - **Dangrek Mountains** (northern border)
 - **Krâvanh** (Cardamom Mountains)

Dâmrei Mountains

PM Modi's Maldives Visit: Diplomatic Reset and Strategic Gains

Overview

Prime Minister Narendra Modi visited the Maldives at the invitation of President Dr. Mohamed Muizzu—his third official trip to the country and the first visit by any foreign Head of State during Muizzu's presidency. The visit symbolizes a major diplomatic shift and consolidation of strategic ties between the two Indian Ocean neighbours.

Key Highlights of the Visit

1. Celebrating 60 Years of Maldives' Independence

- PM Modi attended the **60th Independence Day celebrations** as the **Guest of Honour**.
- He congratulated the nation and reaffirmed India's longstanding support.

2. Commemorating 60 Years of Bilateral Relations

- A **joint stamp release** by PM Modi and President Muizzu marked six decades of India-Maldives diplomatic ties.
- The stamps feature:
 - **India's Uru boat** (from Beypore, Kerala)
 - **Maldives' Vadhu Dhoni**, representing a shared maritime heritage and cultural linkages in Indian Ocean trade.

3. Health and Disaster Preparedness

- India gifted **two Aarogya Maitri BHISHM health cubes** under the 'Neighbourhood First' and **Vision MAHASAGAR** policies.
- These portable medical units can support **200 casualties** and sustain **six medical personnel for 72 hours**—critical in emergencies.

4. Strategic Infrastructure Inaugurations

- Inauguration of **Maldives' Ministry of Defence building** in Malé, constructed with Indian assistance.

- Other handovers and launches included:
 - **3,300 social housing units** in Hulhumale under India's Buyer's Credit.
 - **Roads and drainage projects** in Addu City.
 - **6 High Impact Community Development Projects (HICDPs)**.
 - **72 vehicles and equipment** handed over for government use.

Strengthening Economic Ties

1. Financial Assistance and Credit Relief

- **Line of Credit extended:** ₹4,850 crores (in Indian Rupees) to help Maldives tackle its twin deficit crisis.
- **Debt repayment relief:** Maldives' annual payment reduced from \$51 million to \$29 million on a prior \$800 million loan—a 40% reduction.

2. Trade and Investment

- Launch of **India-Maldives Free Trade Agreement (IMFTA)** negotiations.
- Trade between the two nations reached **\$548 million in 2023**.
- India also provided:
 - ₹120 crore in additional aid.
 - \$150 million in Treasury Bill rollover.
 - \$750 million in currency swaps.
 - **Largest-ever quotas** for essential goods exports.
 - **Visa-free access** for Indian business travellers.

Environmental Cooperation

- Joint **tree plantation ceremony** symbolizing green commitments:
 - **India's "Ek Pedh Maa Ke Naam"**
 - **Maldives' "5 Million Tree Plantation Pledge"**

Diplomatic Turnaround: From 'India Out' to 'India In'

- **Background**
- President Muizzu's early tenure (since September 2023) signaled a **pro-China tilt**, with strong criticism of India's military presence and initial visits to Turkey and China instead of India.
- The **'India Out' campaign**, spearheaded by his party, challenged Indian influence.
- **India's Strategic Response**

- Rather than escalating tensions, India **opted for pragmatic engagement**:
 - At COP28, PM Modi met Muizzu in the UAE.
 - In May 2024, India **replaced its 76 military personnel** in the Maldives with **HAL technicians**, addressing sovereignty concerns while preserving strategic continuity.
- As Maldives grappled with economic stress and limited Chinese aid, its leadership began to recalibrate.
- **Tangible Shifts**
- Maldivian Foreign Minister visited India in May 2024.
- President Muizzu visited India in October 2024.
- Both sides adopted a **joint vision on economic and maritime cooperation**.
- India's timely support played a decisive role in this shift.

Conclusion: A Strategic Recalibration

President Muizzu's public reassurance that *"Maldives will not do anything that would harm India's security interests"* marks a significant shift from past rhetoric. The ceremonial invitation to PM Modi for the Maldives' Independence Day celebrations reflects a mature, interest-driven realignment.

• **Key Takeaway**

India's patient, non-confrontational diplomacy—backed by substantial economic support—helped convert a strained bilateral relationship into a renewed partnership. The visit highlights India's ability to adapt its regional diplomacy, reinforcing its strategic influence in the Indian Ocean region.

India-UK FTA Overlooks Carbon Tax Relief, Raising Alarms for Exporters

No Breakthrough on Carbon Tax in Final FTA Text

India's push to secure relief for its exporters—particularly small and medium enterprises (SMEs)—from the United Kingdom's **Carbon Border Adjustment Mechanism (CBAM)** has not been reflected in the final version of the recently released **India-UK Free Trade Agreement (FTA)**. Despite extensive negotiations, no commitments or exemptions regarding the UK's carbon tax policy were included, prompting concerns over increased

costs and reduced competitiveness for Indian exporters in carbon-intensive sectors.

Understanding the UK's CBAM and Its Implications

- **CBAM Rollout and Sectoral Impact**
- The UK's CBAM is slated for implementation in **January 2027**, initially targeting **carbon-intensive imports** such as:
 - Aluminium
 - Cement
 - Fertiliser
 - Hydrogen
 - Iron & steel
- The mechanism will impose **carbon-based tariffs** on these goods, aligning with the UK's net-zero goals.
- **Scope Could Expand Post-2027**
- The UK has left the door open to expanding CBAM's coverage beyond 2027, citing potential risks of **carbon leakage**, ongoing **technological shifts**, and evolving **climate data**.
- This poses a **strategic risk for Indian exports**, as a broader range of goods could be subjected to these tariffs in the future.

Trade Growth Versus Emerging Risks

- **India-UK Trade Snapshot**
- In FY 2024–25, **India's exports to the UK rose by 12.6%**, reaching **\$14.5 billion**.
- Total bilateral trade in goods stood at **\$21.34 billion**.
- **FTA Benefits Diluted by CBAM Risk**
- Although the FTA offers **zero-duty access for 99% of Indian exports**, the **lack of exemptions for CBAM** undermines these gains.
- Indian exports in carbon-intensive sectors—worth approximately **\$775 million annually**—could now face added carbon tariffs, weakening their competitiveness in the UK market.

Wider Trade Policy Concerns

- **EU Alignment and Legal Gaps**
- The European Union is also rolling out its own CBAM, and like the UK, refuses to treat it as a trade negotiation issue.
- The **absence of legal safeguards** in the India-UK FTA may erode India's leverage in future trade talks and **diminish**

protections for its domestic industries.

India's Legal Options and WTO Strategy

- **Potential WTO Challenge**
- India is considering filing a **challenge at the World Trade Organization (WTO)**, arguing that CBAM violates **Special and Differential Treatment (SDT)** provisions.
 - SDT norms are designed to provide **preferential treatment** to developing countries in global trade.
 - India could argue that CBAM disproportionately impacts poorer economies.
- **Legal and Strategic Hurdles**
- However, experts point to **delays in WTO's Dispute Settlement Body (DSB)**, which has been largely non-functional, as a major barrier to timely resolution.
- Given the **strong influence of the UK and EU at the WTO**, the likelihood of a ruling against CBAM is considered low.
- India's best-case scenario may be limited to securing **regulatory modifications** rather than a full exemption or withdrawal of the tax.

Conclusion: A Strategic Gap in an Otherwise Landmark Deal

While the India-UK FTA offers substantial market access, the **failure to address CBAM** represents a **strategic blind spot**, especially for Indian manufacturers in high-emission industries. Without protective clauses or exemptions, exporters may face rising costs, reducing the FTA's real-world benefits.

Going forward, India may need to pursue a **multi-pronged approach**—including legal challenges, regulatory dialogues, and enhanced domestic carbon accounting—to safeguard its industrial interests in evolving global climate regimes.

Kargil Vijay Diwas Context

India commemorated the **26th anniversary of Kargil Vijay Diwas** on **26 July 2025**, honoring the valiant efforts of the Indian Armed Forces during the **1999 Kargil War**.

- **What is Kargil Vijay Diwas?**
- Observed every year on **26 July** to celebrate the successful completion of **Operation Vijay**, which aimed to evict

Pakistani intruders from Indian territory in the **Kargil sector of Ladakh**.

- It pays tribute to the **bravery, sacrifice, and determination** of Indian soldiers who defended the nation under extreme conditions.
- **Background of the 1999 Kargil War Cause of Conflict**
- In **May 1999**, Pakistani soldiers and militants infiltrated **Indian territory** in the **Dras, Batalik, and Kaksar** sectors.
- Objective: To cut off **National Highway 1A (NH-1A)**, which connects Srinagar to Leh.

India's Response: Operation Vijay

- Launched in **May 1999** as a **military counter-offensive**.
- Indian troops fought at altitudes exceeding **16,000 feet**, facing harsh terrain, freezing temperatures, and hostile fire.
- The **Indian Air Force** conducted **Operation Safed Sagar**, using **Mirage-2000 jets** for precision strikes.
- India did not cross the **Line of Control (LoC)**, showcasing adherence to **international norms**.
- **Key Battlefronts Recaptured**
- Strategic locations such as **Tololing, Tiger Hill, Point 4875, Khalubar Ridge, and Batalik sector**.

Outcome

- On **26 July 1999**, India announced complete eviction of infiltrators and restoration of territorial integrity.
- **Casualties**: 545 Indian soldiers laid down their lives.
- India received **global praise** for its military professionalism and diplomatic restraint.

Significance

- **Defence Reforms**: Led to key changes like the appointment of a **Chief of Defence Staff (CDS)** and enhanced **joint military command structures**.
- **Modernisation**: Prompted investment in **mountain warfare gear, surveillance systems, and indigenous defence production**.

Public Sentiment: Strengthened national unity and civil-military relations

France Recognises Palestinian Statehood

Context

France has officially recognised **Palestine** as a sovereign state, becoming the **first G7 nation** to do so, amid rising humanitarian concerns in **Gaza**.

What Does Recognition Mean?

- Formal **diplomatic recognition** of **Palestine** as a sovereign state.
- Upholds Palestine's **right to self-determination**, independence, and potential **UN membership**.

Countries Recognising Palestine

- **144 out of 193** UN member states currently recognise Palestine.
- Recent recognitions: **Spain, Ireland, Norway**, and now **France**.
- Other supporters: **India, China, Russia, Sweden, Cyprus**, and many **Global South** and **Eastern European** nations.

Why Now?

- **Humanitarian Emergency**: Over **2 million** Gazans face food shortages and human rights violations.
- **Two-State Solution Push**: France aims to revive peace talks and promote a diplomatic resolution to the Israel-Palestine conflict.
- **Global Engagement**: France's move is timed with its leadership role at upcoming **UN meetings**, including cooperation with **Saudi Arabia**.

About Palestine

Geographical Overview

- Located in the **Middle East**.
- Territories include the **West Bank, Gaza Strip**, and **East Jerusalem** (contested).
- Bordered by **Israel, Egypt, Jordan**, and the **Mediterranean Sea**.

Historical Background

- **Pre-1947**: Under **British Mandate** after World War I.
- **1947**: UN proposed partition into two states — one Jewish and one Arab — but only **Israel** was established.
- **1948-1967**: Multiple wars resulted in Israeli occupation of the **West Bank, Gaza**, and **East Jerusalem**.
- **1988**: Palestine declared independence in **Algiers**.
- **2012**: Granted **UN Observer State** status.
- **2024-25**:

- **ICJ** ruled Israeli occupation as unlawful.
- **UN General Assembly** expanded Palestine's rights within the UN system.

Political & Conflict Overview

- Governed by:
 - **Palestinian Authority** in the West Bank
 - **Hamas** in the Gaza Strip
- Faces ongoing conflict with **Israel** over land, security, and governance.

UN supports Palestine's **right to statehood**, based on **UN Resolution 242 (1967)**.

Democratic Republic of the Congo (DRC)

Capital: Kinshasa

Context

- The **DRC government** and the **M23 rebel group** (March 23 Movement), operating under the **Congo River Alliance**, have signed a **Declaration of Principles** in **Doha, Qatar**, aiming to promote peace.
- The negotiations were **mediated by Qatar**.

Political Overview

- **Region**: Central Africa
- **Borders**:
 - **Countries**: Angola, Republic of the Congo, Central African Republic, South Sudan, Uganda, Rwanda, Burundi, Tanzania, Zambia
 - **Water Body**: Narrow coastline along the **Atlantic Ocean**
- **Conflict Zones**: The provinces of **North Kivu, South Kivu**, and **Ituri** are the epicentres of ongoing armed conflict and humanitarian crises.

Geographical Features

- **Major River**:
 - **Congo River** – Second longest river in Africa, with its basin crossing the **Equator twice**.
- **Plateaus**:
 - **Katanga Plateau** – Mineral-rich, particularly in copper and cobalt.
- **Notable Lakes**:
 - **Lake Tanganyika, Lake Albert, Lake Edward, Lake Kivu**
- **Volcanic Activity**:

- **Mount Nyiragongo** – An active volcano in the **Virunga Mountains**, known for its persistent lava lake.
- **Natural Zones:**
 - **Congo Basin** – A vast central rainforest and lowland region.
 - **Savanna** – Grassland regions on the periphery.
- **Mineral Wealth:**

Produces about **75% of the world's cobalt**, making it a critical player in global energy and tech supply chains.

E3 Countries

Context

- The **E3 nations**—UK, France, and Germany—recently **threatened Iran** with “snapback sanctions” amid stalled negotiations on the **U.S.-Iran nuclear deal**.

About E3

- **Definition:** An **informal diplomatic grouping** of the **United Kingdom, Germany, and France** focused on foreign and security policy coordination.
- **Purpose:** Initially created to align policies on **Iraq** and **Iran**, particularly around nuclear risks.
- **Origin:** Formed after the **2003 Iraq invasion** to coordinate trilateral positions.
- **Role in JCPOA (2015):**

They are **signatories to the Iran nuclear agreement** and can invoke **snapback provisions**—a mechanism to **reimpose UN sanctions** on Iran if it violates its nuclear commitments.

Doklam

Context

- After the success of battlefield tourism at **Nathu La**, the **Sikkim government** plans to open **Doklam** and **Cho La** for tourists, eight years after the **India-China standoff** in the region.
- **About Doklam (also known as Donglang)**
- **Altitude:** Approx. **13,780 feet above sea level**
- **Location:**
 - **Tri-junction** point where the borders of **India, China, and**

Bhutan meet in the **eastern Himalayas**.

2017 Doklam Standoff

- **Trigger:** Chinese troops attempted to build a road in territory claimed by **Bhutan**.
- **India's Role:**
 - Intervened militarily in support of **Bhutan**, citing the **2007 India-Bhutan Treaty**.
 - Successfully halted Chinese construction.

Strategic Importance

- **Siliguri Corridor:**
 - Often called “**Chicken's Neck**”, this narrow corridor is a vital link between **mainland India** and the **northeastern states**.
- **Military Leverage:**
 - Control or surveillance of Doklam provides India with a strategic advantage in securing the Siliguri Corridor and monitoring Chinese activities in the region.

Indian Army Enhances Combat Capabilities to Advance the Integrated Battle Group Doctrine Context

- In response to increasing coordinated threats from China and Pakistan, especially highlighted during Operation Sindoor, the Indian Army is upgrading its combat readiness.
- This involves the creation of specialized ‘Rudra’ brigades and ‘Bhairav’ commando battalions to boost rapid offensive actions along India's borders.

Structural Reforms in Combat Forces

- **Shaktibaan Artillery Regiments:** Equipped with advanced ‘Divyadrishti’ surveillance systems and loitering munition batteries to improve battlefield awareness and firepower.
- **Drone Integration:** Every infantry battalion will be outfitted with dedicated drone platoons, reflecting the growing importance of drone warfare.
- **Bhairav Light Commando Battalions:** These elite units are formed from existing infantry personnel and trained for fast, high-mobility operations using modern

drones, advanced gadgets, and lightweight weapons.

- **Rudra All-Arms Brigades:** Current units are being restructured into integrated brigades combining infantry, mechanised infantry, tanks, artillery, UAVs, and special forces, aligning with the long-standing plan to transform formations into self-sufficient Integrated Battle Groups (IBGs).

Understanding Integrated Battle Groups (IBGs)

- **Concept:** IBGs are agile, brigade-sized combat units designed for modern, technology-driven warfare. Each IBG is customized based on three main factors: the nature of the threat, the terrain, and the specific mission.
- **Size:** Approximately 5,000 troops per IBG.
- **Historical Background:** The IBG doctrine evolved after Operation Parakram and is an extension of India's Cold Start or Pro-Active Operations Strategy, which aims for rapid mobilization and swift, limited strikes against Pakistan.

IBGs Operational Philosophy

- **Core Objectives:**
 - **Pre-emption:** Taking the initiative before the enemy.
 - **Dislocation:** Targeting enemy vulnerabilities.
 - **Disintegration:** Disrupting enemy cohesion and command-control systems.
- **Time-Space-Force-Information Dominance:** IBGs focus on quickly gaining control over critical areas with the necessary force, achieving dominance in the shortest possible time frame.

Technology and Leadership: The combination of cutting-edge technologies and empowered leadership within IBGs is central to achieving tactical victories and overall operational success.

Exercise Drone Prahar: Indian Army's Advanced Drone Integration Drill

About the Exercise: The Indian Army recently conducted **Exercise**

Drone Prahar at Rayang Military Station in Arunachal Pradesh's East Siang District, focusing on integrating drone technology into battlefield operations.

Purpose:

- Validate and demonstrate the use of drones for intelligence, surveillance, and reconnaissance (ISR).
- Enhance real-time sensor-to-shooter coordination and precision targeting.
- Improve command reach and situational awareness for tactical commanders through layered surveillance.

Operational Details:

- Conducted under realistic combat conditions.
- Tested secure communication channels, airspace deconfliction, and coordination protocols between different army arms and services.

Focused on seamless integration of drone technology to support dynamic decision-making on the battlefield.

Exercise Bold Kurukshetra 2025

Introduction:

The **14th** edition of **Exercise Bold Kurukshetra** is being held in **Jodhpur, India**, and will continue until **4 August 2025**.

About the Exercise:

- A **bilateral military exercise** between **India and Singapore**, first initiated in **2005**.
- Highlights the **deep defence cooperation** and long-standing strategic ties between the two nations.

Participants:

- **Singapore:** 42 Singapore Armoured Regiment, 4 Singapore Armoured Brigade
- **India:** Mechanised Infantry Regiment of the Indian Army

Nature of the Exercise:

- Conducted as a **Table Top Exercise (TTX)** and **Computer-Based Wargame (CBW)**.
- Designed to simulate and validate **operational procedures for mechanised warfare** in a realistic setting.

Objectives:

- **Enhance interoperability** between the two armies.

- **Strengthen joint operational planning and execution** under a **United Nations mandate**.
- Foster professional exchanges and mutual learning.

Significance:

- Reinforces military cooperation through **high-level visits**, joint training, and policy dialogues.

Contributes to **regional stability** and **strategic collaboration** between India and Singapore.

Operation Mahadev: Strategic Counter-Terror Mission in Kashmir

Context:

Operation Mahadev was a high-stakes counter-terrorism operation conducted near **Srinagar**, which resulted in the elimination of **three high-value terrorists**, including **Suleiman Shah**, the key planner behind the **April 22 Pahalgam attack**.

Overview of Operation Mahadev

- **Nature of the Operation:** A **targeted counter-terrorist offensive** aimed at dismantling a Lashkar-e-Taiba-linked terror module entrenched near **Lidwas, Harwan**, on the outskirts of Srinagar.
- **Coordinating Forces:** A joint initiative involving the **Indian Army's Para Special Forces**, **Central Reserve Police Force (CRPF)**, and the **Jammu & Kashmir Police**, all operating under the strategic leadership of the **Chinar Corps**.
- **Primary Objective:** To **neutralise terrorists** responsible for orchestrating **high-profile attacks**, notably the **Pahalgam assault** (April 2024) and the **Sonamarg Tunnel ambush**.

Strategic Significance

- **Counter-Terror Impact:** The operation delivered a **decisive blow** to **cross-border terrorism networks** active in the Kashmir Valley.
- **Key Elimination:** Among those neutralised was **Suleiman Shah**, identified as a **Pakistan-trained operative** and alleged **former Pakistani Army personnel**, strengthening intelligence claims about **state-backed militancy**.

- **Morale Booster:** The success of Operation Mahadev significantly **bolstered the morale of Indian security forces**, especially amid the ongoing discourse around **Operation Sindoor** and counter-insurgency strategies in the region.

Conclusion

Operation Mahadev marks a **notable success** in India's counter-terrorism efforts in Jammu & Kashmir. Through precise coordination, actionable intelligence, and swift execution, the operation disrupted a key terror cell and reaffirmed India's commitment to neutralising threats emanating from across the border. It also underscores the growing efficiency of **inter-agency collaboration** and **specialised counter-terror units** in high-risk zones.

India's Third Voluntary National Review (VNR) at the UN High-Level Political Forum (HLPF), 2025

Context and Objective

India presented its **Third Voluntary National Review (VNR)** at the **UN High-Level Political Forum (HLPF) 2025**, reaffirming its commitment to the **2030 Agenda for Sustainable Development**. The VNR is a **country-led, voluntary assessment** designed to share national experiences and accelerate progress toward the **17 Sustainable Development Goals (SDGs)**.

India's Implementation Strategy

India adopts a **Whole-of-Government and Whole-of-Society approach** to SDG implementation. The strategy is underpinned by **data-driven governance** and the localization of SDGs through tools such as:

- **SDG India Index**
- **North Eastern Region District SDG Index**
- **National Multidimensional Poverty Index (MPI)**
- **3. Key Achievements and Highlights**
- **Overall Progress:** Despite global slowdowns, India continues to make **consistent strides** across multiple SDGs.
- **SDG 1 - No Poverty:** An estimated **248 million individuals** moved out of multidimensional poverty between **2013-14 and 2022-23**, highlighting progress in inclusive development.

- **SDG 2 - Zero Hunger:** The **PM Garib Kalyan Anna Yojana** has been instrumental in providing **nutritional support to millions**, especially during crises.
- **SDG 3 - Good Health and Well-being:** **Out-of-pocket health expenditure** dropped from **48.8% (2017-18)** to **39.4% (2020-21)**, reflecting improved public healthcare access.
- **Clean Energy Transition:** Initiatives such as the **National Green Hydrogen Mission, PM-KUSUM, and PM Surya Ghar Muft Bijli Yojana** are promoting clean and renewable energy adoption.
- **Digital Public Infrastructure:** Platforms like **Digital India, Aadhaar, and the Unified Payments Interface (UPI)** have enhanced digital inclusion.
 - Notably, **UPI accounts for 49% of all real-time digital payments globally.**

About the UN High-Level Political Forum (HLPF)

- **Established:** Following the **Rio+20 Conference (2012)** through the outcome document *"The Future We Want"*.
- **Purpose:** Serves as the **primary UN platform** for reviewing progress on the SDGs.
- **Structure:**
 - Meets **annually** under the **Economic and Social Council (ECOSOC).**

Meets **quadrennially** under the **General Assembly.**

FIDE Women's World Cup 2025

Overview

- Indian chess player **Divya Deshmukh** made history by becoming the first Indian woman to win the **FIDE Women's Chess World Cup 2025**, defeating veteran Koneru Humpy in the final in Batumi, Georgia.

About the Tournament

- A prestigious knockout chess event organized by the **International Chess Federation (FIDE)** with 107 players.
- The tournament identifies top contenders for the **Women's Candidates Tournament 2026.**

- Held from **5 July to 29 July 2025** in Batumi, Georgia. This was the third edition of the Women's Chess World Cup.
- **Tournament Format**
- The competition followed a **7-round knockout** structure, where losing a match leads to elimination.
- The **top 21 seeded players** received byes into Round 2.

Match Details

- **Classical Games (over 2 days):**
 - Two games per match
 - 90 minutes per player for the first 40 moves
 - Additional 30 minutes after move 40
 - 30-second increment per move from the start
- **If tied after classical games:**
 - Two rapid games (15 min + 10-sec increment)
 - If still tied, two more rapid games (10 min + 10-sec increment)
 - If still tied, two blitz games (5 min + 3-sec increment)
 - If still no winner, an **Armageddon game** decides:
 - White gets 3 minutes, Black gets 2 minutes
 - 2-second increment starts from move 61
 - Black wins if the game ends in a draw

Results and Significance

- Divya Deshmukh won the final **5-0.5 in rapid tiebreaks**, earning a place in the Women's Candidates Tournament 2026.
- She is the **first Indian woman** to win this title.
- Became India's **88th Grandmaster** and only the **4th Indian woman** to earn the GM title.

Marks a new era and generational shift in Indian chess.

Exercise Divya Drishti

Context

The Indian Army conducted **Exercise Divya Drishti** in East Sikkim to test AI-based battlefield awareness, real-time surveillance, and advanced warfare technologies under high-altitude conditions.

About Exercise Divya Drishti

- A high-altitude **technology demonstration** by the Indian Army's **Trishakti Corps**.
- Designed to validate AI-integrated surveillance, real-time decision-making, and sensor-to-shooter systems in realistic battlefield scenarios.

Objectives

- Test battlefield digitization tools in extreme Himalayan terrain.
- Integrate AI sensors with communication systems for seamless data transmission.
- Validate coordination among UAVs, drones, and ground units in combat.
- Align future warfare doctrines with the **Atmanirbhar Bharat** initiative and the Army's **Decade of Transformation** roadmap.

Key Features

- Realistic deployment of ground platforms, drones, and UAVs in East Sikkim.
- AI-enabled sensors provide battlefield intelligence, terrain mapping, and situational awareness in real time.
- Sensor-to-shooter linkage ensures instant transmission of data from surveillance to command and firing units.
- Secured networked communications for smooth tactical data relay.
- Promotes indigenous defence technology development under **Make in India**.

Significance

- Enhances tactical readiness for hybrid warfare, especially in Himalayan conflict zones.
- Supports self-reliance in defence technology, reducing import dependence.

Accelerates decision-making with AI-driven situational analysis and instant response.

Geelong Treaty

Overview

- Australia and the United Kingdom have signed the **Nuclear-Powered Submarine Partnership and Collaboration Treaty** (known as the **Geelong Treaty**) under AUKUS Pillar I.
- The **United States is not a signatory** to this treaty.
- The Trump administration previously reviewed the AUKUS submarine pact for alignment with its "America First" policy.

Purpose

- The treaty facilitates **50 years of strategic cooperation** to design and build a new generation of nuclear-powered submarines.

AUKUS Context

A trilateral security pact between Australia, the UK, and the US focused on **technology sharing in the Indo-Pacific region**.

BRICS Culture Ministers' Meeting

Recent Event

The **BRICS Ministers of Culture Meeting** was held recently in **Brasilia, Brazil**.

Key Highlights

- **New BRICS Cultural Platform:**
 - Agreement to create a platform to promote **cultural and creative industries** within BRICS nations.
 - Objectives include developing cultural infrastructure, enhancing content sharing, facilitating artist exchanges, and initiating joint projects.
- **Culture in Post-2030 Development Agenda:**
 - BRICS supports including culture as a distinct goal in the global post-2030 development agenda, aligned with UNESCO's MONDIACULT conference.

Also acknowledged the UNFCCC's **Group of Friends of Culture-Based Climate Action (GFCBCA)**.

UN Nelson Mandela Award

Recent Presentation

The **UN Secretary-General** awarded the **Nelson Mandela Prize** to **Brenda Reynolds (Canada)** and **Kennedy Odede (Kenya)**.

About the Prize

- Established by the **UN General Assembly in 2015**.
- Awarded every **5 years** to one male and one female from different regions worldwide.
- Recognizes outstanding individuals dedicated to **humanity through reconciliation, social cohesion, and community development**.
- Winners receive a **plaque with a citation and a quote from Nelson Mandela**; there is **no monetary prize**.
- UN staff are not eligible.

To date, **no Indian recipient** of this award.

India Reconsiders China Investment Restrictions to Strengthen Tech Manufacturing

India is signalling a strategic recalibration of its stance on Chinese investments in electronics manufacturing, as it seeks to boost domestic production and integrate more deeply into global supply chains.

Introduction: From Border Clashes to Policy Shift

Nearly five years after imposing restrictions on Chinese investment in response to the **2020 Galwan Valley clashes**, India is now reassessing its protectionist approach. With aspirations to emerge as a **global electronics manufacturing hub**, the Indian government is reviewing **FDI regulations** that previously blocked China-based firms from participating in the sector.

This shift reflects **changing geopolitical dynamics**, the need for **technological self-reliance**, and the recognition that **Chinese firms remain key suppliers of upstream components** essential for high-tech production.

Backdrop: The 2020 FDI Blockade

In **April 2020**, the Indian government issued **Press Note 3**, requiring government clearance for all foreign direct investment from countries sharing a land border with India—effectively targeting China. The aim was to **prevent opportunistic acquisitions** of Indian firms during the pandemic and to assert economic sovereignty following border tensions.

This policy led to the **exclusion of Chinese players** from critical sectors such as **telecommunications, infrastructure, and electronic hardware**, even as India's own electronics sector grew rapidly under **Production Linked Incentive (PLI)** schemes.

Signs of a Policy Recalibration

India is now displaying **pragmatic flexibility** as its manufacturing goals outpace domestic capabilities in certain high-tech segments.

- **Key Developments:**
- **Dixon Technologies**, a leading Indian contract manufacturer, received approval to form a **joint venture with China-based Longcheer**, aimed at producing smartphones, AI-powered PCs, and automotive electronics.
- **NITI Aayog** has recommended relaxing FDI restrictions for Chinese firms to

attract critical investment and boost exports.

- The **Economic Survey 2023-24** acknowledged the need to revisit blanket bans on Chinese firms, recognizing their role in global electronics supply chains.

Persistent Dependence on Chinese Components

Despite curbs on investment, **China continues to dominate India's electronics component imports:**

- In **FY 2023-24**, India imported:
 - **\$12+ billion** in electronic parts from **mainland China**
 - **\$6 billion** from **Hong Kong**
- Combined, China and Hong Kong account for **over 50%** of India's total component imports — dwarfing inflows from **Taiwan, South Korea, Japan, and ASEAN nations**.

This underlines a **structural dependency**: while India has restricted finished goods like Chinese smartphones, it remains heavily reliant on **Chinese-origin inputs** to support its fast-expanding electronics assembly operations.

Strategic Drivers Behind the Rethink

1. Manufacturing Aspirations

India's ambition to become a top-tier electronics manufacturer under schemes like the **₹23,000 crore component manufacturing incentive** requires global collaboration. **Chinese technical know-how** in electronics manufacturing remains unmatched in some segments.

2. Global Supply Chain Realignment

In the wake of **COVID-19 disruptions** and **U.S.-China trade tensions**, global manufacturers are embracing the **"China+1" strategy** — diversifying production beyond China. India sees an opening to position itself as a viable alternative, but success hinges on **access to Chinese technology and inputs**.

3. Geopolitical Realism

Recent diplomatic signals suggest a thaw in relations:

- **Tourist visas** for Chinese nationals have resumed.
- **High-level diplomatic exchanges** have been held, including Foreign Minister S. Jaishankar's visit to China, where he emphasized that "competition should not become conflict."

Ongoing Challenges and Strategic Dilemmas

Despite efforts to recalibrate, several **frictions persist**:

- **Chinese retaliation:** Beijing has restricted the deployment of Chinese workers in Indian projects and imposed **export controls** on rare earths and magnets — vital for electronics production.
- **Compliance hurdles:** Chinese companies in India continue to face **delays, security vetting, and procedural roadblocks.**
- **Balancing act:** India must manage a **delicate trade-off** — ensuring **strategic autonomy** while acknowledging its **dependence on Chinese supply chains** to scale up manufacturing.

Conclusion: A Pragmatic Pivot

India's evolving policy reflects **pragmatism over isolationism**. While national security remains a priority, the country is increasingly aware that **excluding Chinese firms entirely** could **undermine its industrial and export ambitions**.

Carefully **targeted engagement**, tighter compliance controls, and **sector-specific partnerships** could allow India to benefit from Chinese capabilities while maintaining strategic oversight — a middle path that may prove essential to realizing its tech manufacturing goals.

Operation ShivShakti

Context:

The Indian Army successfully eliminated two terrorists attempting to infiltrate across the Line of Control (LoC) in the Poonch district. This operation took place shortly after the neutralisation of three Lashkar-e-Taiba militants during Operation Mahadev.

About Operation ShivShakti:

- **Definition:** Operation ShivShakti is a counter-infiltration mission initiated by the Indian Army aimed at preventing terrorists from crossing the LoC into Jammu and Kashmir.
- **Command and Coordination:** The operation is conducted by the Indian Army's White Knight Corps in close coordination with the Jammu & Kashmir Police (JKP). It is based on precise intelligence inputs obtained through multi-agency collaboration.

- **Location:** The mission was executed in the Degwar sector of Poonch district, specifically near Maldivalan—a highly sensitive area known for frequent infiltration attempts along the LoC.
- **Primary Objective:** To thwart cross-border terrorism by detecting, intercepting, and neutralising infiltrators before they can reach civilian zones or damage infrastructure.
- **Operational Details:**
 - The mission utilized swift and precise firepower to minimise response time.
 - Three weapons were recovered from the terrorists, indicating their readiness for a high-intensity conflict.
 - The operation was intelligence-driven, involving synchronised inputs from Army intelligence and Jammu & Kashmir Police, demonstrating effective multi-agency cooperation.

Search and cordon operations are ongoing in the area to locate any additional threats.

Schengen Visa Scheme: Fast-tracking for Trusted Indian Travellers

What is a Schengen Visa?

- A **Schengen visa** allows non-EU nationals temporary travel within the **Schengen Area** — a zone comprising **29 European countries** with **no internal border controls**
- Valid for up to **90 days within any 180-day period**
- Permits multiple entries but does **not allow work**
- Issued for purposes including tourism, business, visiting family, medical treatment, or cultural/sporting events

Schengen Area Countries

- Includes **25 EU member states** (excluding Cyprus and Ireland)
- Includes **4 European Free Trade Association members:** Iceland, Liechtenstein, Norway, and Switzerland
- Internal borders are mostly unchecked except for specific threats; external borders are controlled under uniform criteria

The Cascade Visa Scheme

- Targets “**trusted travellers**” with a clean travel history
- Indian citizens with **two Schengen visas within the past 3 years** can apply for a **2-year multi-entry visa**
- This visa can be upgraded to a **5-year visa** if the passport validity matches
- During its validity, holders enjoy **free movement within the Schengen zone** akin to visa-free nationals, but still limited to 90 days in 180 days and no work rights
- The scheme applies a tiered validity system:

- **1-year visa:** If the applicant used 3 Schengen visas in the last 2 years
- **2-year visa:** If holding a 1-year multiple-entry visa used in the past 2 years

5-year visa: If holding a 2-year multiple-entry visa used in the last 3 years

U.S. Imposes 25% Tariff on Indian Imports Starting August 2025

Context

The U.S. President announced a **25% import tariff on Indian goods** effective **August 1, 2025**, citing India’s high trade barriers and its ongoing **energy and defence trade with Russia**.

Details of the Tariff

- **25% tariff on eligible Indian imports** to the U.S.
- Additional penalties tied to India’s **continued oil and defence trade with Russia**, linked to the proposed **Russian Sanctions Act 2025**

Objectives

- **Address trade imbalance:** Pressure India to lower tariffs and remove non-tariff barriers

- **Discourage Russia trade:** Penalize India’s oil imports from Russia amid Ukraine conflict sanctions
- **Accelerate bilateral deal:** Push for a “fair and reciprocal” India–U.S. trade agreement

Key Features and Background

- The U.S. criticized India’s trade policies as “obnoxious” and opaque
- The tariff is connected to the **Russian Sanctions Act 2025**, which could impose duties up to 500% on countries trading oil with Russia
- Follows the **failure of the fifth round** of India-U.S. trade talks in Washington
- Revokes a previously suspended 26% tariff from April 2025, now intensified

India’s Response

- The Ministry of Commerce is reviewing the situation
- Reaffirms commitment to protect farmers, MSMEs, and entrepreneurs
- Points to the recent UK-India Free Trade Agreement as evidence of fair trade intentions

Impact on India

- Potential loss of competitiveness for exporters, especially in **textiles, pharmaceuticals, and engineering** sectors
- Risks undermining progress on the India-U.S. trade agreement and diplomatic cooperation in forums like the **Quad** and **Indo-Pacific**

Poses challenges to India’s **strategic autonomy**, particularly concerning its multi-alignment policy and Russia ties under Western economic pressure

SOCIETY AND SOCIAL JUSTICE

WHO Report on Social Connection: Addressing the Global Loneliness Crisis

The **World Health Organization's Commission on Social Connection** has released a significant report emphasizing how **loneliness and social isolation** affect global health, mental well-being, and community life. The report outlines the scale of the problem, its health and socio-economic consequences, and provides a roadmap to strengthen human connections across societies.

Understanding Social Connection and Disconnection

- **Social connection** refers to the various ways people interact and maintain relationships—with family, friends, colleagues, classmates, and community members.
- **Social disconnection** happens when a person lacks meaningful relationships or feels unsupported—even if they're not physically isolated.

This disconnection can take two main forms:

- **Loneliness** – the gap between the relationships one desires and the ones they actually have.
- **Social isolation** – having few or infrequent social interactions.

Key Findings from the Report

- **Loneliness Is Widespread:** Around **1 in 6 people globally** experienced loneliness between 2014 and 2023.
 - **Young people (13–29 years)** reported the highest levels of loneliness.
 - Among **older adults (1990–2022)**, up to 1 in 3 felt lonely.
 - **Teenagers (2003–2018):** Roughly 25% reported being socially isolated.
- **Income-Based Disparities:**
 - In **low-income countries**, about **24%** of individuals feel lonely.
 - In **high-income nations**, this drops to **11%**, suggesting structural and support differences.
- **Health and Socioeconomic Impact:**
 - **Physical health:** Loneliness contributed to nearly **871,000 global deaths (2014–2019)**.

- **Mental health:** Linked to **depression, anxiety, cognitive decline, and dementia**.
- **Economic impact:** Social disconnection leads to **reduced academic performance, lower workplace productivity, and broader societal costs**.

Underlying Causes of Disconnection

The report identifies several contributing factors:

- **Chronic illness or poor physical health**
- **Marginalization and discrimination**
- **Living alone or in transitional life phases**
- **Low income and education levels**
- **Lack of accessible public spaces or community support**
- **Excessive or unhealthy digital media use**, which can substitute for genuine connection

Global Roadmap for Building Connection

The WHO outlines a multi-level approach to reversing this trend:

1. **Policy Action**
 - Develop national policies prioritizing social connection.
 - Countries like **Denmark, Finland, and Germany** already have such frameworks.
2. **Research and Innovation**
 - Strengthen national and international research into the science of connection.
 - Launch a **"Grand Challenges" program** focused on social connectivity.
3. **Targeted Interventions**
 - Establish an **intervention accelerator** to support pilot programs.
 - Invest in **community infrastructure** (parks, libraries, support services) that foster belonging.
4. **Better Metrics**
 - Create a **Global Social Connection Index** to track progress across nations.
5. **Public Engagement and Social Prescribing**

- Organize mass campaigns and events that encourage in-person interaction.
- Promote “**social prescribing**”, where healthcare providers refer individuals to community-based activities for mental and emotional well-being.

Conclusion

The WHO's report underlines that **social connection is a public health priority**, not just a personal matter. By treating loneliness and isolation as serious threats to global well-being—and taking coordinated policy, research, and community action—we can build **healthier, more resilient societies** rooted in empathy, inclusion, and belonging.

Savitribai Phule National Institute of Women and Child Development

- **Context:**
The National Institute of Public Cooperation and Child Development (NIPCCD) has been renamed as the Savitribai Phule National Institute of Women and Child Development.
- **New Development:** A new Regional Centre in Ranchi will be inaugurated to strengthen grassroots implementation of women and child welfare schemes in Eastern India.
- **About the Institute:**
 - It is a premier autonomous body under the Ministry of Women and Child Development.
 - Serves as the national apex institute for training, research, and capacity-building related to women and child welfare.
- **Historical Legacy:**
 - Renamed to honour Savitribai Phule, one of India's earliest women educationists and social reformers.
 - Reflects a renewed commitment to inclusive, region-specific development for women and children.
- **Headquarters and Regional Centres:**
 - Headquarters: New Delhi
 - Existing Regional Centres: Bangalore, Guwahati, Lucknow, Indore, Mohali

- New Regional Centre: Ranchi (to serve Jharkhand, Bihar, Odisha, West Bengal)

Objectives:

- Strengthen capacity building for implementation of women and child development schemes.
- Support region-specific interventions aligned with national missions such as Mission Shakti, Vatsalya, Saksham Anganwadi, and Poshan 2.0.

Functions:

- **Training:** Conducts in-service and induction training for ICDS, Poshan, and related staff.
- **Research & Extension:** Develops contextual solutions for gender issues, mental health, and adolescent welfare.
- **Policy Support:** Provides evidence-based insights to improve women and child development schemes at national and regional levels.
- **Documentation & Innovation:** Archives best practices, develops training modules, and promotes digital training innovations.
- **Frontline Empowerment:** Supports over 7 lakh field workers by enhancing local access to training and counselling.
- **Academic Programmes:** Offers specialized diplomas like Child Guidance and Counselling, especially at the new Ranchi centre.

Significance:

- Decentralizes capacity building to reduce dependence on distant centres, especially for Eastern India.
- Empowers grassroots by improving last-mile delivery of services and strengthening local governance like Panchayats.
- Adopts a holistic approach integrating mental health, education, and nutrition for overall welfare of women and children.

Nutritional Intake in India Report

- **Publisher:** National Statistics Office (NSO)
- **Basis:** Household Consumption Expenditure Surveys of 2022-23 & 2023-24.

Key Findings:

- **Average Per Capita Daily Calorie Intake:**
 - Rural: 2233 Kcal (2022-23), 2212 Kcal (2023-24)
 - Urban: 2250 Kcal (2022-23), 2240 Kcal (2023-24)
- **Protein Sources:**
 - Cereals remain the primary protein source.
 - However, their share in protein intake has declined by about 14% in rural and 12% in urban areas since 2009-10.
 - This decline is compensated by increased consumption of eggs, fish, meat, milk, etc.
- **Expenditure and Calorie Intake:**
 - An increase in Monthly Per Capita Consumption Expenditure (MPCE) corresponds with an increase in average calorie intake.
- **Narrowing Gap:**

The calorie intake disparity between the bottom 5% and top 5% of the population (ranked by per capita expenditure) has significantly reduced in 2023-24.

Understanding Healthy Ageing

Healthy ageing involves maintaining physical, mental, and functional well-being in older age. It emphasizes quality of life, not just longevity, acknowledging that **biological age can differ significantly from chronological age**.

- Ageing is shaped by molecular changes (e.g., telomere shortening) and lifelong exposures like infections, pollution, and social factors.
- For example, a 60-year-old individual may show the **organ health of a 75-year-old** due to cumulative stressors.

Key Statistics and Trends

- **Population Ageing:** By 2050, **20% of Indians (319 million)** will be aged 60 or older. (*UNFPA India*)
- **Disease Burden Rising:**

- Parkinson's cases projected to rise by **168%**
- Dementia cases may grow by **200%** (*Lancet, 2024*)
- **Gender Gap:** Women live longer than men but suffer more from disability-adjusted life years (DALYs).
- **Economic Strain:**
 - Elderly dependency ratio is rising
 - Only **28%** of seniors receive formal pensions (*NSSO 75th round*)
- **Healthcare Shortfalls:**
 - **<5%** of PHCs have geriatric outpatient services (*MoHFW*)

Core Components of Healthy Ageing

- **Functional Independence:** Ability to perform daily tasks like walking, cooking, or bathing
- **Resilience:** Ability to recover from illness or surgery
- **Mental Health:** Protection against isolation, depression, and cognitive decline
- **Preventive Biomarkers:** Early indicators like **CRP, HDL**, or metabolite levels to detect age-related decline
- **Culturally Relevant Standards:** Diagnostic thresholds adjusted for Indian genetics and diets

Why India Needs a Tailored Approach

- **Faster Demographic Shift:** States like **Kerala** may see elderly dependency ratios hit **35**
- **Diagnostic Mismatch:** Western lab values don't match Indian baselines
 - E.g., Low B12 levels are common in vegetarians but don't always indicate deficiency
- **Weak Social Security Net:**
 - Indira Gandhi Pension Scheme reaches **<20%** of eligible elderly
- **Rural-Urban Divide:**
 - Geriatric facilities are concentrated in urban areas
 - Rural elders lack access to care, transport, and support
- **Eroding Family Structures:**
 - Smaller families and urban migration lead to more elders in care homes

Challenges in Promoting Healthy Ageing

- **Lack of Indigenous Data:** Most biomarker research is based on Western cohorts (e.g., Framingham, NHANES)
- **Cultural Hesitancy:** Resistance to screening or AI tools, especially in tribal or remote populations
- **Low Budget Allocation:**
 - No standalone ageing component in NHM, despite NPHCE
- **Sampling Difficulties:** Hard to find healthy elders without comorbidities for studies like BHARAT
- **Environmental & Early-life Factors:**
 - Early infections and undernutrition can lead to early-onset diseases like diabetes

Key Initiatives

- **BHARAT Study:** India's first large-scale biobank for ageing-related indicators
- **National Programme for Health Care of Elderly (NPHCE):** Focus on geriatric care at district and primary levels
- **Longitudinal Ageing Study in India (LASI):** Tracks elder health and social trends
- **Senior Citizen Health Insurance:** Coverage under RSBY and Ayushman Bharat for common geriatric illnesses
- **Academic Push:** Geriatrics included in AYUSH and MBBS as a super-specialty subject

The Road Ahead: Policy Recommendations

- **Develop India-Specific Health Norms:** Redefine thresholds for CRP, HDL, B12, and blood pressure
- **National Expansion of BHARAT:** Include all dietary, ecological, and ethnic profiles
- **Leverage AI for Early Diagnostics:** Predict organ ageing (e.g., liver, kidney) to enable timely interventions
- **Boost Public Awareness:** Launch healthy ageing campaigns via ASHA and Anganwadi workers
- **Integrate with NDHM:** Link elderly health data to the **Ayushman Bharat Digital Mission** for better tracking and continuity of care

Conclusion

India's ageing population is growing rapidly, and the current systems are not fully equipped to meet

their unique health and social needs. **Healthy ageing** must become a public health priority—shifting focus from simply living longer to living better. Efforts like the **BHARAT study**, if scaled and supported with contextual policies, can pave the way for a more resilient, dignified, and productive ageing population.

India's First Transgender-Led Health Clinic Reopens as 'Sabrang' in Hyderabad Context

India's pioneering transgender-led health clinic, earlier known as *Mitr Clinic*, has reopened in Hyderabad under the name **Sabrang Clinic**, backed by renewed funding from **Tata Trusts**. The clinic had previously shut down due to a funding freeze by USAID.

About Sabrang Clinic

- **What It Is:** Sabrang Clinic is **India's first health facility fully operated and managed by transgender individuals**, catering specifically to the healthcare needs of the transgender community.
- **Key Services Offered:**
 - Gender-affirming care
 - HIV/AIDS prevention and treatment
 - Mental health support
 - Primary and general healthcare services
- **Unique Features:**
 - A safe, stigma-free space for transgender patients
 - Empowerment through employment in the healthcare sector for transgender staff

Significance

- Addresses persistent discrimination and marginalization of transgender individuals in mainstream medical institutions
- Promotes inclusive healthcare access and sets a precedent for community-led care models
- Demonstrates a shift toward community empowerment and health equity

WHO Launches "3 by 35" Initiative to Tackle Non-Communicable Diseases

Overview

The **World Health Organization (WHO)** has launched the **"3 by 35" initiative**, aimed at reducing the global burden of **non-communicable diseases (NCDs)** by significantly increasing health taxes on:

- Tobacco
- Alcohol
- Sugary drinks

Key Goal

Raise the price of these harmful products by **at least 50%** through taxation over the next **10 years**.

Expected Outcomes

- Generate \$1 trillion in additional global public revenue
- Reduce premature deaths linked to NCDs
- Improve long-term health equity and financial stability

What Is a Health Tax?

A **health tax** is levied on products harmful to public health to:

- Discourage consumption
- Offset healthcare costs
- Fund health services

Why Health Taxes Are Needed

- **Health Burden:** NCDs cause over 75% of global deaths, with tobacco and unhealthy diets as major drivers
- **Economic Cost:** Tobacco alone cost the global economy \$1.4 trillion in 2012
- **Revenue Potential:** A 50% health tax could generate \$740 billion annually, about 0.75% of global GDP
- **Equity Impact:** Poorer populations are more affected by NCDs, making health taxes a tool for reducing health inequities

India's Efforts to Curb Unhealthy Consumption

Domestic Tax Measures

- Aerated drinks: Taxed at 28% GST + 12% compensation cess
- HFSS Foods (High Fat, Sugar, Salt): Taxed at 12% GST
- FSSAI Norms: Trans fats capped at 2% by mass in edible oils and fats

Global Best Practices

- **Colombia (2016):** Cigarette tax hike led to a 34% drop in smoking rates
- **Saudi Arabia:** A 50% sugar-sweetened beverage (SSB) tax led to a 19% decline in consumption within a year

Global Peace Index (GPI) 2025

Released by: Institute for Economics and Peace (IEP)

Edition: 19th

Coverage: 163 countries

Indicators Used: 23 indicators across three main domains:

- Level of Societal Safety and Security
- Extent of Ongoing Domestic and International Conflict
- Degree of Militarisation

Key Findings:

- Global peacefulness has worsened on average.
- South Asia is the **second least peaceful region**, suffering the largest regional decline.
- **Top ranked country:** Iceland (1st place)
- **India's rank:** 115th
- **Least peaceful country:** Russia (163rd)

Maternal Mortality in India: Trends, Challenges, and the Way Forward

Introduction

India's **Maternal Mortality Ratio (MMR)** has shown a commendable decline, currently standing at **93 per 100,000 live births** (SRS, 2019–21). While this progress is indicative of improved maternal healthcare systems, significant **regional disparities** and **systemic challenges** persist—particularly in emergency obstetric care and healthcare access in underserved regions.

Understanding Maternal Mortality

- **Definition:** According to the World Health Organization (WHO), a *maternal death* is defined as the death of a woman during pregnancy or within 42 days of termination of pregnancy, from causes related to or aggravated by the pregnancy or its management.
- **Measurement:**
 - The **Maternal Mortality Ratio (MMR)** is calculated as the number of maternal deaths per **100,000 live births**.
 - Based on SRS data (2019–21):
 - **India:** 93
 - **Kerala:** Lowest MMR at 20
 - **Assam:** Highest MMR at 167
 - Southern states consistently outperform the **Empowered**

Action Group (EAG) states, which include Bihar, Jharkhand, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Odisha, Rajasthan, and Uttarakhand.

Significance of Reducing Maternal Mortality

1. **Public Health Indicator:** MMR serves as a key barometer of health system quality, gender equity, and the effectiveness of governance.
2. **Preventable Tragedy:** The majority of maternal deaths are preventable through timely interventions and access to essential obstetric care.
3. **Global Commitments:** Under **Sustainable Development Goal (SDG) 3.1**, India is committed to reducing MMR to **below 70 by 2030**—a goal requiring accelerated and targeted efforts.

Key Challenges

1. **Three Delays Model** (*Deborah Maine Framework*):
 - **Delay in seeking care:** Often due to low awareness, gender norms, and poor health literacy.
 - **Delay in reaching care:** Inadequate transport, geographic isolation, and lack of referral pathways.
 - **Delay in receiving care:** Infrastructure deficits, shortage of specialists, non-functional operation theatres, and lack of blood supplies.
2. **Infrastructure and Human Resource Deficiencies:**
 - Of the **5,491 Community Health Centres (CHCs)**, only **2,856** function as **First Referral Units (FRUs)**.
 - Over **66% of sanctioned specialist posts remain vacant**, limiting access to critical care during obstetric emergencies.
3. **Medical Causes of Maternal Mortality:**
 - Common direct causes include **postpartum haemorrhage, hypertensive disorders of pregnancy, obstructed labour, puerperal sepsis, and unsafe abortions**.
4. **Underlying Health Risks:**

- **Anaemia, malnutrition, and comorbidities such as malaria, tuberculosis, and urinary tract infections** are widespread, particularly in EAG states, compounding maternal health risks.

Government Initiatives

1. **Janani Suraksha Yojana (JSY):** Provides financial incentives to encourage institutional deliveries and incentivises Accredited Social Health Activists (ASHAs).
2. **Janani Shishu Suraksha Karyakram (JSSK):** Offers free maternal healthcare, including transport, diagnostics, and treatment.
3. **Operationalising FRUs:** The target is to establish **at least four FRUs per district**, each equipped with obstetricians, anaesthetists, and blood storage units.
4. **Maternal Death Reviews (MDRs):** Mandated under the National Health Mission (NHM) to audit all maternal deaths and facilitate corrective action.
5. **Kerala's Confidential Review Model:** Demonstrates effective MMR reduction through targeted facility-based improvements (e.g., uterine tamponade kits, embolism response teams), clinical audits, and provider capacity building.

Strategic Recommendations

1. **Targeted Investment in EAG States:**
 - Prioritise recruitment of obstetric specialists and infrastructure upgrades in high-burden districts.
 - Strengthen district hospitals as referral centres for complicated deliveries.
2. **Strengthening Emergency Obstetric Care:**
 - Ensure **24×7 functional blood banks**, skilled obstetric teams, and emergency transport systems in rural and tribal areas.
3. **Empowering Community Health Workers:**
 - Scale up **ASHA-ANM collaboration** for maternal tracking, birth preparedness counselling, and early risk identification.

4. Comprehensive Pre- and Post-natal Care:

- Institutionalise early **antenatal registration**, universal **iron-folic acid supplementation**, and mandatory **risk screening** for all pregnant women.

5. Replicating Best Practices:

- States such as **Tamil Nadu, Maharashtra, and Jharkhand** should adopt Kerala's **confidential review mechanism** and quality assurance models for reducing preventable maternal deaths.

Conclusion

Maternal mortality in India remains a **largely preventable public health issue**. The path to reducing MMR requires a **dual approach**: robust community engagement at the grassroots level and a responsive, well-equipped health system at the facility level. The ultimate objective must go beyond promoting institutional delivery to ensuring **safe motherhood**, with dignity, timely care, and equitable access for every woman—regardless of geography or socio-economic status. **District SDG Index 2023–24 for the North East Region: Advancing Localisation of the Global Goals**

Context and Overview

In a significant step towards localising the Sustainable Development Goals (SDGs), **NITI Aayog**, in collaboration with the Ministry of Development of the North Eastern Region (MDoNER), released the **District SDG Index 2023–24 for the North Eastern Region (NER)**. The index assesses district-level progress across all 120 districts in the region using 75 indicators aligned with the SDG framework.

- **Top Performer:** *Hnahthial district (Mizoram)* ranked as the best-performing district.
- **Front Runner States:** All districts in **Mizoram, Sikkim, and Tripura** achieved "Front Runner" status, reflecting strong progress towards multiple SDG targets.

This index marks a pivotal moment in **institutionalising bottom-up approaches** to sustainable development and reinforces the role of local governance in achieving global goals.

Significance of SDG Localisation

1. **Local Jurisdictions as Primary Sites of Delivery:** State governments in the NER are integrating SDG goals into **State Vision Documents** and implementation strategies. For example, **Mizoram** has developed robust **Village Level Monitoring Committees** to track SDG performance at the grassroots level.
2. **Bottom-Up Planning:** Subnational governments serve as crucial intermediaries between the central government and local communities. They facilitate **multistakeholder engagement**, including **civil society, academia, and private sector** actors, ensuring context-sensitive development.
3. **Alignment of State Budgets with SDGs:** Local authorities are increasingly mobilising domestic resources by aligning **budgetary allocations** and **development planning** with SDG priorities.
4. **Addressing Regional Disparities:** District-level SDG assessments help identify **intra- and inter-district disparities**, allowing targeted interventions to bring lagging areas in line with **national development benchmarks**.

Challenges in Localising SDGs

1. **Fiscal Constraints:** Local bodies often face budgetary pressures, prioritising basic services like **health, education, and sanitation**, making it challenging to fund long-term sustainability initiatives.
2. **Interlinkages and Trade-offs:** Local governments may encounter difficulties in balancing the often **intersecting and competing objectives** of economic growth, social inclusion, and environmental sustainability.
3. **Data Gaps and Capacity Limitations:** Reliable, **disaggregated, and real-time data** is frequently unavailable at the district and village levels, limiting evidence-based policymaking and hindering effective SDG monitoring.

Strategic Pathways for Strengthening SDG Localisation

- **Decentralised Governance:** Strengthening the institutional capacities of **Panchayati Raj Institutions (PRIs)**

and Urban Local Bodies (ULBs) to plan, execute, and monitor SDG-aligned programs.

- **Innovative Financing Mechanisms:** Promoting **blended finance**, **impact bonds**, and **public-private partnerships** tailored to local socio-economic conditions.
- **Context-Specific Strategies:** Encouraging flexibility in SDG planning to account for **cultural, ecological, and economic diversity** across districts.

India's National Framework for SDG Localisation

India has adopted a **cooperative and competitive federalism model** to implement Agenda 2030:

- **NITI Aayog's Role:**
 - Formulation of the **SDG India Index**,
 - State-specific **Vision Documents**,
 - Coordination with central ministries and state governments.
- **Flagship Initiatives and Schemes:**
 - **Panchayat Advancement Index (PAI)** for performance-based rural governance.
 - **Rashtriya Gram Swaraj Abhiyan (RGSA)** for PRI capacity-building.
 - Housing and social protection schemes such as **Pradhan Mantri Awas Yojana (PMAY)**.
 - State-level programmes like **Chief Minister's Samagra Gramya Unnayan Yojana (Assam)** support integrated rural development.

Conclusion

The **District SDG Index 2023-24 for the North East Region** represents a vital shift towards **data-driven, decentralised development planning**. By empowering local institutions, enhancing fiscal capacity, and ensuring inclusive stakeholder engagement, India is making tangible progress towards achieving the SDGs. However, overcoming structural constraints and enabling sustained capacity-building at the local level remain essential to realising the **"Leave No One Behind"** principle of the 2030 Agenda.

Harnessing Industry 4.0 Technologies to Transform Food Processing in India: Opportunities and Challenges

Context

According to a joint report by **ASSOCHAM and PwC**, the global **food processing market** is projected to reach **USD 10 trillion by 2025**. However, despite this significant market size, persistent issues such as **food insecurity, post-harvest losses**, and **limited processing infrastructure** continue to hinder sectoral efficiency and sustainability.

Challenges in the Food Processing Sector

1. **Food Wastage and Food-borne Illnesses**
 - Annual losses due to food wastage and food-borne diseases are estimated at **USD 936 billion** and **USD 110 billion**, respectively.
 - These issues result from inadequate storage, transportation, and quality control mechanisms.
2. **Supply Chain Inefficiencies**
 - India alone incurs **post-harvest losses worth INR 1.53 trillion** annually, reflecting inefficiencies in logistics, cold chain infrastructure, and market access.
3. **High Operational and Environmental Costs**
 - The sector is resource-intensive, requiring substantial **energy and water inputs**, raising concerns about environmental sustainability and cost-effectiveness.

Potential of Industry 4.0 Technologies

Industry 4.0, or the fourth industrial revolution, introduces advanced technologies such as **AI, ML, blockchain, IoT, and automation**, which offer transformative potential in food processing:

1. **Artificial Intelligence (AI) and Machine Learning (ML)**
 - Enable **non-invasive quality inspections**, detect contaminants, and optimise processing conditions.
 - Facilitate automation of **repetitive tasks** like packaging and labelling, improving productivity and reducing labour costs.
2. **Smart Foods and Evolving Consumer Trends**

- Innovation in **food formulation and processing techniques** enhances shelf life and nutritional value.
- Growing demand for **functional and fortified foods**, aligned with health-conscious consumer behaviour.
- 3. **Blockchain for Supply Chain Transparency**
 - Provides **real-time traceability** and accountability throughout the supply chain, reducing fraud and enhancing food safety.
 - Ensures data integrity across stakeholders—from farm to fork.
- 4. **Meeting Future Population Demands**
 - The **global population is projected to reach 9.8 billion by 2050 (UN)**, necessitating technological interventions to scale food production and reduce waste.

Constraints to Technological Adoption

Despite its promise, the adoption of Industry 4.0 in food processing faces **regulatory, operational, and institutional challenges**:

- **Regulatory Uncertainty**: The implementation of frameworks such as the **Digital Personal Data Protection (DPDP) Act, 2023** is crucial to ensure responsible data handling in AI-enabled systems.
- **Workforce and Skills Gap**: There is a pressing need to develop a **digitally skilled workforce** capable of operating advanced technologies.
- **Infrastructure and Investment Barriers**: Small and medium enterprises (SMEs) face challenges in accessing capital and upgrading legacy systems.

Food Processing Sector in India: Current Landscape

- **Average Annual Growth Rate (AAGR)**: The sector recorded an AAGR of approximately **5.35%** over the eight years leading up to 2022–23.
- **Export Performance**: In 2023–24, **processed food** accounted for **23.4% of India's total agri-food exports**, underscoring its importance in the export basket.

Policy Support:

- **PM Kisan Sampada Yojana**: Aims to create modern infrastructure and boost value addition.
- **Production Linked Incentive (PLI) Scheme** for the food processing industry: Encourages large-scale investments and technology adoption.

Conclusion and Policy Implications

The integration of **Industry 4.0 technologies** into the food processing sector offers a pathway to reduce food loss, enhance operational efficiency, and meet future nutritional demands sustainably. However, to unlock its full potential, India must:

- **Strengthen regulatory frameworks** for digital innovation,
- **Promote capacity-building** and skills development,
- Facilitate **targeted investments** through public-private partnerships.

A multi-pronged strategy that addresses technological, human capital, and infrastructural gaps will be critical in ensuring that food processing becomes a **pillar of sustainable agri-food systems** in the 21st century.

PARAKH RS Survey 2025: Revealing Persistent Learning Gaps in Indian School Education Introduction

The 2025 edition of the **PARAKH Rashtriya Sarvekshan (RS)** has unveiled critical deficiencies in student learning outcomes across India's school education system. Covering **over 21 lakh students** across **781 districts**, the nationwide assessment evaluated academic competencies in core subjects at **Grades 3, 6, and 9**. The findings raise pressing concerns about foundational learning and indicate a marked decline in subject mastery—particularly in **mathematics and science**—as students move to higher grades.

About PARAKH RS

The **PARAKH Rashtriya Sarvekshan (RS)**, formerly known as the **National Achievement Survey (NAS)**, is conducted by **PARAKH** (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development)—an autonomous institution functioning under the **National Council of Educational Research and Training (NCERT)**. The survey is a central mechanism for monitoring the efficacy of school

education and learning achievement across Indian states and union territories.

Key Scope of the 2025 Survey:

- **Participants:**
 - **Students:** 21,15,022
 - **Schools:** 74,229
 - **Districts:** 781
 - **Teachers/School Leaders (for contextual data):** 2.7 lakh
- **Subjects Assessed:**
 - **Grades 3, 6, and 9:** Language and Mathematics
 - **Grades 3 and 6:** Environmental Studies
 - **Grade 9:** Science and Social Science

Key Findings

State-wise Performance

- **Top Performing States/Districts:**
 - **Grade 3:** Punjab, Himachal Pradesh, Kerala
 - **Grade 6:** Kerala, Punjab, Dadra & Nagar Haveli and Daman & Diu
 - **Grade 9:** Punjab, Kerala, Chandigarh
- **Low Performing Regions:**
 - **Grade 3:** Sahebganj (Jharkhand), Reasi and Rajouri (Jammu & Kashmir)
 - **Grades 6 & 9:** Several districts in Meghalaya, especially North and South Garo Hills

A notable finding was the **intra-institutional disparity** observed in **Kendriya Vidyalayas**. These schools exhibited low proficiency in **Grade 3 Mathematics**, yet performed strongly in **Grade 9 Language**, indicating inconsistencies within institutional learning trajectories.

Learning Gaps by Subject and Grade

The survey results reveal an **alarming trend of declining competency** in higher grades, with students increasingly struggling in **conceptual subjects** like mathematics and science. This pattern points to **weak foundational skills** and limited progression in cognitive application as students advance through the education system.

Policy Implications and Recommendations

The PARAKH RS 2025 findings carry substantial implications for India's educational policy and classroom practices. The data suggest that systemic reforms are urgently required to address learning inequalities and to enhance overall

educational quality. Key recommendations include:

1. **Strengthening Foundational Literacy and Numeracy (FLN):**
 - Focus on early-grade interventions to build core skills that are essential for future learning.
2. **Enhancing Teacher Training and Pedagogical Support:**
 - Prioritize continuous professional development in underperforming regions.
 - Promote context-sensitive teaching methodologies, especially for STEM subjects.
3. **Implementing Formative Assessment Tools:**
 - Develop and integrate low-stakes, diagnostic assessments for early identification of learning gaps.
4. **Curriculum and Assessment Reforms:**
 - Shift curricular focus from rote learning to **conceptual understanding, critical thinking, and contextual learning**.
 - Encourage cross-disciplinary and real-world learning integration.

Conclusion

The 2025 PARAKH RS serves as a wake-up call for India's education stakeholders. The deepening learning deficits, particularly in higher grades and in key academic subjects, demand immediate policy attention. Unless foundational education is strengthened and systemic disparities addressed, the nation's vision for equitable and quality education for all will remain unfulfilled.

Kerala's Semicircular Classroom Model: A Shift Toward Inclusive Pedagogy Context and Background

In a departure from the conventional row-based classroom arrangement, several schools in Kerala have begun implementing **semicircular classroom seating**, inspired by the 2018 Malayalam film *Sthanarthi Sreekuttan*. This innovative pedagogical approach reflects a broader effort to foster **inclusive, engaging, and student-centered learning environments**.

While the concept was initially proposed under the **District Primary Education Programme (DPEP) in 1994**, its recent resurgence highlights

the power of **public discourse and cultural influence** in shaping educational practices.

Structural Characteristics of the Semicircular Model

- **Layout Design:** Students are seated in a semicircular arc, facing the teacher positioned at the center.
- **Purpose:** The design **dissolves hierarchical divisions** such as the 'front-bencher vs back-bencher' dynamic, promoting **equal visibility and participation**.
- **Spatial Dynamics:** The physical layout encourages **open dialogue** and more **interactive teacher-student relationships**, avoiding traditional power imbalances embedded in seating structures.

Educational and Psychological Impacts

1. Promoting Inclusive Classrooms

- The semicircular format fosters **equal opportunity for attention and participation**, regardless of students' academic standing or social background.
- It mitigates feelings of marginalization, particularly among shy or underperforming students.

2. Enhanced Teacher-Student Interaction

- The teacher's central position facilitates **better eye contact, non-verbal communication, and responsiveness**.
- It supports **dynamic teaching methods** such as questioning, discussion, and interactive instruction.

3. Improved Classroom Behaviour

- By removing physical barriers and social stratification, the arrangement contributes to **reduced disruptive behaviour**.
- It promotes a **collaborative atmosphere**, where peer engagement is naturally facilitated.

4. Boost to Confidence and Peer Learning

- Students become more comfortable **asking questions, expressing opinions, and collaborating** with peers.
- Peer-to-peer assistance and shared learning increase, strengthening classroom cohesion.

5. Positive Psychological Outcomes

- The design contributes to a **supportive and non-intimidating environment**,

which can be particularly beneficial for students experiencing anxiety, low self-esteem, or learning difficulties.

Conclusion

The **semicircular classroom model**, now gaining traction in Kerala's schools, exemplifies a **low-cost, high-impact intervention** that aligns with contemporary educational goals—**equity, engagement, and holistic development**. Its revival, driven by community influence and pedagogical insight, demonstrates how spatial reconfiguration can transform classroom dynamics and advance inclusive education.

Erasmus+ Programme

Recently, 101 Indian students, including 50 women, were awarded Erasmus+ scholarships to pursue master's degree programs in Europe.

Programme Overview

Launched in 1987, the Erasmus+ programme is the European Union's flagship initiative aimed at fostering international academic mobility. The scholarship facilitates students' study at two or more European universities, enabling them to obtain joint, double, or multiple degrees. It comprehensively covers tuition fees, travel expenses, and living costs.

Opportunities for Students

Participants in the Erasmus+ programme may:

- Study abroad for periods ranging from two to twelve months.
- Engage in internships abroad lasting between two to twelve months.
- Enroll in Erasmus Mundus Joint Master's programmes lasting one to two academic years.

The programme is administered by the European Commission, the Education, Audiovisual, and Culture Executive Agency (EACEA), along with several National Agencies within participating countries, and National Offices in select partner nations.

Eklavya Model Residential Schools (EMRS)

Recent Achievement:

In a recent performance review conducted by the Ministry of Tribal Affairs, it was reported that nearly 600 students from Eklavya Model Residential Schools (EMRS) across 12 Indian states successfully qualified for premier undergraduate entrance exams in engineering and medicine, underscoring the program's growing efficacy.

Introduction and Policy Framework:

EMRS is a flagship initiative under the Ministry of Tribal Affairs, Government of India. It aims to provide comprehensive residential education to students belonging to Scheduled Tribes (ST) from Class VI to XII. The primary goal is to bridge the educational gap between tribal and non-tribal populations and facilitate access to quality academic opportunities in remote and underdeveloped areas.

Historical Context and Expansion Plan:

Launched in 1998, the EMRS scheme underwent significant restructuring in 2018–19 to improve infrastructural quality and expand coverage. According to the revised policy, EMRS will be established in every administrative block where the tribal population constitutes over 50% and the total tribal population exceeds 20,000 individuals. The government has set an ambitious target of setting up 728 EMRS institutions nationwide by 2026.

Governance and Implementation Mechanism:

The programme is implemented through the **National Education Society for Tribal Students (NESTS)**—an autonomous body established under the Ministry of Tribal Affairs. NESTS is responsible for the planning, coordination, and oversight of EMRS institutions across India.

Institutional Features and Facilities

- **Academic Structure:** EMRS institutions follow the **Central Board of Secondary Education (CBSE)** curriculum and provide free education to students.
- **Infrastructure:** Schools are equipped with academic and administrative blocks, separate hostels for boys and girls, science laboratories, staff accommodation, playgrounds, and sports facilities to promote holistic development.
- **Cultural and Skill Training:** In addition to mainstream education, these schools also emphasize the preservation of tribal art and culture, and offer training in sports and vocational skills.
- **Enrollment Capacity:** Each school can accommodate up to 480 students, with gender parity in admissions.

Inclusivity Measures: Non-ST students may be admitted up to 10% of the total strength, and 20% of seats are reserved under a sports quota for ST students with demonstrated athletic talent.

Empowering India's Youth: Turning Demographic Potential into Development Power

Context

The theme for **World Population Day 2025** by the United Nations centers on empowering youth to shape the families and futures they envision. It calls for population policies that amplify young voices and uphold their rights. As the country with the **largest youth population globally**, India faces a critical moment to transform this demographic strength into a foundation for long-term national growth.

India's Demographic Opportunity

A Global Youth Powerhouse: India is home to **371 million youth (ages 15–29)**, the largest youth cohort in the world (UNICEF). This immense workforce positions India to lead in global productivity and innovation.

The Demographic Dividend Window: From **2005 to 2055**, India's demographic structure offers a unique chance to drive **productivity-led growth**. This dividend can only be realized with sustained investment in human development.

A \$1 Trillion Opportunity: Targeted investments in **education, healthcare, skills, and jobs** could yield a **\$1 trillion GDP boost by 2030** (World Bank & NITI Aayog).

Labour Market Advantage: India's youthful workforce offers a **strategic edge over ageing economies** such as Japan and much of Europe, strengthening its position in global manufacturing, outsourcing, and services.

Urban Innovation and Digital Growth: Youth-led entrepreneurship, urbanisation, and digital adoption are reshaping India's economic landscape, driving the shift toward a **knowledge-based economy**.

Barriers to Youth Empowerment

1. **Limited Reproductive Autonomy:** According to NFHS-5, over 36% of young women experience unintended pregnancies, and nearly 30% report unmet fertility goals, underscoring gaps in access to informed reproductive choices.
2. **Persistent Child Marriage and Teen Pregnancy:** While child marriage rates have halved since 2006, 23.3% of girls still marry

before 18, and teen pregnancies remain at 7%, with wide regional variation.

3. **Low Female Workforce Participation:** With female labour force participation below 25%, gender disparities limit both economic independence and broader societal empowerment.
4. **Socio-cultural Restrictions:** Entrenched gender norms, stigma around sexual and reproductive health and rights (SRHR), and low awareness levels continue to restrict young people's agency.
5. **Inadequate Access to Essential Services:** Youth, especially in rural and marginalised areas, face unequal access to contraception, maternal care, SRHR education, and mental health services.

Successful Initiatives Making a Difference

- **Project Udaan – Rajasthan (IPE Global):** Between 2017 and 2022, this initiative **prevented 30,000 child marriages** and **15,000 teenage pregnancies** by offering schooling incentives and reproductive health services.
- **Project Advika – Odisha (UNICEF-UNFPA):** This youth-led project enabled **11,000 villages to declare themselves child-marriage free**, stopping **950 child marriages in 2022** through community mobilisation and leadership training.
- **Project Manzil – Rajasthan:** By training **28,000 young women** (aged 18–21) in government centres, **16,000 gained employment**, delaying marriage and improving economic agency.
- **Beti Bachao Beti Padhao & National Adolescent Health Programme:** These national programs focus on reducing **adolescent fertility** and improving **awareness of reproductive rights**, especially for girls.

The Way Forward

- **Ensure Universal SRHR Access:** Guarantee access to **contraceptives, safe abortion, fertility treatment**, and **mental health services** across all regions.
- **Expand Girls' Education:** Every additional year of **secondary education** reduces the likelihood of child marriage

by **6%** (UNICEF), making education a powerful tool for empowerment.

- **Align Skills with Market Needs:** Design **human-centred skilling programs** and promote access to **dignified, gender-equitable employment** to raise participation, especially among women.
- **Build Structural Support Systems:** Invest in **affordable housing, transport, childcare, and workplace flexibility** to support young people's economic participation and life choices.
- **Promote Social Norm Shifts:** Run behaviour change campaigns through **media, schools, and community engagement** to challenge regressive norms and promote informed decision-making.
- **Localise and Decentralise Implementation:** Support **state-led and district-level innovations**, using **local data and youth profiles** to design responsive, targeted interventions.

Conclusion

India's future will be defined by how it engages its youth—not just as a demographic figure but as **active agents of change**. Empowering young people with **education, health, skills, and opportunities** can transform population pressure into a national advantage. Ensuring **choice, control, and capital**, especially for adolescent girls, is not just smart policy—it is the **most enduring investment in India's development journey**.

World Population Day 2025

- **Date and Theme:** Scheduled for Friday, July 11, 2025, this year's theme is *"Empowering young people to create the families they want in a fair and hopeful world."*
- **About World Population Day (WPD):**
 - An annual observance initiated by the United Nations to raise awareness about challenges and opportunities linked to global population growth.
 - Highlights issues such as sustainable development, reproductive rights, gender equality, and equitable resource access.

- The global population surpassed 8.2 billion as of 2025.
- **History:**
 - Established in 1989 by the UNDP Governing Council after "Five Billion Day" on July 11, 1987, which marked the world's population reaching 5 billion.
 - Suggested by Dr. KC Zachariah, a World Bank demographer.
 - The UN General Assembly adopted it as an annual event in 1990, with the first celebration held on July 11, 1990, across over 90 countries.
- **Key Population Facts:**
 - The world population has more than tripled since the mid-20th century.
 - Projected to peak at 10.4 billion around the 2080s, rising to 9.7 billion by 2050.
 - India leads as the most populous country with 1.46 billion, followed by China with 1.41 billion.

India's population is expected to grow to about 1.7 billion before starting to decline in approximately 40 years, according to the UNFPA's 2025 State of World Population Report.

TALASH Initiative

- **Introduction:** Launched recently by the National Education Society for Tribal Students (NESTS) under the Ministry of Tribal Affairs, in partnership with UNICEF India.
- **Purpose:** The Tribal Aptitude, Life Skills and Self-Esteem Hub (TALASH) is a national initiative aimed at the holistic development of tribal students enrolled in Eklavya Model Residential Schools (EMRSs).
- **Goals:**
 - Enhance education quality and personal growth among tribal youth.
 - Foster self-awareness, life skills, and clarity in career choices.
- **Scope:**
 - Targets over 1,38,336 students in EMRSs across 28 states and 8 Union Territories.
- **Key Features:**

- A digital platform for self-discovery and career planning.
- Psychometric Assessments inspired by NCERT's 'Tamanna' initiative, generating personalized Career Cards based on students' strengths.
- Career counseling to help students align aspirations with aptitudes.
- Modules on life skills such as problem-solving, communication, and emotional management.

E-learning portal for teachers, providing resources and training to mentor students effectively.

WASH Progress Tracker 2025: Key Highlights & Funding Gaps

Overview

The **World Health Organization (WHO)** and **UNICEF** have released an updated **WASH in Health Care Facilities Progress Tracker** for 2025. Covering data from over 100 countries, the tracker evaluates national progress across **eight key steps** for improving **Water, Sanitation, and Hygiene (WASH)** in healthcare settings.

- It aligns with the **2023 UN General Assembly Resolution** addressing WASH, waste management, and electricity access in healthcare facilities.
- A significant finding: **Only 17% of countries** have secured **adequate funding** to improve WASH-related services in health facilities.
- **What is WASH and Why It Matters**

WASH stands for **Water, Sanitation, and Hygiene**. It involves:

- Ensuring access to **safe drinking water**
- Providing **improved sanitation facilities**
- Promoting **basic hygiene practices**

Importance of WASH

- **Vital for SDGs:**
 - **SDG 3:** Good Health and Well-being
 - **SDG 6:** Clean Water and Sanitation for All
- **Health Impact:** Crucial for preventing infections such as:
 - Cholera
 - Diarrhea (3rd leading cause of death in children aged 1-59 months)

- Sepsis
- Neglected tropical diseases
- **Gender & Education Impact:** Lack of sanitation, especially in schools, leads to higher dropout rates among girls.
- **Human Rights:** Recognized by the UN as a **basic human right**.
- **India's Progress**

India is recognized in the tracker for its efforts in:

- Developing national WASH standards for health care facilities
- Improving health infrastructure
- Incorporating WASH indicators into national monitoring systems
- **Major WASH Initiatives**

India (National Level)

- **Swachh Bharat Mission (SBM):** Aimed at ending open defecation
- **Jal Jeevan Mission (2019):** Ensures piped tap water for rural households (Currently covers **80.15%** of homes)
- **Namami Gange:** Focuses on cleaning and conserving the Ganga River

Global Initiatives

- **Protocol on Water and Health:** The only legally binding international agreement linking water management to disease prevention in Europe (Supported by WHO/Europe and UN Economic Commission)
- **UN Resolution (2010):** Officially recognized access to safe water and sanitation as human rights
- **WHO WASH Strategy (2018–2025):** Targets improved public health via better WASH systems
- **UNICEF WASH Strategy (2016–2030):** Supports SDG 6 goals

UN Sanitation and Hygiene Fund (2020): Funds high-burden countries for sanitation improvements

Reservation in Local Bodies

Context:

Telangana has approved a 42% reservation for Backward Classes in local body elections.

Constitutional Backing:

- Articles **243D** (Panchayats) and **243T** (Municipalities), introduced via the 73rd and 74th Constitutional Amendments, authorize States to implement reservations.

Reservation Provisions:

- **SCs/STs:** Seats reserved based on population proportion, with rotation across constituencies.
 - At least one-third of these are earmarked for SC/ST women.
- **Women:** One-third of total seats (including those for SCs/STs) are reserved for women.

Chairperson Posts: States may legislate to reserve these posts for SCs, STs, and women as well.

Panch Sankalp under National Education Policy (NEP) 2020

Overview

The **Union Education Minister** has introduced "**Panch Sankalp**"—a set of **Five Guiding Resolutions**—to drive the transformation of India's **higher education system** under the framework of **NEP 2020**.

Objectives of NEP 2020

- Reform and improve the overall quality of:
 - **School education**
 - **Higher education**
 - **Technical education**
- Built on five foundational principles:
 - **Access**
 - **Equity**
 - **Quality**
 - **Affordability**
 - **Accountability**

The Panch Sankalp (Five Resolutions)

1. **Next-Gen Emerging Education**
2. **Multidisciplinary Education**
3. **Innovative Education**
4. **Holistic Education**
5. **Bharatiya Education** (rooted in Indian values and traditions)

Status of Higher Education in India

- **Gross Enrollment Ratio (GER):** 28.4% (Goal: 50% by 2035)
- **Female GER:** 28.5% (Higher than males); **Gender Parity Index:** 1.01

Government Universities: Account for **73.7%** of total student enrollment

India's Gender Gap: Structural Challenges and Strategic Imperatives

- The **Global Gender Gap Report 2025**, published by the World Economic Forum (WEF), places India at 131 out of 148 countries, underscoring widening gender disparities in critical areas like economic participation and health outcomes.

- Despite some progress in education, the report highlights that India continues to perform poorly in economic empowerment and health indicators, reflecting the structural and cultural barriers that hinder gender parity.

Overview of the Global Gender Gap Report 2025

- The World Economic Forum's report evaluates gender parity across four key dimensions: **Economic Participation, Educational Attainment, Health and Survival, and Political Empowerment.**
- Globally, 68.8% of the gender gap has been closed; however, at the current pace, full equality will take approximately 123 years.
- India's rank reflects a severe lag in two crucial areas — women's economic integration and health, despite noticeable gains in educational access.

Key Barriers Undermining Gender Equality in India

- **Economic Participation:** India ranks 143rd, reflecting persistent wage gaps and low female labour force participation (FLFP), which remains below 25%.
– A 2015 McKinsey report estimated that bridging the gender gap could add \$770 billion to India's GDP by 2025.
- **Health and Survival:** Poor gender outcomes in health are driven by deep-rooted son preference and neglect of women's reproductive health.
– The National Family Health Survey (NFHS-5) shows that 57% of women aged 15–49 suffer from anaemia, impacting their overall wellbeing and productivity.
- **Unpaid Care Work:** According to the Time Use Survey, women spend nearly seven times more time on domestic work than men, yet this remains excluded from formal economic accounting.
- **Leadership and Representation:** Women remain significantly underrepresented in leadership roles across politics, the judiciary, and corporate governance, constraining gender-sensitive policymaking and inclusive growth.
- **Policy Fragmentation:** Although mechanisms like gender budgeting exist,

social protection schemes and infrastructure for care work (such as childcare and eldercare) remain inadequate and poorly integrated.

Broader Consequences of Gender Inequality

- **Economic Inefficiency:** The underrepresentation of women in the formal workforce results in the underutilisation of over half the country's human capital, negatively affecting national productivity.
- **Demographic Pressures:** As India faces a declining fertility rate and an ageing population, low female labour participation raises the dependency burden and places long-term strain on public finances.
- **Health-Related Productivity Losses:** Poor reproductive health and widespread anaemia among women reduce their educational outcomes, work capacity, and maternal health — with adverse effects passed on to future generations.
- **Governance Deficit in Gender-Sensitive Policies:** Limited female participation in decision-making structures leads to underinvestment in key areas such as the care economy, safety infrastructure, and women's healthcare.
- **Cycle of Intergenerational Inequality:** Girls raised in gender-unequal environments often suffer from poor nutrition, limited education, and restricted economic opportunities, perpetuating cycles of poverty and marginalisation.

Strategic Interventions: The Way Forward

- **Prioritise Women's Health:** Strengthen public health systems to support reproductive health, nutritional needs, and preventive care through focused government investment.
- **Develop the Care Economy:** Formalise and expand services such as childcare, eldercare, and paid maternity support to reduce the disproportionate care burden on women.
– Uruguay's National Integrated Care System is a potential model for India.
- **Boost Labour Force Inclusion:** Implement policies that promote skill development, ensure equal pay, offer

flexible work arrangements, and protect women's employment rights.

- **Institutional and Policy Reforms:** Integrate gender-based data such as Time Use Surveys into policy planning, scale up gender-responsive budgeting, and strengthen welfare schemes at both central and state levels.
- **Transform Social Norms:** Initiate widespread awareness campaigns to dismantle patriarchal attitudes and promote gender equity in education, workplaces, and public life.

Conclusion: Gender Equality as Economic Strategy

- The Global Gender Gap Report should not merely be seen as a benchmarking tool but as a call to action for India to reorient its economic and social frameworks.
- Without full inclusion of women in the developmental agenda, India risks undermining its demographic dividend and long-term growth potential.
- Advancing gender equality must be approached not just as a social imperative, but as a strategic economic priority vital to national development.

Tamil Nadu's TN-KET Program: A Targeted Approach to Reducing TB Mortality

Background and Purpose

- Tamil Nadu has achieved notable success in reducing tuberculosis-related mortality through the implementation of the **TN-KET (Kasanoi Erappila Thittam)** initiative, introduced in 2022.
- This state-level program prioritizes **early identification of high-risk patients** and the provision of **differentiated care** tailored to disease severity.

Core Components of TN-KET

- **Triage-Based Screening:**
 - Utilizes a simplified, **paper-based triage tool** assessing five clinical indicators: body mass index (BMI), oxygen saturation, respiratory rate, leg swelling, and the ability to stand unassisted.
 - Patients identified as "severely ill" are prioritized for immediate intervention.
- **Timely Admission and Care:**

- Approximately **98% of severe TB cases** are admitted to healthcare facilities within **seven days** of identification.

- **Digital Risk Assessment Tool:**

- A **web-based application** supports frontline health workers by calculating mortality risk scores and guiding prompt medical responses.

- **Efficiency and Accessibility:**

- The triage process eliminates the need for laboratory testing and reduces assessment time by **6-7 days**, compared to conventional 16-parameter methods.

- **Differentiated Care Delivery:**

- Treatment protocols are customized based on factors such as **patient age, BMI, severity of illness, and presence of comorbid conditions**, improving the precision of care.

Impact and Broader Significance

- **Mortality Reduction:**

- The initiative led to a **20% decline in early TB-related deaths** within the first six months of implementation.

- **Model for National Adoption:**

- TN-KET is recognized as a **scalable and replicable model** for high-burden TB regions across India and complements the goals of the **National TB Elimination Programme (NTEP)**.

- **Data-Driven Governance:**

Real-time triage data enables **targeted intervention strategies**, strengthening the efficiency of the state's public health response.

National Health Claims Exchange (NHCE) Overview

The Government of India is preparing to place the National Health Claims Exchange (NHCE), currently overseen by the Ministry of Health, under the joint supervision of the Ministry of Finance and the Insurance Regulatory and Development Authority of India (IRDAI).

Background and Purpose

- Developed under the Ayushman Bharat Digital Mission (ABDM) by the National Health Authority (NHA) in collaboration

with IRDAI, the NHCX seeks to standardize and streamline the health insurance claim process.

- The platform facilitates efficient and transparent exchange of health insurance claim data among insurers, third-party auditors, healthcare providers, beneficiaries, and other stakeholders.
- NHCX ensures interoperability, machine-readability, auditability, and verifiability, thereby enhancing accuracy and trustworthiness in claim processing.

Key Features

- **Coverage Eligibility Verification:** Enables healthcare providers to confirm if a treatment is covered under a patient's insurance plan, reducing unexpected financial burdens.
- **Pre-Authorization Requests:** Hospitals can seek insurer approval before initiating treatment.
- **Predetermination Requests:** Providers may request an estimate of potential insurance benefits prior to treatment.
- **Claim Submission:** Claims are submitted in a standardized format to facilitate expedited processing.
- **Payment Status Tracking:** Hospitals can monitor the status of claim payments.
- **Communication Requests:** Providers may raise queries or request additional information through the platform.

Reprocess Requests: Allows providers to request review and resolution of problematic claims.

ICMR-NIE and the "Silent Salt Epidemic"

Context

- The **ICMR-National Institute of Epidemiology** flagged a growing public health threat due to **excessive salt consumption**.
- A **community intervention programme** has been launched in **Punjab and Telangana** to promote **low-sodium salt alternatives**.
- **Problem Overview**
- **Excess salt intake** is a leading cause of **hypertension and heart diseases**.
- Average daily salt consumption:
 - **Urban India:** 9.2 g/day
 - **Rural India:** 5.6 g/day

- Both exceed the **WHO's recommended limit of 5g/day**.

Project Goals

- A **three-year study** to test the effectiveness of:
 - **Salt-reduction counselling**
 - **Low-sodium substitutes**
- Focus on **hypertensive individuals** in pilot states.

Health Impact of Salt

- **Common salt (NaCl)** contributes to high **blood pressure**.
- **Low-sodium salts** replace part of NaCl with **potassium or magnesium**, maintaining taste while improving health.
- Switching to low-sodium salt can reduce blood pressure by **an average of 7/4 mmHg**.

Key Challenges

- **Silent onset:** Symptoms only appear after years of excess intake.
- **Cultural diet:** High-salt foods are embedded in Indian cuisine and processed products.
- **Awareness gap:** Most people are unaware of daily salt limits.
- **NCD rise:** Poor salt habits contribute to **non-communicable diseases** like:
 - Hypertension
 - Cardiovascular diseases
 - Kidney disorders

Pradhan Mantri Divyasha Kendra (PMDK): Inclusive Support for Divyangjan and Senior Citizens

Overview

The **75th Pradhan Mantri Divyasha Kendra (PMDK)** is set to be inaugurated at the **Government Medical College, Badaun, Uttar Pradesh**, by the Union Ministry of Social Justice & Empowerment.

About PMDK

PMDKs are integrated service centres that provide:

- **Assessment & evaluation**
- **Counselling**
- **Distribution of assistive devices**
- **Post-distribution support**

These services are targeted at **Divyangjan (persons with disabilities)** and **elderly citizens**, ensuring accessibility under one roof.

Implementation Agency

The centres are developed through **ALIMCO** (Artificial Limbs Manufacturing Corporation of India), a CPSE under the **Department of Empowerment of Persons with Disabilities (DEPwD)**.

Schemes Covered

- **ADIP Scheme** – for providing aids and appliances to Divyangjan
- **Rashtriya Vayoshri Yojana (RVY)** – for senior citizens

Types of Devices Provided (Free of Cost)

- Tricycles
- Wheelchairs
- Hearing aids
- Walkers
- Artificial limbs
- Mobility aids and accessories

Impact

- Over **1.40 lakh beneficiaries** served so far
- Assistive devices worth **₹179.15 lakh** distributed

Reduces logistical barriers for rural and semi-urban residents by providing **local, dignified, and timely support**

Untouchability Cases in India: Insights from the 2022 Government Report

Context:

A report by the **Ministry of Social Justice and Empowerment** reveals severe gaps in the enforcement of the **Protection of Civil Rights (PCR) Act, 1955**, which criminalizes untouchability.

Understanding the PCR Act:

- Prohibits caste-based discrimination in access to food, public spaces, education, and religious places.
- Mandates **penalties, special courts**, and **annual monitoring** of enforcement.

Key Findings from the 2022 Report:

- **Sharp Drop in FIRs:** Only 13 FIRs were registered in 2022 (down from 24 in 2021), mostly from J&K, Karnataka, Maharashtra, and Himachal Pradesh.
- **High Pendency:**
 - **97% of cases** remain pending in court
 - **1,242 cases** awaiting trial under the PCR Act
- **Low Conviction Rate:**

- Out of 31 cases disposed, only **1 resulted in conviction**, rest ended in acquittals.

- **Ineffective Policing:**

- Of 51 pending investigations, chargesheets were filed in only 12 cases.

- **Administrative Apathy:**

- No State or UT identified any area as **“untouchability-prone.”**

- **Contrast with SC/ST (PoA) Act Cases:**

A rising number of cases under this Act suggest **greater awareness or reporting disparities**.

Immunization in India: Progress and Global Context (2024)

Context

According to **WHO/UNICEF 2024 estimates**, India has made significant strides in childhood immunization, achieving a sharp reduction in “zero-dose” children.

Global Highlights (2024):

- **89% of infants globally** received at least one dose of the **DTP vaccine** (Diphtheria, Tetanus, Pertussis).

India's Progress (2024):

- Reduced number of **zero-dose children** (i.e., those who received no vaccine) by **43%**, from **1.6 million (2023)** to **0.9 million (2024)**.
- This marks a major milestone in **universal immunization efforts**.

Universal Immunization Programme (UIP):

Origin & Scope

- Started as **Expanded Programme on Immunization** in **1978**; renamed **UIP** in **1985**.
- A key pillar of the **National Rural Health Mission (NRHM)** and India's public health infrastructure.

Coverage

- **Free immunization** against **12 vaccine-preventable diseases**:
 - **Nationwide (9):** Diphtheria, Pertussis, Tetanus, Polio, Measles, Rubella, Tuberculosis, Hepatitis B, Meningitis & Pneumonia.
 - **Region-specific (3):** Rotavirus Diarrhoea, Pneumococcal Pneumonia, Japanese Encephalitis.

Child Immunization Norm

- A child is considered **fully immunized** after receiving all scheduled vaccines in the **first year** of life.

Major Achievements

- **Polio eradication** certified in **2014**.
- **Neonatal tetanus eliminated** in **2015**.

Key Initiatives

- **Intensified Mission Indradhanush (IMI) 5.0**: Focuses on improving **Measles-Rubella vaccine** coverage and reaching hard-to-reach populations.

U-WIN Portal: Digital platform to monitor and manage immunization records and logistics.

Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

Context

India marks **10 years of PMKVY**, celebrating the training of over **1.63 crore youth** under the flagship skill development initiative.

Overview

Launched in **2015** under the **Skill India Mission**, PMKVY is a national scheme aimed at equipping young Indians with **industry-relevant skills** to enhance their employability.

Administered By

- **Ministry of Skill Development and Entrepreneurship (MSDE)**

Core Objectives

- Close the skill gap between workforce capabilities and industry demands.
- Provide **short-term training**, validate **prior learning**, and facilitate **job placements**.

Key Features

- **Short-Term Training (STT)**: 3–6 month training programs across 30+ sectors.
- **Recognition of Prior Learning (RPL)**: Certifies informal sector workers (artisans, weavers, etc.).
- **Digital Integration**: PMKVY 4.0 includes AI-based analytics, Academic Bank of Credits, and a unified digital platform.
- **Inclusivity**: 45% of trainees are women; strong participation from SC, ST, and OBC communities.
- **Future Skills**: Courses in **AI, IoT, drones, mechatronics**, along with support for **traditional vocations**.
- **Skill Hubs & COVID Warriors**: Vocational training in schools and 1.2 lakh trained for pandemic response roles.

Achievements Over 10 Years

- **1.63 crore** trained under PMKVY as of July 2025.
- **6 crore+** trained across all MSDE schemes since 2014.
- **25 lakh+** trained under PMKVY 4.0 (FY 2022–2025).
- **1.10 crore** under PMKVY 2.0, aligned with **Make in India** and **Digital India**.

Additional training through **DDU-GKY (17 lakh)** and **RSETIs (56 lakh)**.

10-Year Milestone of Skill India Mission (SIM) Objective

The Skill India Mission aims to train **40 crore individuals by 2022**, equipping them with diverse skills through its various flagship initiatives and programs.

About Skill India Mission

- **Launch Year**: 2015
- **Governing Body**: Ministry of Skill Development and Entrepreneurship (MSDE)
- **Major Components**:
 - **Pradhan Mantri Kaushal Vikas Yojana 4.0 (PMKVY 4.0)**
 - **Pradhan Mantri National Apprenticeship Promotion Scheme (PM-NAPS)**
 - **Jan Shikshan Sansthan (JSS) Scheme**

All these schemes are integrated under the unified framework known as the **Central Sector Scheme of the "Skill India Programme."**

Initiative	Details	Achievements
Pradhan Mantri Kaushal Vikas Yojana (PMKVY) (2015)	- Free short-duration skill training and certification for youth. - PMKVY 4.0 running from FY 2022 to 2026.	- Over 1.60 crore youth trained across 38 sectors since 2015. - 45% of trainees are women.
Jan Shikshan Sansthan (JSS)	- Provides vocational training for non-literates, neo-literates, and school dropouts in rural areas.	- Trained around 2.45 lakh beneficiaries through 289 JSS centers (as of January 2025).

PM National Apprenticeship Promotion Scheme (PM-NAPS)	- Subsidizes 25% of stipend (up to ₹1,500/month) via Direct Benefit Transfer for apprentices and employers. - Target age: 14 to 35 years.	- Approximately 2.6 lakh apprentices completed training in FY 2023-24. - 65% of candidates secured gainful employment post-training.
Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) (2014)	- Part of the National Rural Livelihood Mission (NRLM). - Aims to diversify rural incomes and fulfill youth career aspirations.	- Successfully training rural youth to enhance livelihood opportunities (specific numbers not provided here).

Rise in Dowry Deaths Highlights Deep Social and Legal Failures

Context:

A disturbing increase in **dowry-related deaths** in states like **Uttar Pradesh, Tamil Nadu, and Chandigarh** has sparked national concern, exposing the **persistence of regressive social norms** and **serious shortcomings in the criminal justice system**.

What Are Dowry Deaths?

- **Definition:** Dowry deaths refer to the **murder or suicide** of a woman due to **prolonged harassment or violence** by her husband or in-laws over **unfulfilled dowry demands**.
- **Legal Framework:**
 - Covered under **Section 80 of the Bharatiya Nyaya Sanhita (BNS)**
 - Also penalized under the **Dowry Prohibition Act, 1961**

Data & Trends (2017-2022):

- **Annual Average:** Around **7,000 dowry deaths** reported every year (NCRB data)
- **Dowry-Linked Murders:** Over **6,100 murders** during this period were directly attributed to dowry demands

Investigation Status (2022):

- Only **~4,500 cases charge-sheeted** annually
- Over **3,000 cases still under investigation**
- **67% of these cases remained pending** for more than six months

Conviction Rate:

- Barely **100 convictions** per year from nearly **6,500 trial cases**

Regional Concentration:

- Over **80% of dowry deaths** occurred in:
 - **Uttar Pradesh, Bihar, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, West Bengal, and Haryana**

Urban Hotspot:

- **Delhi** accounted for **30% of dowry deaths** among 19 major Indian cities

Key Concerns:

- **Legal Delays and Low Conviction Rates:** Undermine deterrence and justice
- **Gender-Based Violence Normalization:** Cultural and familial complicity often prevent women from reporting abuse
- **Enforcement Gaps:** Weak implementation of the Dowry Prohibition Act enables continued misuse

Conclusion:

The spike in dowry deaths is a **grim reminder** that deep-rooted patriarchy and legal lethargy continue to undermine women's rights. **Systemic reforms**, faster trials, better victim protection, and **societal awareness** are essential to combat this persistent form of **gender-based violence**.

Supreme Court Upholds Equal Inheritance Rights for Tribal Women

Context:

In a landmark verdict in *Ram Charan & Ors. vs. Sukhram & Ors.*, the **Supreme Court of India** has upheld the **equal succession rights of tribal women**, ruling that **customary exclusion** from inheritance violates the Constitution.

Key Highlights of the Judgment:

- **Violation of Fundamental Rights:**
 - Denying tribal women inheritance based on custom **violates Articles 14 and 15** of the

Constitution (equality and non-discrimination).

- Supported by **Articles 38 and 46**, which advocate social justice and protection for disadvantaged groups.
- **Non-Applicability of Hindu Succession Act Not a Barrier:**
 - Although the **Hindu Succession Act, 1956** does **not extend to Scheduled Tribes**, this does **not justify** blanket denial of rights.
 - Courts must step in to **apply equity, justice, and good conscience** in the absence of codified law.
- **Importance of Proving Custom:**
 - **Customs must be proven** with clarity and consistency in court to be valid.
 - Vague or regressive customs **cannot override constitutional protections**.

Judicial Precedents Cited:

- **Mst. Sarwango v. Mst. Urchamahin (2013):** Directed inheritance rights for daughters on equitable grounds.
- **Tirith Kumar v. Daduram (2024):** Affirmed tribal women's right to ancestral property based on fairness and constitutional values.

Significance of the Ruling:

- **Breaks Legal Silence:** Offers **legal clarity** on a matter where the **Hindu Succession Act does not apply**, filling a crucial gap.
- **Upholds Gender Justice:** Affirms that **tribal identity does not exempt one from constitutional protections**.
- **Corrects Historical Injustices:** Reverses courts' earlier **reluctance to interfere** in tribal customs, setting a **progressive precedent**.

On Custom as a Source of Law:

- **Role of Custom:** Customs are among the **oldest sources of law** and govern social behavior.
- **Legal Validity:** To be legally enforceable, a custom must be:
 - **Reasonable**
 - **Morally acceptable**
 - **Consistently followed**

- **Problematic Customs:** Practices like **sati, child marriage, and triple talaq** are examples of customs **rejected for violating public conscience and constitutional morality**.

Conclusion:

The Supreme Court's ruling marks a **transformative step toward gender equality** in tribal communities. By affirming that **constitutional values trump discriminatory customs**, it paves the way for more **inclusive and equitable jurisprudence** for India's marginalized groups.

CARA Directs States to Strengthen Counselling at All Stages of Child Adoption

Context:

The **Central Adoption Resource Authority (CARA)** has issued new directives to **State Adoption Resource Agencies (SARAs)** to enhance **psychosocial counselling support** throughout the adoption process. These instructions are in line with the **Juvenile Justice (Care and Protection of Children) Act, 2015** (as amended in 2021) and the **Adoption Regulations, 2022**.

Key Directions to SARAs:

1. **Strengthen Counselling for All Stakeholders:**
 - CARA has called for a **robust psychosocial support framework** to assist:
 - **Prospective Adoptive Parents (PAPs)**
 - **Adopted Children**
 - **Biological Parents**
2. **Appointment of Qualified Counsellors:**
 - SARAs must **designate or empanel trained counsellors** at both **State and District levels** to provide continuous support during and after the adoption process.
3. **Support in Other Circumstances:**
 - **Specialised Adoption Agencies (SAAs)** and **District Child Protection Units (DCPUs)** are empowered to **assess and provide psychosocial interventions** in any other situation requiring support, beyond standard procedures.

Child Adoption in India: Legal and Institutional Framework

- **Nodal Authority:**
- **Ministry of Women and Child Development (MWCD)** is the central ministry responsible for child adoption policies and implementation.
- **Key Legislations Governing Adoption:**
 1. **Hindu Adoption and Maintenance Act (HAMA), 1956**
 2. **Juvenile Justice (Care and Protection of Children) Act, 2000 (amended in 2015 and 2021)**
 - Adoption provisions under the JJ Act apply to all religions, unlike HAMA which is specific to Hindus.

Central Regulatory Body – CARA:

- **CARA** is a **statutory body** under MWCD, functioning as the **central nodal authority** for both:
 - **In-country (domestic) adoptions**
 - **Inter-country (international) adoptions**
- **Mandates and Responsibilities:**
 - Regulates and monitors the entire adoption process to ensure **transparency, legality, and ethical compliance**.
 - Ensures adherence to **Adoption Regulations, 2022**.
 - **Designated as the Central Authority** under the **Hague Convention on Protection of Children and Cooperation in Respect of Intercountry Adoption (1993)**.
 - India ratified the Convention in **2003** to align with international standards and **prevent child trafficking** in inter-country adoptions.

State and Local Implementation Bodies:

Under the JJ Act, adoption is operationalised at the local level by:

- **State Adoption Resource Agencies (SARAs):** Coordinate and monitor adoption-related activities at the state level.
- **Child Welfare Committees (CWCs):** Declare children legally free for adoption

and act as the final authority on their welfare.

- **District Child Protection Units (DCPUs):** Provide on-ground support and are responsible for child protection and family-based care services.

Conclusion:

CARA's directive to fortify counselling support at every stage of adoption marks a **critical step toward more child-sensitive and inclusive adoption processes**. By mandating qualified psychological support for all stakeholders, it seeks to address **emotional, legal, and social challenges** faced by adoptive families and children, reinforcing ethical standards in line with **domestic law and international conventions**.

Kerala's KITE Initiative

Context

Kerala's **KITE initiative** has received **national and international recognition** for the ethical use of Artificial Intelligence (AI) in school education. **UNICEF** has acknowledged it as a **global best practice in responsible EdTech**.

What is KITE?

Kerala Infrastructure and Technology for Education (KITE) is the technology implementation wing of the state's **General Education Department**, established to ethically integrate digital tools, including AI, into public education.

Objectives

- Promote **equitable, transparent, and open-source AI adoption**.
- Ensure **teacher empowerment** and **student data protection**.

Major Features

- **Massive Teacher Training:** Over **80,000 teachers** from Classes 8–12 trained in:
 - AI bias detection
 - Privacy issues
 - Curriculum alignment
- **FOSS Adoption:** More than **15,000 schools** use **Free and Open-Source Software**, enhancing autonomy and transparency.
- **Samagra Plus AI Platform:** Kerala's proprietary **Retrieval-Augmented Generation (RAG)** AI engine, developed by expert teachers to align with the curriculum.

- **Student Innovation: Little KITEs IT Clubs** train students in **robotics and AI** via practical learning.

Bias Resistance & Data Sovereignty: Uses in-house infrastructure and open datasets to avoid commercial surveillance and algorithmic bias.

Language and Identity: Inclusion, Tensions, and Belonging

Context

Recent attacks on migrant workers in **Bengaluru and Mumbai** have reignited debates around **language, regional identity, and integration**. These incidents underscore a recurring tension: **local linguistic pride vs migrant assimilation** and **elite detachment** from regional cultures.

Understanding Local Language and Culture

- A **local language** is more than a communication tool; it reflects a region's **collective memory, oral traditions, and social identity**.
- Language and culture are **interdependent**—language preserves stories, values, rituals, and community wisdom.

What Shapes a Region's Language?

- **Geography:** Dialects and accents vary (e.g., coastal vs inland Marathi).
- **Migration and Urbanization:** Cities like Bengaluru evolve linguistically due to influxes of tech-sector migrants.
- **Class and Usage:** In Kolkata, Bengali's use across all social classes sustains its relevance and vitality.

Language as a Tool for Inclusion

- **Builds social bonds:** Speaking the local language fosters emotional connections with native communities.
- **Enhances livelihood:** Jobs in transport, domestic work, or retail are more accessible to those fluent in the local tongue.
- **Supports civic participation:** Understanding public schemes or notices requires local language proficiency.
- **Facilitates migrant integration:** Learning Kannada or Tamil, for instance, gives migrants identity beyond their jobs.
- **Promotes national unity:** Embracing linguistic diversity strengthens India's federal, pluralistic character.

Language as a Barrier

- **Deepens class divisions:** Urban elites often live in English-speaking bubbles, avoiding local engagement.
- **Undermines regional pride:** Viewing local languages as "non-essential" erodes cultural dignity.
- **Restricts access:** Public services can become exclusionary when only offered in one language.
- **Fuels local resentment:** Migrants who resist linguistic adaptation may be perceived as outsiders.
- **Blocks empathy:** Without language exchange, stereotypes and distrust grow between groups.

Wider Roles of Language

- **Economic enabler:** Knowing the local language improves business and entrepreneurial success.
- **Political instrument:** Regional parties (e.g., DMK, MNS) often mobilize linguistic pride to assert identity.
- **Emotional anchor:** Native tongues offer comfort during personal or societal crises.
- **Cognitive benefits:** Multilingualism is linked to better problem-solving and emotional intelligence.

Why Language Matters in India

- **Constitutional pluralism:** India recognizes **22 official languages** under the Eighth Schedule.
- **Bridge for social cohesion:** Language literacy encourages shared experiences and communal harmony.
- **Tool for inclusive urban growth:** Language-aware governance helps avoid conflicts and foster integration.
- **Mirror of inequality:** The dominance of Hindi or English often reflects deeper **power imbalances** in urban life.

Conclusion

Language is not just a system of grammar—it is a symbol of **belonging, respect, and dignity**. True inclusivity lies in **learning without coercion and preserving without exclusion**. A just city listens to all voices while cherishing its own linguistic soul.

Mental Health: A Crisis Hidden in Plain Sight
Context

The tragic **Air India incident in Ahmedabad** has cast a spotlight on an often-neglected issue in aviation and society at large: **mental health**,

particularly among high-stress professionals like pilots.

What is Mental Health?

- Mental health refers to one's **emotional, psychological, and cognitive well-being**.
- It is not the absence of illness but includes **resilience, social functionality**, and the ability to **cope with life's demands**.
- It exists along a **continuum**, fluctuating through life stages and circumstances.

Traits of Good Mental Health

- **Emotional balance**: The ability to regulate mood and emotional reactions.
- **Cognitive clarity**: Capable of critical thinking and rational decision-making.
- **Healthy relationships**: Maintains supportive and positive social bonds.
- **Productivity at work**: Manages job roles with consistency and effectiveness.
- **Resilience**: Can navigate trauma, stress, or personal crises without collapse.

Why Mental Health Matters

- **Foundation for human growth**: Supports learning, working, and forming healthy relationships.
- **Public health impact**: Mental illness raises the risk of chronic diseases and lowers immunity.
- **Suicide prevention**: Most suicides stem from untreated mental disorders.
- **Economic value**: According to WHO, every \$1 spent on mental health returns \$4 in productivity.
- **Human rights imperative**: Mental health underpins dignity, freedom, and full societal participation.

Challenges Facing Mental Health in India

- **Social stigma**: Mental illness is wrongly equated with weakness, leading to silence and shame.
- **Workplace pressure**: Irregular hours, job insecurity, and performance anxiety are major triggers.
- **Access issues**: Many areas lack trained professionals and mental health infrastructure.
- **Financial burdens**: Costs of treatment, unemployment, or debt deepen psychological distress.

- **Diagnostic hurdles**: Assessments often depend on subjective responses, making early detection harder.

India's Mental Health Initiatives

- **Mental Healthcare Act (2017)**: Legal right to mental care; also decriminalizes suicide.
- **National Mental Health Programme (1982)**: Decentralized care through **District Mental Health Programmes** in over 760 districts.
- **Tele-MANAS (2022)**: 24/7 toll-free mental health support via **helpline 14416**.
- **Suicide Prevention Policy (2022)**: Aims to cut suicide rates by 10% by 2030.

Global Measures

- **WHO Mental Health Action Plan (2013–2030)**: Focuses on care access, rights, and governance.
- **Mental Health Gap Action Programme (mhGAP)**: Trains non-specialists in basic care delivery.
- **UNCRPD Compliance**: Encourages legal safeguards for people with mental disabilities.
- **Workplace Reforms**: FAA and UN mental health strategies (2024) promote psychological safety in high-risk sectors like aviation.

Steps Forward

- **Peer support systems**: Colleagues trained to detect early signs and offer emotional support.
- **Mental health leave**: Allow structured leave during psychological crises.
- **Awareness training**: Train managers and educators to recognize distress signals early.
- **Regulatory reforms**: Move away from punitive checks that discourage disclosure.
- **Community-based care**: Expand access via primary health centers, tele-counselling, and NGOs.

Conclusion

Mental health must move from the margins to the mainstream. It is central to **national productivity, human dignity, and public health**. A mentally resilient society begins with **open conversations, proactive policies, and compassionate institutions**.

Role of Social Organisations in Nation-Building Context

The **Lok Sabha Speaker** recently highlighted the **critical role of social organisations** in the progress of both the **nation and society**, underscoring how these institutions form the bedrock of community development and resilience.

Understanding Social Organisations

Social organisations represent the structured interactions between individuals and groups in a society. These can be:

- **Formal institutions:** such as religious bodies, educational institutions, labour unions, and NGOs.
- **Informal groups:** including families, peer networks, and friendships.

Each of these plays a unique and irreplaceable role in shaping not just individual behaviour, but also the broader **socio-economic and cultural fabric** of society.

Social Institution	Role in Nation Building
Family	Primary conduit of social norms and values; transfers good moral behaviours; helps create a more harmonious and inclusive society.
Religious Institution	Provides moral framework; strengthens values like compassion, forgiveness, and charity; promotes social order and community cohesion; engages in charitable and welfare activities.
Educational Institution	Transmits knowledge and skills; promotes values such as hard work, discipline, and teamwork; prepares individuals for various societal roles and responsibilities.
Non-Government Organisations (NGOs)	- Policy Advocacy and Influence: e.g. Mazdoor Kisan Shakti Sangathan's role in influencing the RTI Act.

- **Awareness & Capacity-Building:** e.g. SEWA's role in gender issues.
- **Improved Service Delivery:** e.g. Pratham's role in the education sector.
- **Strengthening of Democracy:** e.g. ADR's role in decriminalising politics.

Significance of Social Organisations

- **Community Development:** They foster values, ethics, and civic responsibility.
- **Social Cohesion:** Encourage mutual support, conflict resolution, and cultural preservation.
- **Economic Impact:** Help in mobilising resources, labour rights, education, and healthcare access.
- **Resilience Building:** Enable communities to adapt and respond to changing socio-political or environmental challenges.

Conclusion

Recognising and investing in both **formal and informal social structures** is vital for building **inclusive, adaptive, and sustainable societies**. Social organisations act as key partners in governance, development, and nation-building.

Maulana Azad National Fellowship (MANF) Recent Update

The **Ministry of Minority Affairs** has released payments that were **pending for seven months** under the **Maulana Azad National Fellowship (MANF)** scheme.

Overview of MANF

- **Type:** A five-year fellowship for pursuing **M.Phil. and Ph.D.** programs.
- **Target Beneficiaries:** Students from **six notified minority communities**:
 - Muslims, Christians, Buddhists, Sikhs, Jains, and Parsis.
- **Objective:** To financially support minority students undertaking **full-time research** within India and help them qualify for roles like **Assistant Professors**.

Eligibility and Coverage

- The fellowship applies to students enrolled in institutions recognized by the

University Grants Commission (UGC), including:

- **Central/State Universities** (with valid NAAC accreditation).
- **Deemed Universities** under Section 3 of the UGC Act (also NAAC-accredited).
- **State/Central Government funded institutions** empowered to award degrees.
- **Institutions of National Importance** as notified by the Ministry of Education.

Implementation

- **Nodal Ministry:** Ministry of Minority Affairs
- **Implementing Body:** University Grants Commission (UGC)

Designation: Recipients are recognized as **Ministry of Minority Affairs Scholars.**

NIRF Rankings to Penalize Research Retractions: Light Penalty in 2024, Harsher from 2025

• **Overview**

In a landmark policy change aimed at strengthening academic integrity and improving research quality, the **National Institutional Ranking Framework (NIRF)** will now incorporate **negative scoring** for institutions whose research papers have been retracted.

Beginning with the **2024 rankings**, institutions will face **mild deductions** for retracted publications. From **2025 onwards**, these penalties will become significantly stricter. This decision reflects increasing concern over the rise in **research misconduct and publication retractions** in Indian academia.

Why NIRF is Introducing Retraction Penalties

• **Background**

The NIRF uses several weighted metrics to rank higher education institutions. Among these, the **Research and Professional Practice (RP)** category—which accounts for **up to 40%** of the total score in certain categories—includes:

- Volume and quality of publications
- Intellectual Property Rights (IPR)
- Sponsored research projects

Due to the increasing number of **retractions from Scopus- and Web of Science-indexed journals**, NIRF is revising its methodology to ensure only credible research output is rewarded. The initiative aligns with global academic

standards and aims to protect the integrity of India's research ecosystem.

Research Retractions: A Growing Concern

According to data from the **NIRF 2024 brochure**, around **300 research articles** were retracted in **2023** across Indian academic institutions—a sharp rise compared to previous years.

- **Common Reasons for Retractions:**
- **Plagiarism or duplicate submissions**
- **Manipulated data or peer review fraud**
- **Ethical violations or authorship disputes**

These issues not only compromise academic credibility but can **skew NIRF rankings** if institutions are not held accountable.

Revised Retraction Penalty Framework

- **2024 Rankings – Mild Penalty Phase**
- A **small score deduction** will be applied under the **Research and Professional Practice (RP)** metric for institutions that had retracted papers in 2023.
- The extent of the penalty will be **proportional to both the number of retractions and the severity of the misconduct** involved.
- **2025 Rankings Onward – Stricter Enforcement**
- From 2025, the penalty will be more **severe and comprehensive**.
- Institutions will face **greater losses in RP scores**, especially in cases involving:
 - **Multiple retractions**
 - **Serious ethical violations**
 - **Institution-wide patterns of misconduct**

This **phased implementation** gives institutions a transition period to reform internal research processes and strengthen quality assurance mechanisms.

Enhancing Evaluation Standards: Integration of UGC CARE

Currently, NIRF evaluates research output primarily through data from **Scopus and Web of Science**. However, efforts are underway to incorporate journal quality assessments from **UGC CARE (Consortium for Academic and Research Ethics)**.

- **Triangulated Evaluation Approach:**
- A new methodology combining:
 - **Scopus**
 - **Web of Science**
 - **UGC CARE**

This integration is designed to **filter out predatory or low-quality journals**, ensuring that **only publications from reputable sources** influence institutional rankings.

Institutional Responsibility and Course Correction

The retraction penalty is not merely punitive—it is meant to **catalyze institutional reform** and elevate academic standards.

- **Institutions are encouraged to:**
- **Establish dedicated Research Integrity Offices or Committees**
- **Implement rigorous peer-review oversight** for in-house publications
- **Offer training and workshops on academic ethics**
- **Enforce publication quality standards** across all departments

These measures aim to promote a **culture of research accountability**, in alignment with **international best practices**.

Broader Impact on Indian Higher Education

By penalising retracted papers in national rankings, India is sending a clear signal that **academic misconduct will have tangible consequences**.

- **Expected Outcomes:**
- **Discouragement of unethical research practices**
- **Proactive internal audits of publication records**
- **Enhanced global perception of India's research integrity**
- **Improved performance in international rankings** like QS and Times Higher Education (THE)

This move is also likely to encourage **greater transparency and quality control**, helping institutions compete on a global academic stage.

About the National Institutional Ranking Framework (NIRF)

- **Launched in 2015** by the **Ministry of Education**, Government of India.
- Ranks Indian higher education institutions based on five key parameters:
 - **Teaching, Learning and Resources (TLR)**
 - **Research and Professional Practice (RP)**
 - **Graduation Outcomes (GO)**
 - **Outreach and Inclusivity (OI)**
 - **Perception (PR)**

Ranking Categories Include:

- Overall
- University
- Engineering
- College
- Management
- Pharmacy
- Law
- Medical
- Dental
- Agriculture & Allied Sectors
- Architecture
- Research Institutions
- Innovation

Institutions are classified as:

- **Category A:** Institutions of National Importance, Deemed-to-be Universities, State Universities, Private Universities, and Autonomous institutions
- **Category B:** Colleges affiliated with universities

The framework helps **students make informed decisions** and motivates institutions to **continuously improve educational and research standards**.

Key Highlights of NIRF 2024 Rankings

- The **ninth edition** of NIRF was released in **August 2024**.
- Participation has grown from **3,500 institutions in 2016** to over **6,500 unique institutions across 16 categories in 2024**—an 86% increase.
- **Top Institutions by Category (2024):**

Category	Top Institution	Streak
Overall	IIT Madras	6 years (2019–2024)
Engineering	IIT Madras	9 years (2016–2024)
Universities	Indian Institute of Science, Bengaluru	9 years (2016–2024)
Research Institutions	Indian Institute of Science, Bengaluru	4 years (2021–2024)
Management	IIM Ahmedabad	5 years (2020–2024)
Medical	AIIMS, New Delhi	7 years (2018–2024)

Pharmacy	Jamia Hamdard, New Delhi	1st position in 2024
Law	National Law School of India University, Bengaluru	Retained top position
Dental	Saveetha Institute of Medical and Technical Sciences, Chennai	3 years (2022–2024)
Agriculture & Allied	Indian Agricultural Research Institute, New Delhi	2 years (2023–2024)
Architecture & Planning	IIT Roorkee	4 years (2021–2024)
Innovation	IIT Kanpur	1st in 2024

Conclusion

The introduction of **research retraction penalties in NIRF rankings** marks a strategic and much-needed reform in India's higher education evaluation system. By encouraging institutions to uphold **ethical standards and research rigor**, this policy aims to **foster a more credible, transparent, and globally respected academic ecosystem**. As India aspires to greater visibility in global rankings, aligning quality with accountability will be key.

Raji Tribe: An Overview

Current Context

In the village of **Khetar Kanyal** in **Uttarakhand's Pithoragarh district**, predominantly inhabited by the **Raji tribe**, the **absence of a female candidate** for the position of village head (pradhan) has brought attention to **deeper systemic and cultural issues** within this marginalized community.

Who Are the Raji?

- The **Raji** are one of **India's smallest and most vulnerable tribal groups**.
- Primarily located in the **Kumaon region** of **Uttarakhand** and parts of **western Nepal**, they live in **remote forested regions**, especially in **Pithoragarh district**.

- Alternate names: **Banrawats, Ben-Manus**, and **cave dwellers**—highlighting their **forest-dependent and semi-nomadic heritage**.
- Recognized as a **Particularly Vulnerable Tribal Group (PVTG)** by the Government of India.

Cultural and Linguistic Identity

- Language: The Raji speak **Bat-Kha**, a language belonging to the **Tibeto-Burman family**.
- Religion: They follow **Hinduism** while also **revering nature**, blending animist traditions with mainstream beliefs.

Traditional Livelihoods and Economic Activities

- Historically:
 - **Forest-based livelihoods**: honey collection, fishing, and hunting.
- In recent decades:
 - A gradual **shift to agriculture**, cultivating **rice, maize, and barley**.
 - They also practice **traditional handicrafts**, such as **basket weaving and woodwork**.

Social Structure and Governance

- The Raji have a **distinct social organization**, structured into **clans**, each preserving unique **customs and traditions**.
- **Elders** play a key role in **community decisions and conflict resolution**.
- **Local Panchayats** act as traditional institutions to maintain **social order** and resolve **internal disputes**.

Housing and Architecture

- Dwellings are made using **locally sourced materials** like **wood, mud, and stone**.
- Built on **elevated platforms** to withstand:
 - **Flood risks**
 - **Wild animal threats**

Harsh climatic conditions

Kashi Declaration

Context

The **Youth Spiritual Summit** concluded in **Varanasi** with the adoption of the **Kashi Declaration**, outlining a national plan to address **drug abuse** through youth-led initiatives.

About the Kashi Declaration

- **Nature:** A national action framework focused on combating substance abuse through **youth engagement** and **spiritual leadership**.
- **Launched By:** Ministry of Youth Affairs and Sports, during **Youth Spiritual Summit 2025**.

Objectives

- **Drug-Free India Goal:** Develop a **Nasha Mukh Yuva** base to support a **Viksit Bharat** by 2047.
- **Spiritual Engagement:** Utilize **spiritual ethos and leadership** to drive change.
- **Community Involvement:** Foster a **whole-of-society approach** involving families, institutions, and communities.
- **Institutional Mechanism:** Establish a **Joint National Committee** with regular updates and coordination.
- **Empowering Youth:** Strengthen **MY Bharat youth clubs** to lead awareness, rehabilitation, and outreach.

Key Features

- **Plenary-Driven Agenda:** Formulated through sessions focused on:
 - **Psychological factors**
 - **Drug trafficking**
 - **Public awareness**
 - **Spiritual-based recovery**
- **Multi-Ministerial Involvement:** Includes Ministries of **Youth, Social Justice, Culture, Labour, and Home Affairs**.
- **Annual Review Mechanism:** Progress tracked via the **Viksit Bharat Young Leaders Dialogue 2026**.
- **Digital Safety Measures:** Initiatives to counter **online drug targeting of school children**.

Grassroots Action: Campaigns, pledges, and support programs run through **MY Bharat** platforms.

The Female Labour Force Participation (FLFP) Paradox in India

Context

Despite notable gains in **female literacy**, particularly in urban India, **female labour force participation remains low**, revealing a paradox that questions the inclusiveness of India's economic growth. The **Periodic Labour Force Survey (PLFS) 2023-24** reveals a deepening gap between **literacy and employment**, especially in urban areas.

Key Trends: Literacy vs FLFP Gap (PLFS 2023-24 & World Bank 2024)

- **Urban female literacy rate:** 84.9%
- **Urban Female Labour Force Participation Rate (FLFPR):** 28%
- **Literacy-FLFP gap:**
 - Rural: ~22%
 - Urban: ~57%
- **National female literacy rate:** 74.6%
- **Employment gap:** 33 percentage points
- **India's position:** Sits between developed nations (40-point gap) and developing countries (25-point gap)

Reasons for Low FLFPR: Structural and Social Disconnect

Urban India

- **Rigid Job Structures:** Most urban service-sector jobs lack flexibility, discouraging women with family duties.
- **Mobility & Safety Concerns:** Limited access to safe public transport and unsafe urban spaces restrict women's movement.
- **Informal and Insecure Work:** Women are disproportionately employed in informal sectors with poor pay and benefits, prompting exits during life events.
- **Childcare Deficit:** With **61.3% of urban households being nuclear (NFHS-5)**, lack of childcare infrastructure like crèches compels women to stay home.
- **Post-Maternity Dropout:** The absence of re-entry pathways or flexible roles after childbirth leads to permanent exits, creating a "care penalty."

Rural India

- **Agricultural Flexibility:** Farm work and self-employment offer proximity to home and flexible hours.
- **Kinship-Based Childcare:** Support from extended families enables women to balance caregiving and work.
- **Work Driven by Necessity:** Economic hardship—not autonomy—pushes rural women into the workforce.
- **Cultural Acceptance:** Women's labour, paid or unpaid, is more culturally normalized in rural areas.
- **Crisis Employment:** Post-COVID, rural FLFP rose due to return migration and economic distress—not sustained empowerment.

A Puzzling Trend: Declining FLFPR Amid Social Progress

2005–2019 Paradox

- Even as **fertility rates declined** and **female education improved**, **FLFPR dropped**.
- Rising family incomes led to the reinforcement of traditional gender roles—**men as breadwinners, women as homemakers**.

Post-COVID Developments

- A spike in **rural female participation** occurred, but it was driven by **distress employment** and fallback strategies.
- **Urban FLFPR remains stagnant**, even with increased digitization and economic revival.

Broader Implications: Economic, Social, and Equity Costs

- **Loss of Demographic Dividend:** A large section of the population remains underutilized, weakening India's long-term growth potential.
- **Hindered Social Progress:** Low FLFP slows improvements in health, education, and gender equality.
- **Urban Middle-Class Conservatism:** Rising incomes have led to greater role traditionalism, prompting many women to opt out of the workforce when not financially essential.
- **Global Competitiveness Impact:** India's lagging FLFPR limits its ability to compete with countries like **Bangladesh** and **Vietnam** in inclusive development.
- **Justice and Equity Gap:** Economic exclusion deepens patriarchal norms, denying women access to economic dignity and equal opportunity.

Policy Pathways: The Way Forward

- **Public Childcare Infrastructure:** Expand **anganwadis** and establish urban **crèche networks** to support working mothers.
- **Flexible Work Models:** Promote **part-time roles, gig economy platforms, and remote work** to fit women's time and caregiving responsibilities.
- **Legislative Reforms for Safe Workspaces:** Enforce the **POSH Act** and equal pay laws to ensure workplaces are safe and equitable.

- **Norms Transformation Campaigns:** Launch public campaigns to challenge traditional gender roles and promote shared caregiving.
- **Inclusive Urban Design:** Invest in **safe transport, women-only toilets, and creche-linked workplaces** to make cities more gender-responsive.

Conclusion

India's low female labour force participation is more than a statistical concern—it reflects a deeper **gendered social contract**. As the nation aims to become a **\$5 trillion economy**, the inclusion of women in the workforce is not just a matter of social equity, but an **economic necessity**. Neither rural necessity-driven resilience nor urban infrastructure alone is sufficient. What's required is a **dual structural overhaul** and a **cultural mindset shift** to ensure women's economic participation is both possible and valued.

India's Student Suicide Crisis: Supreme Court Takes Suo Motu Cognisance

Context

Amidst a spate of tragic student suicides in premier academic institutions, the **Supreme Court of India has taken suo motu notice**, underscoring the need for **comprehensive institutional and systemic reforms** to address the mental health crisis among students.

Disturbing Statistics (NCRB, 2022)

- **Students accounted for 7.6%** of all suicide deaths in India.
- **Male students** recorded a higher suicide rate than their female counterparts.
- The **three most affected states** were:
 - **Maharashtra**
 - **Tamil Nadu**
 - **Madhya Pradesh**

Underlying Causes of Rising Student Suicides

1. Academic Factors

- **High stress and academic pressure**
- **Dissatisfaction with studies or performance**
- **Failure in exams**
- **Negative learning environments:**
 - Poor peer relationships
 - Harassment or humiliation
 - Isolation from teachers and classmates

2. Institutional Factors

- **Ragging, bullying, and peer pressure**

- **Caste-based discrimination**
- **Toxic campus culture** fostering exclusion and mental stress

3. Family-Related Issues

- **Family instability** (e.g., divorce, separation, financial hardship)
- **Parental neglect or overpressure**
- **Bereavement and trauma**
- **Mental health history** or hereditary depression
- **Excessive social media usage** leading to isolation or low self-worth

4. Social Stigma

- **Mental illness and suicide-related stigma**
- **Reluctance to seek help** due to fear of judgment or shame

Key Government and Institutional Interventions

1. MANODARPAN Initiative

- Launched by the **Ministry of Education**
- Offers **mental health support** through:
 - Counselling helplines
 - Live interactive sessions
 - Outreach to lakhs of students

2. National Tele Mental Health Programme

- Focuses on expanding access to **quality mental health care and counselling**
- Operates via **tele-services** to overcome accessibility barriers

3. Supreme Court-Appointed National Task Force

- Set up to:
 - Address rising mental health issues in academic spaces
 - Prevent student suicides through structural reform
 - Recommend actionable policy changes and preventive frameworks

4. District Mental Health Programme

- Run by the **Ministry of Health and Family Welfare**
- Covers **767 districts**
- Offers:
 - Suicide prevention services
 - Life skills training in **schools and colleges**

5. Malaviya Mission Teacher Training Programme

- Conducted by **IITs**
- Aims to build **faculty capacity** in:

- Stress management
- Student resilience
- Early identification of mental health red flags

6. UGC Advisory to Higher Education Institutions

- Urges colleges and universities to:
 - Prioritise **physical fitness, sports, student welfare, and emotional well-being**
 - Foster an **inclusive, empathetic campus culture**

Conclusion

The growing rate of student suicides in India signals a deep-rooted crisis that extends beyond academics. It is a reflection of **pressures within families, institutions, and society at large**, compounded by the lack of accessible and stigma-free mental health services. The **Supreme Court's intervention**, alongside existing programmes, offers a chance to build a **supportive, responsive ecosystem** that prioritises student well-being as a national imperative.

Bima Sakhi Yojana

Overview

- The **Life Insurance Corporation of India (LIC)** has signed a **Memorandum of Understanding (MoU)** with the **Department of Rural Development**, Ministry of Rural Development, to implement the **Bima Sakhi Yojana** in rural India.
- The initiative aims to **promote insurance awareness and financial literacy** while creating employment opportunities for women.

Key Features

- A **performance-based stipend scheme** exclusively for women.
- Women aged **18 to 70 years** with a **minimum qualification of Class X pass** are eligible.
- Offers **specialized training** followed by a **monthly stipend for three years**:
 - ₹7,000/month in the **first year**
 - ₹6,000/month in the **second year**
 - ₹5,000/month in the **third year**
- In addition to the stipend, **commissions** are also provided:
 - ₹48,000 (excluding bonus) in the **first year**

- Post-training, participants can become **LIC agents**.
 - **Graduate Bima Sakhis** may be eligible for promotion to **Development Officer** positions.

Scale and Outreach

- The scheme aims to appoint **2 lakh Bima Sakhis** across the country over a **three-year period**.

Eligibility Criteria

- **Women aged 18–70 years**
- **Minimum educational qualification:** Passed Class 10
- **Preference** to women residing in **rural areas**
- **Ineligibility Conditions**
- Women who are **related to existing LIC agents or employees** (includes spouse, children, adopted or stepchildren, parents, siblings, and immediate in-laws)
- **Retired LIC employees or ex-agents**

Women who are **currently LIC agents**

Mission Organic Value Chain Development for North Eastern Region (MOVCDNER)

Recent Update

- The government has announced a **one-year extension** of the MOVCDNER for **Assam**.

About the Scheme

- **Launched:** 2015–16
- **Objective:** To promote **organic farming** in the North Eastern Region through a **value chain approach**, linking farmers to markets.
- **Coverage:** Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura

Key Components

- Support for:
 - **Certified organic production**
 - **Organic seed supply**
 - **Certification services**

Infrastructure for collection, processing, packaging, and marketing of organic produce

National List of Essential Diagnostics (NLED)

Latest Development

- The **Indian Council of Medical Research (ICMR)** has released an **updated version** of the **National Essential Diagnostics List (NEDL)**.

About NEDL

- **First launched in 2019**

- **Purpose:** To ensure the **minimum essential diagnostic tests** are available at all tiers of healthcare — from **village-level** to **PHCs and beyond**.

Revised List Highlights

- New additions for **Sub-Health Centres** (Ayushman Arogya Mandirs):
 - **Rapid diagnostic tests** for:
 - **Sickle cell anaemia**
 - **Thalassaemia**
 - **Hepatitis B**
 - **Syphilis**

Sample collection for dengue testing

Hatti Tribe

- **Context**

A woman in **Sirmaur district, Himachal Pradesh**, recently married two brothers from the **Hatti tribe**, sparking renewed public and legal discussion about the tribe's **traditional polyandry practice**, locally known as **Jodidara** or **Jajda**.

Who Are the Hattis?

- The **Hattis** are a **Scheduled Tribe (ST)** in **Himachal Pradesh**, primarily located in the **Trans-Giri region**, and also in **Jaunsar Bawar, Uttarakhand**.
- The name “Hatti” originates from their traditional role as **sellers at haats (rural markets)**, dealing in **local produce, wool, and meat**.

Geographical Distribution

- The Hatti tribe is concentrated in **hilly regions between the Giri and Tons rivers**, both tributaries of the Yamuna River.
- Key areas:
 - **Sirmaur district** (Himachal Pradesh)
 - **Dehradun district** (Uttarakhand)
- Historically, the region was part of the **Sirmaur princely state** and came under **British rule** after 1814.

Cultural and Social Characteristics

- **Attire:** Hatti men wear **white headgear** on ceremonial occasions.
- **Community Governance:** They are governed by a **traditional council called Khumbli**, which decides matters related to customs and local disputes.
- **Marriage System:**
 - The Hatti tribe practices **polyandry**.

- **Inter-clan marriages** are common between Hatti populations in Himachal Pradesh and Uttarakhand.
- Community life is marked by **collective celebrations** and **strong kinship ties**.

Understanding Polyandry

- **Polyandry** refers to a marriage arrangement in which one woman has multiple husbands.
- **Types:**
 1. **Fraternal (Adelphic):** The husbands are **brothers**.
 2. **Non-Fraternal:** The husbands are **unrelated**, and share time with the wife in **rotational turns**.

Polyandry Among the Hattis

- **Local Terms:** Known as **Jodidara** or **Jajda**.
- **Ceremony:** Includes a "**Seenj**" ritual held at the groom's home.
- **Reasons for Continuation:**
 - **Land Conservation:** Prevents the fragmentation of ancestral agricultural land.
 - **Family Workforce:** Ensures enough manpower for farming and guarding remote properties.
 - **Economic Logic:** Helps in the **shared care of livestock and dispersed farmlands**.
 - **Social Harmony:** Reinforces **joint family unity**, even among half-brothers.

Legal Perspective on Polyandry in India

General Legal Provisions

- Polyandrous unions are **not recognized under Indian law**, including:
 - **Hindu Marriage Act, 1955**
 - **Special Marriage Act**
 - **Section 82 of the Bharatiya Nyaya Sanhita (BNS)**, which penalizes **bigamy**.

Special Provisions for Scheduled Tribes

- The **Hindu Marriage Act** does **not automatically apply** to **Scheduled Tribes** unless specifically **notified by the Central Government**.
- **Customary Practices:**
 - If the practice is **longstanding, reasonable, and not against**

public policy, it may be **considered valid** under Indian law.

Legal Reference:

- **Section 13 of the Indian Evidence Act** allows **customs to be proved in civil cases** as valid practice.

Other Indian Communities with Historical Polyandry Practices

Tribe/Community	Region
Toda	Nilgiri Hills, Tamil Nadu
Khasa	Jaunsar Bawar, Uttarakhand
Hatti	Sirmaur and Trans-Giri, Himachal Pradesh
Khasi	Meghalaya
Ladani Bota	Northern India (exact area not clearly defined)
Nayar	Kerala (historically matrilineal; no longer polyandrous)

Manual Scavenging in India: Persistent Violations Despite Legal Ban Context

A **social audit by the Ministry of Social Justice** has revealed alarming gaps in the enforcement of safety norms for sanitation workers, despite a decade-old ban on manual scavenging.

Key Findings

- **Definition:** Manual scavenging involves the unsafe manual handling of human waste in dry latrines, sewers, or septic tanks. It was banned under the **Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013**.
- **Recent Trends (2022-23):**
 - **150 worker deaths** while cleaning sewers.
 - **90% lacked safety equipment**.
 - **Over half** were not counseled or informed about hazards.
 - Most workers were employed **informally**, escaping regulatory scrutiny.
- **Policy Response: NAMASTE Scheme (2023)**
- Aimed at mechanising sewer cleaning and providing protections.
- Over **84,000 sanitation workers** identified.

- However, only **about 50% have received Personal Protective Equipment (PPE)**.

Conclusion

The continued deaths of sanitation workers reflect systemic neglect, poor implementation of laws, and failure to mechanise hazardous work. Stronger enforcement and worker integration into formal systems remain critical.

Palna Scheme: Enhancing Early Childhood Care

Overview

The **Palna Scheme** is a Centrally Sponsored initiative under the **Ministry of Women and Child Development**, launched as part of the **Samarthya component of Mission Shakti**. It is implemented across all **States and Union Territories** to ensure early childhood care and development.

Objective

To offer **safe, accessible, and quality crèche services** for children aged **6 months to 6 years**, while also supporting their **nutritional, health, cognitive, and emotional development**.

Key Features

- **Universal Access:** Open to all mothers, regardless of employment status.
- **Types of Facilities:**
 - **Standalone Crèches**
 - **Anganwadi-cum-Crèches (AWCCs)**
- **Operating Guidelines:**
 - Crèches operate **26 days per month**, for **7.5 hours daily**, with **timings flexible** based on local needs.
 - State/UTs can modify hours as per regional requirements.

Funding Pattern

- **General States:** 60:40 (Centre:State)
- **NE & Special Category States:** 90:10
- **UTs with Legislature:** 60:40
- **UTs without Legislature:** 100% Central Assistance

Services Provided

- Daycare and sleeping facilities
- Early stimulation (for <3 years) & pre-school education (3–6 years)
- Locally sourced **supplementary nutrition**

Growth monitoring, health check-ups, and immunization

Supreme Court Issues Mental Health Guidelines Amid Surge in Student Suicides

Introduction

In response to an alarming rise in student suicides, the Supreme Court of India has introduced comprehensive mental health guidelines for all educational institutions. On July 26, 2025, a two-judge bench issued a landmark judgment calling the mental health crisis in the education sector a “systemic failure.” The Court mandated a unified, enforceable mental health policy to be implemented across schools, colleges, universities, coaching centres, and hostels—irrespective of their affiliation or ownership.

Escalating Mental Health Crisis on Campuses

- Data from the National Crime Records Bureau (NCRB) reveals that 13,044 student suicides were reported in 2022—accounting for 7.6% of total suicides in the country. The figures have surged dramatically from 5,425 cases in 2001. Of the 2022 cases, 2,248 were directly linked to exam-related failures.
- The Court condemned the hyper-competitive academic culture, citing how the pressure to perform, coupled with isolation—especially in coaching centres—leads to severe emotional distress. It noted:
- “Education is meant to liberate, not burden the learner... true success lies not in grades or rankings, but in the holistic growth of a human being capable of living with dignity, confidence, and purpose.”
- The judgment highlighted how institutional indifference and stigma around mental health exacerbate student vulnerability. Student suicides, the Court emphasized, must not be viewed as isolated incidents but as reflections of collective societal and institutional neglect.

Key Directives from the Supreme Court

In a pioneering move, the Court issued 15 binding interim guidelines to be followed until a national regulatory framework is established. These apply to all types of educational settings, including residential and non-residential institutions.

1. Mandatory Mental Health Support

- Institutions with 100+ students must appoint a trained counsellor, psychologist,

or social worker specializing in adolescent mental health.

- Smaller institutions are required to form referral networks with qualified external professionals.
- Staff training in mental health awareness must occur biannually.

2. Physical Infrastructure and Safety

- Residential facilities must install tamper-proof ceiling fans and secure high-risk areas like rooftops to prevent impulsive acts of self-harm.

3. Ending Discriminatory Academic Practices

- Segregating students based on performance, public shaming, or setting unrealistic academic expectations is to be discontinued.
- These practices were labelled psychologically harmful, especially for vulnerable students.

4. Institutional Accountability

- Institutions must establish confidential grievance redressal systems for issues related to harassment, bullying, caste/gender discrimination, and sexual misconduct.
- Retaliation against complainants or whistleblowers will attract institutional liability.
- Administrative inaction will carry legal consequences.

5. Mental Health Policy and National Coordination

- Every institution must develop and publish an annual mental health policy, aligned with national initiatives like:
 - **Ummeed** (Understand, Motivate, Manage, Empathise, Empower, Develop)
 - **Manodarpan** (Ministry of Education mental health programme)
 - **National Suicide Prevention Strategy** (India's first nationwide strategy, released in 2022)
- The Court also recommended establishing a **National Task Force** to coordinate student mental health and suicide prevention initiatives in higher education.

Background of the Case

The ruling originated from a case involving the death by suicide of a 17-year-old NEET aspirant in

Visakhapatnam. The student's parents sought a CBI inquiry after alleging flaws in the state police investigation. The Court used this case as a catalyst to examine systemic issues, leading to the formulation of nationwide reforms.

Significance and Future Outlook

This verdict marks a significant advancement in embedding mental health within the framework of fundamental rights, particularly the right to life and education. It introduces a model of empathetic and inclusive learning environments supported by psychological care and legal safeguards.

Implementation Challenges Ahead:

- Swift adoption and enforcement by states and Union Territories
- Adequate funding for mental health staffing and infrastructure
- Awareness campaigns and training to reduce stigma and promote student well-being

Ultimately, the ruling calls for a cultural shift—from relentless academic pressure to prioritizing the dignity, emotional resilience, and individuality of every student.

Atal Pension Yojana (APY)

Context

The Atal Pension Yojana marks its 10th anniversary with over **8 crore enrolments**, including **39 lakh new subscribers** this fiscal year.

About APY

- **Launch Date:** 9 May 2015
- **Administered By:** Pension Fund Regulatory and Development Authority (PFRDA)
- **Target Group:** Workers in the unorganised sector
- **Nature:** Voluntary, contributory pension scheme
- **Pension Guarantee:** ₹1,000–₹5,000/month post age 60

Objectives

- Build a universal social security net
- Encourage long-term savings
- Provide financial security in old age

Eligibility

- Indian citizens aged **18–40 years**
- Must hold a **savings/post office account**
- **Aadhaar and mobile number** recommended for updates

- **Government co-contribution** (2015–2020) only for non-taxpayers outside other statutory schemes

Key Features

- **Flexible Contributions:** Monthly, quarterly, or half-yearly via auto-debit
- **Government Co-Contribution:** 50% of subscriber's input (up to ₹1,000/year)
- **Return Guarantee:** GoI covers any shortfall from actual returns
- **Spousal/Nominee Benefits:** Pension continues to spouse; corpus passed to nominee
- **Exit Options:**
 - Regular exit at 60 years
 - Early exit with partial refund

Death before 60: spouse may continue or withdraw

United Nations Office on Drugs and Crime (UNODC)

- **Recent Highlight**

A joint report by the **World Health Organization (WHO)** and UNODC revealed that **contaminated medicines** have caused the deaths of **1,300 people over the last 90 years**, underscoring the urgent need for global regulatory action.

- **Overview**
- **Established:** In 1997 through the merger of:
 - United Nations Drug Control Programme
 - Centre for International Crime Prevention
- **Headquarters:** Vienna, Austria
- **Funding:** Primarily through **voluntary contributions**, especially from member state governments
- **Mandate and Focus Areas**

UNODC is a **global authority** in combating:

- **Illicit drug use and trafficking**
- **Transnational organized crime**
- **Corruption**
- **Terrorism**

It also plays a central role in implementing **UN-led initiatives against terrorism**.

- **Core Functions**
- **Drug Awareness & Prevention:** Promotes education on the dangers of drug abuse globally

- **Law Enforcement Support:** Helps strengthen global efforts to prevent illegal drug production and distribution
- **Criminal Justice Reform:** Assists nations in reforming legal systems to uphold the **rule of law** and maintain **criminal justice stability**
- **Terrorism Prevention:** Since 2002, supports countries in:
 - Ratifying international anti-terrorism treaties

Implementing 18 universal legal frameworks to combat terrorism

Global Specs 2030 Initiative – WHO's Eye Health Campaign

1. Introduction

The **World Health Organization (WHO)** has launched the **Global SPECS 2030** initiative with the goal of ensuring **universal access to affordable eye care** by the year 2030.

2. Objectives

The initiative focuses on improving **refractive error correction**—ensuring more people have access to **eyeglasses and eye care services**.

3. Key Pillars of the Initiative

The SPECS 2030 framework is built around five main action areas:

1. **Services** – Expand access to refractive (vision correction) services
 2. **Personnel** – Increase the number and skill level of eye care professionals
 3. **Education** – Raise public awareness of eye health and its importance
 4. **Cost** – Make spectacles and related services more affordable
 5. **Surveillance** – Enhance data systems and research on global eye health needs
- ##### 4. Strategic Engagement Channels

To support national efforts, the initiative is structured around four major engagement strategies:

5. Normative Guidance

- Builds on WHO's existing technical resources and guidelines for eye care
- Develops new policy tools and standards

6. Global SPECS Network

- A collaborative platform to:
 - Share knowledge and best practices
 - Promote advocacy

- Expand professional partnerships among organizations and stakeholders

7. Private Sector Collaboration

- Dialogues with:
 - Optical, pharmaceutical, and tech industries
 - Insurance companies
 - Private healthcare providers

8. Country and Regional Engagement

- Supports national governments with tailored activities to help:
 - Bridge the gap between global commitments and national implementation
 - Scale local eye care solutions

Veer Parivar Sahayata Yojana: Strengthening Legal Aid for Defence Personnel and Families Overview:

The National Legal Services Authority (NALSA) has launched the **Veer Parivar Sahayata Yojana**, a scheme aimed at providing robust legal assistance to defence personnel, ex-servicemen, and their families.

Key Partners:

- National Legal Services Authority (NALSA)
- Kendriya Sainik Board (KSB)
- Rajya Sainik Boards (RSBs)
- Zilla Sainik Boards (ZSBs)
- Department of Ex-Servicemen Welfare, Ministry of Defence

Objectives:

- Deliver free and competent legal services to armed forces personnel and their families.
- Facilitate legal aid especially for those posted in remote or difficult locations.

Implementation:

- Nationwide network of Legal Services Clinics established at Rajya and Zila Sainik Boards across all states and union territories.
- These clinics collaborate closely with the Ministry of Defence's Department of Ex-Servicemen Welfare and local Directorates of Sainik Welfare.
- Panel lawyers and paralegal volunteers from NALSA will provide free legal aid,

ensuring proper representation in cases related to family property, land disputes, domestic issues, and more.

Extended Coverage:

The scheme also benefits paramilitary personnel from forces like BSF, CRPF, ITBP, and others who serve in isolated and high-risk environments.

System for Pension Administration (RAKSHA) – SPARSH

Overview:

The **System for Pension Administration (RAKSHA)**, known as **SPARSH**, is a digital platform launched by the **Ministry of Defence, Government of India** to manage pensions for armed forces personnel and defence civilians.

Key Objectives:

- Streamline the **sanction and disbursement** of pensions for personnel from the **Army, Navy, Air Force**, and **Defence Civilian** workforce.
- **Eliminate third-party intermediaries** by providing a **direct, web-based interface** for processing pension claims and disbursing payments.
- **Implementation:**
- Operated by the **Defence Accounts Department** through the **Principal Controller of Defence Accounts (Pensions)**, Prayagraj.
- Designed to function as a **centralised pension management system**, covering:
 - **Initiation and sanctioning**
 - **Disbursement**
 - **Revisions**
 - **Grievance redressal and service requests**

Features:

- Facilitates **digital self-verification** of pensioner data, reducing the need for physical visits.
- Provides a **transparent and comprehensive view** of the pensioner's account.
- Maintains a **complete digital record** of entitlements from the start to the cessation of pension.

Aims to **simplify pension processing**, but has faced criticism from ex-servicemen over technical glitches, interface challenges, and data correction issues.

Living Wage Reform Could Boost Women's Workforce Participation in India

Context

A recent joint report by **Quess Corp** and the **Udaiti Foundation** underscores the urgent need for wage reforms to enhance women's participation in the workforce. It reveals that over **50% of blue- and grey-collar women workers** in India are dissatisfied with their wages, with **80% saving less than ₹2,000 per month**. Low pay, combined with high opportunity costs, is pushing many women out of formal employment.

What is a Living Wage?

- A **living wage** refers to the minimum income required to meet **basic needs**—such as food, shelter, clothing, healthcare, education, and some savings.
- Unlike **minimum wages**, which are legally set and often outdated, living wages reflect the **true cost of living** in a particular region.
- They aim to ensure **dignity and economic security** for workers and their families.

Key Findings from the Report

- **Wage Disparity and Economic Strain**
- **Women in blue- and grey-collar jobs** earn only about **70%** of what men earn in similar roles.
- These jobs include:
 - **Blue-collar:** Manual labor (e.g., factory work, maintenance)
 - **Grey-collar:** Skilled roles combining manual and intellectual tasks (e.g., technicians)
- Other challenges faced by women include:
 - **Unpaid caregiving responsibilities**
 - **Long commutes and migration costs**
 - **Inadequate or unsafe housing**
- In **peri-urban manufacturing hubs**, **living costs are high**, but **minimum wages remain low**, worsening the economic burden.
- **1 in 5 women** earn less than ₹20,000/month—despite it being the standard minimum wage in Tier-1 cities.
- Women earning above ₹20,000/month are **21% less likely** to exit the workforce, indicating a strong link between wage levels and retention.

Government's Proposed Wage Reform

- **Broadening the Minimum Wage Definition**
- The **Labour Ministry** is considering redefining **minimum wage norms** to include essential costs such as:
 - **Healthcare**
 - **Education**
 - **Childcare**
- Currently, minimum wage covers only:
 - **Nutrition**
 - **Housing**
 - **Clothing**
- Including these additional components could **lower the opportunity cost** of working for women, especially those balancing paid work with caregiving duties.
- **Challenges in Implementation**
- Implementation will require careful adjustment due to **regional variations** in living costs across India.
- Experts stress the need for **social dialogue** involving:
 - Government agencies
 - Employers
 - Worker representatives

Broader Barriers to Women's Employment

While living wages are essential, other **structural and social barriers** also limit women's labour force participation:

- **India's female Labour Force Participation Rate (LFPR)** is **32%**, compared to **77.1% for men** (June 2025, PLFS data).
- To achieve developed economy status, India must **raise women's LFPR above 50%**.

Key Barriers Include:

- **Workplace safety concerns**
- **Lack of affordable housing near workplaces**
- **Regulations restricting women's employment**, including:
 - Over **50 laws** that limit women from working night shifts or in certain sectors
 - These are being revised, but employers—especially small businesses—must now ensure safety, increasing their burden

Industry-Led Progress: Manufacturing as a Catalyst

- States like **Tamil Nadu, Karnataka, and Maharashtra** are leading in female employment due to strong **manufacturing bases**.
- Sectors such as **electronics and automobile manufacturing** increasingly employ women for their:
 - **Finger dexterity**
 - **Hand-eye coordination**
- These skills make women highly suitable for precision-based production roles, and employers are actively seeking female talent.

Conclusion

Living wage reform presents a **critical opportunity** to improve the economic participation of women, especially in India's vast blue- and grey-collar workforce. While wage enhancement is a **necessary first step**, it must be supported by structural changes—like better safety norms, affordable housing, and inclusive employment laws—to enable women to thrive in the formal economy.

Five Years of NEP 2020: Achievements, Challenges, and the Road Ahead

Overview

Launched in 2020, the **National Education Policy (NEP)** aimed to transform India's school and higher education systems. Five years on, while some foundational reforms have taken root—especially in early education—many of its more ambitious goals are yet to be fully realized. Delays due to institutional inertia, Centre-State disagreements, and funding challenges have slowed its progress.

Achievements So Far

1. Reforming School Structure and Curriculum

- The old **10+2 format** has been replaced with a **5+3+3+4 model**:
 - **Foundational** (Pre-school to Class 2)
 - **Preparatory** (Classes 3–5)
 - **Middle** (Classes 6–8)
 - **Secondary** (Classes 9–12)
- The **2023 National Curriculum Framework** defined learning goals for each stage.
- **NCERT** has released new textbooks for Classes 1–8 that integrate subjects (e.g., combining history and geography). Textbooks for Classes 9–12 are still pending.

2. Early Childhood Education Initiatives

- NEP targets **universal pre-primary education by 2030**.
- Initiatives include:
 - **ECCE curriculum** and **Jaadui Pitara learning kits** from NCERT.
 - States like **Delhi, Kerala, and Karnataka** are enforcing a minimum age of six for Class 1, improving readiness but slightly reducing enrolment numbers.
- Gaps persist in **Anganwadi infrastructure** and **teacher training**.

3. Foundational Literacy Through NIPUN Bharat

- **Launched in 2021**, this mission targets literacy and numeracy by **Class 3**.
- Recent data:
 - **Language proficiency:** 64%
 - **Math proficiency:** 60%
 - Shows progress but short of universal targets.

4. Higher Education Reforms: Flexibility and Access

- Introduction of:
 - **Academic Bank of Credits (ABC)**
 - **National Credit Framework (NCrF)**
Allows students to exit with a **certificate, diploma, or degree** at different stages (1, 2, or 4 years).
- **CBSE** is piloting this credit system at the school level.

5. Standardized College Admissions

- **CUET** (launched in 2022) streamlines admissions for central universities, reducing the burden of multiple entrance exams.

6. Global Expansion of Indian Institutes

- Indian institutions expanding abroad:
 - **IIT Madras** (Zanzibar)
 - **IIT Delhi** (Abu Dhabi)
 - **IIM Ahmedabad** (Dubai)
- Meanwhile, global institutions like the **University of Southampton** are setting up campuses in India; **12 others** await approval.

Reforms Underway

1. Board Exam Redesign

- NEP recommends flexible, low-stakes exams.

- Starting **2026**, CBSE will allow **Class 10** students to take board exams **twice a year**.
- Karnataka** has already piloted this approach.
- The proposal to offer **standard and higher levels** in all subjects remains limited—only **Mathematics** in Class 10 currently follows this model.

2. Holistic Progress Cards

- NCERT's **PARAKH** has created report cards with **self and peer assessments**.
- However, most state boards have yet to adopt this system.

3. Four-Year Undergraduate Degrees

- NEP recommends **multi-exit** four-year undergraduate programs.
- Central universities** and **Kerala** have implemented it, but progress elsewhere is slow due to:
 - Faculty shortages**
 - Lack of infrastructure**

4. Mother Tongue as Medium of Instruction

- NEP suggests using the **mother tongue/local language** at least until **Class 5**.
- CBSE** has directed schools to implement this from **pre-primary to Class 2**, with flexibility for Classes 3–5.
- NCERT is working on multilingual textbooks to support this shift.

Unresolved Challenges and Roadblocks

1. Three-Language Formula Opposition

- NEP mandates that students learn **three languages**, two of which must be Indian.
- Strong opposition from **Tamil Nadu**, which prefers a **Tamil-English** model and views this as an attempt to impose Hindi.

2. Stalled Teacher Education Reforms

- The **National Curriculum Framework for Teacher Education** is delayed.
- The proposed **Integrated Teacher Education Programme (ITEP)** faces pushback from existing B.El.Ed. colleges, slowing progress.

3. Delay in Higher Education Regulatory Overhaul

- The policy aims to replace **UGC** with a unified regulator—**Higher Education Commission of India (HECI)**.
- Despite being announced in 2020, the **HECI Bill** is still under drafting.

4. No Breakfast Scheme Despite NEP Recommendation

- NEP recommended **providing breakfast** alongside mid-day meals for young learners.
- Finance Ministry** rejected the proposal in 2021 due to budget constraints.

5. Centre-State Conflicts

- States like **Kerala, Tamil Nadu, and West Bengal** have opted out of NEP-aligned initiatives like **PM-SHRI schools**.
- In response, the Centre **withheld Samagra Shiksha funds**, prompting legal challenges (e.g., Tamil Nadu in the Supreme Court).

6. Policy U-Turn in Karnataka

- Karnataka** initially implemented the four-year degree model but later reversed its decision.
- The current government is developing a **state-specific education policy**, fulfilling a 2023 election promise.

Conclusion

Five years into its rollout, **NEP 2020** has laid the foundation for a more holistic, inclusive, and flexible education system in India. While key reforms in early education, curriculum, and higher education access have begun, major goals such as teacher training reform, regulatory overhaul, and multilingual learning remain incomplete.

For NEP 2020 to achieve its full potential, it must overcome:

- Centre-State tensions**
- Funding limitations**
- Institutional bottlenecks**

A coordinated effort involving **states, educators, and civil society** will be essential for realizing its long-term vision.

State of Food Security and Nutrition in the World (SOFI) 2025: A Critical Overview

Source: World Health Organization (WHO)

Published by: FAO, WFP, IFAD, WHO, and UNICEF

Focus Year: 2024 (Data Reference)

Introduction

The *State of Food Security and Nutrition in the World (SOFI) 2025* report provides a comprehensive evaluation of global hunger and malnutrition trends, tracking progress toward Sustainable Development Goal 2 (SDG 2) — ending hunger and achieving food security and improved nutrition by 2030. In 2024,

approximately 8.2% of the global population, equating to 720 million individuals, experienced chronic hunger, reflecting a marginal improvement from previous years but still falling short of pre-pandemic levels.

Objectives and Scope of SOFI 2025

- **Purpose:** To monitor and analyze trends in food security and nutrition, assess progress towards SDG 2, and provide policy guidance.
- **Key Themes for 2025:**
 - Post-pandemic recovery
 - Affordability of nutritious food
 - Regional disparities
 - Projections and trajectories to 2030

Key Global Findings

1. **Limited Progress:** While global hunger has declined slightly from 8.7% in 2022 to 8.2% in 2024, figures remain above pre-COVID-19 benchmarks, signaling slow recovery and threatening the achievement of SDG 2.
2. **Regional Inequalities:**
 - **Africa:** Over 20% of the population remains undernourished, despite having a smaller population than Asia.
 - **Asia:** Continues to house nearly half of the world's food-insecure individuals due to its sheer demographic weight.
 - **Southeast Asia and South America:** Report slight reductions in hunger, largely attributed to social protection measures and agricultural-nutrition reforms.
3. **Diet Affordability:** More than 3 billion people globally are unable to afford a healthy diet, leading to reliance on high-calorie but nutrient-deficient foods.
4. **Impact of Conflict and Climate:** Armed conflicts and climate events — such as droughts and floods — remain central drivers of food insecurity.
5. **Future Outlook:** Only a projected decline of 65 million undernourished individuals by 2030 suggests that the world is significantly off-track in achieving 'zero hunger.'

Key Stats from SOFI 2025 Report

- Global Hunger (2024): 720 million affected
- 2030 Projection: 512 million may remain hungry, 60% in Africa
- Food Insecurity: 2.3 billion moderately/severely
- Since 2015: 96 million more chronically hungry, 683 million more food-insecure
- Regional Burden: Asia - 323 million undernourished; Africa-307 million
- 55.6% of Indians cannot afford a healthy diet

Undernourishment And Obesity in India

- 12% of India's population was undernourished in 2024, down from 243 million in 2006 to 172 million today.
- India ranks 48th globally and 7th in Asia in terms of undernourishment prevalence.
- 42.9% of Indians could not afford a healthy diet in 2024 almost half the population.
- The cost of a healthy diet in India rose from \$2.77 PPP/day (2017) to \$4.07 PPP/day (2024).
- Adult obese population in India doubled from 33.6 million (2012) to 71.4 million (2024).
- 18.7% of Indian children under 5 suffered from wasting in 2024 - highest globally, affecting 21 million+ children.
- 37.4 million children under 5 were stunted in India, reflecting chronic undernutrition.
- Overweight children under 5 increased from 2.7 million (2012) to 4.2 million (2024).
- 53.7% of Indian women (15-49 yrs) were anaemic in 2023 - 203 million women affected.
- Anaemia among women increased from 50.1% in 2022 to 53.7% in 2023, highest in Asia, 4th globally.

India-Specific Insights

1. **Dietary Inaccessibility:** Approximately 6% of India's population cannot afford a nutritious diet, highlighting challenges in equitable food access despite grain surpluses.
2. **Urban-Rural Divide:** Urban areas have benefited from post-COVID income

recovery, while rural regions face persistent issues due to inefficiencies in the Public Distribution System (PDS) and price instability.

3. **Child Nutrition:** India remains among the worst affected in terms of child stunting and wasting, indicating significant early-life nutritional deficiencies.
4. **Micronutrient Deficiency:** "Hidden hunger" is widespread due to over-reliance on cereal-based diets with limited consumption of fruits, vegetables, and proteins.
5. **Policy Recommendations:**
 - Integrate nutrient-dense foods such as millets, pulses, and fortified items into public nutrition programs.
 - Strengthen local food systems through diversification and targeted subsidies.

Analytical Perspective

Positive Developments:

- Gradual global decline in hunger post-2022.
- Promising interventions in Southeast Asia and Latin America.
- Increased awareness of dietary quality and nutrition.
- Strong multi-agency collaboration fostering integrated responses.
- Technological advances in hunger mapping and data-driven decision-making.

Persistent Challenges:

- COVID-19's lasting impact, reversing nearly a decade of gains.
- Africa projected to account for 60% of global undernourishment by 2030.
- Inadequate pace of improvement to meet SDG 2 targets.
- Rising food costs disproportionately affecting low-income populations.
- Inequities in food distribution despite sufficient global food production.

Strategic Recommendations

1. **Nutrition-Oriented PDS:** Reform India's PDS to prioritize diverse, locally grown, and nutrient-rich foods.
2. **Agricultural Diversification:** Encourage cultivation beyond staple grains to include

climate-resilient crops like millets and pulses.

3. **Strengthening Food Systems:** Develop regional, climate-adaptive food systems to mitigate the impacts of natural disasters.
4. **International Cooperation:** Enhance support for food-insecure regions, particularly Africa and South Asia, through targeted SDG financing and food aid.
5. **Affordability Measures:** Align food pricing with income growth via policy tools such as minimum wage adjustments, inflation control, and efficient supply chains.

Conclusion

The SOFI 2025 report underscores a growing disparity between global food security goals and actual progress. Despite slight improvements, chronic hunger remains widespread, particularly in vulnerable regions. For India, the focus must shift from calorie sufficiency to nutritional adequacy. The report calls for transformative, equity-driven, and nutrition-sensitive reforms across food systems — both nationally and globally — to reinvigorate the pursuit of 'zero hunger' by 2030.

Setubandha Scholar Scheme

The Setubandha Scholar Scheme offers students trained in traditional gurukuls a unique opportunity to earn recognized qualifications and receive substantial scholarships for research at leading IITs.

About the Scheme:

This is India's first national-level initiative aimed at formally integrating scholars from traditional educational backgrounds into the research ecosystem of IITs, without the prerequisite of conventional academic degrees. The program seeks to connect India's ancient gurukul tradition with contemporary scientific and academic research.

The scheme is supported by the Ministry of Education and implemented by the Indian Knowledge System (IKS) division of the Central Sanskrit University (CSU). It provides fellowships up to Rs 65,000 per month across 18 interdisciplinary fields, ranging from Ayurveda, cognitive science, architecture, political theory, and grammar to strategic studies, performing arts, mathematics, physics, and health sciences.

Eligibility Criteria:

- Applicants must have undergone a minimum of five years of rigorous study at a recognized gurukul.
- They must demonstrate excellence in Shastras or traditional knowledge.
- The maximum age limit to apply is 32 years.

Fellowship Details:

- Category 1 scholars (equivalent to postgraduate level) receive a monthly fellowship of Rs 40,000 along with an annual research grant of Rs 1 lakh.
- Category 2 scholars (equivalent to PhD level) are awarded Rs 65,000 per month and an annual grant of Rs 2 lakh.

This scheme marks a significant shift in India's education policy by opening advanced research opportunities to scholars from non-formal, classical learning backgrounds.

Education Minister Issues Letters of Intent (LoIs) to Four Foreign Universities

Context:

To commemorate five years of the National Education Policy (NEP) 2020, the Union Education Minister issued Letters of Intent (LoIs) to four foreign universities authorizing them to establish campuses in India.

Details:

- **Issuing Authority:** The Ministry of Education, under the leadership of Dharmendra Pradhan, issued the LoIs during the Akhil Bharatiya Shiksha Samagam 2025.
- **Universities and Locations:**
 - Western Sydney University – Greater Noida
 - Victoria University – Noida
 - La Trobe University – Bengaluru
 - University of Bristol – Mumbai (from 2026)

Programs Offered:

- Degrees in business, artificial intelligence, logistics, cybersecurity, health, and public policy.
- Joint Ph.D. academy.
- 3+1 pathway integrating undergraduate and postgraduate education.

Alignment with NEP:

- Supports the NEP's objective of internationalizing Indian higher education.

- Emphasizes multidisciplinary learning, innovation, and global partnerships.

About Letter of Intent (LoI):

- A LoI is a formal document indicating the intention of two parties to enter into a partnership or agreement, preceding a legally binding contract.
- **Key Characteristics:**
 - Non-binding but provides directional clarity.
 - Outlines scope including purpose, timeline, responsibilities, and goals.
 - Facilitates negotiations and reduces ambiguity during formal contract drafting.
- **Use in Academia:**
 - Demonstrates institutional commitment.

Serves as a blueprint for collaboration in joint research, curriculum sharing, and faculty/student exchanges

UN Deputy Secretary-General Urges Immediate Action to Reform Global Food Systems

Context: UNFSS+4 Stocktake Summit in Addis Ababa

At the **UN Food Systems Summit +4 (UNFSS+4) Stocktake** held in **Addis Ababa, Ethiopia**, the **UN Deputy Secretary-General** called for **urgent global action** to overhaul the world's food systems. The summit marked a critical moment to assess progress since the original **UN Food Systems Summit of 2021**, which was launched to build **resilient, inclusive, and sustainable food systems**.

As part of the event, the Deputy Secretary-General also released the **second biennial UNFSS+4 progress report**, evaluating how far the global community has come—and how far it still needs to go.

Understanding Food Systems

Definition

Food systems refer to the **entire chain of actors and activities** involved in **producing, processing, distributing, consuming, and disposing of food products**. These systems span across **agriculture, forestry, fisheries**, and associated sectors.

Why Food Systems Matter

Global food systems carry **unseen but massive social, economic, and environmental costs**, estimated at **\$11.6 trillion** annually.

- **Social Impact:**
 - Closely linked to multiple **Sustainable Development Goals (SDGs)** such as **health, zero hunger, and biodiversity**.
 - Yet, **783 million people globally remain chronically hungry**.
- **Economic Impact:**
 - Food systems are a **major source of employment**, especially for rural and agricultural households.
- **Environmental Impact:**
 - Contribute to **over 30% of global greenhouse gas emissions**.
 - Responsible for **80% of biodiversity loss**.
 - Consume **70% of the world's freshwater resources**.

Why Global Food Systems Are Failing

1. **Climate Shocks:**
 - Increasing frequency of natural disasters disrupts agriculture and damages supply chains.
2. **Rising Debt in Least Developed Countries (LDCs):**
 - The debt burden in LDCs has risen from **3.1% to 12% of national revenue (2010–2023)**, limiting funds for **healthcare, education, and social services**.
3. **Weak Infrastructure:**
 - **One-third of all food is lost or wasted** due to inadequate storage, poor transportation networks, and limited market access.

Path Forward: Building Resilient Food Systems

To overcome these challenges and ensure food security, the following priorities were emphasized:

- **Boost private investment** and enhance **local capacity-building**.

- Promote **coordinated efforts** that connect **emergency aid** with **long-term development strategies**.
- Focus on **community-led solutions**, especially empowering **women and youth** at the grassroots level.

Major Initiatives Driving Food System Reform

1. **COP28 UAE Declaration:**
 - **160 governments** committed to integrating food systems into their **national climate action plans**.
2. **Biodiversity Frameworks (COP15 & COP16):**
 - Adopted **23 global targets** for transforming food systems, with a **clear implementation roadmap and funding mechanisms**.
3. **World Food Programme (WFP):**
 - Provides training to **smallholder farmers** in:
 - Sustainable agricultural practices
 - Post-harvest handling
 - Business development and marketing skills
4. **Other Global Efforts:**
 - Food systems are increasingly becoming a **top global priority**, with key initiatives such as:
 - The **Apulia Food Systems Initiative** (launched by the G7)
 - The **G20 Global Alliance Against Hunger and Poverty**

Conclusion

The Deputy Secretary-General's urgent call at UNFSS+4 highlights the **pressing need to transform global food systems**, not only to combat hunger and poverty but to address the broader goals of **climate resilience, environmental sustainability, and social equity**. With mounting climate shocks, deepening inequalities, and unsustainable practices, the world must act now—through investment, innovation, and inclusive solutions—to safeguard the future of food for all.

GEOGRAPHY, ENVIRONMENT, BIODIVERSITY AND DISASTER MANAGEMENT

Animal and Plant Discoveries 2024: Biodiversity Milestones

Released by:

Ministry of Environment, Forest, and Climate Change in collaboration with:

Zoological Survey of India (ZSI) – Animal Discoveries

Botanical Survey of India (BSI) – Plant Discoveries

Animal Discoveries 2024 Highlights:

Total Faunal Additions: 683 species

459 new species

224 new records

Top States by Faunal Discoveries:

Kerala: 101 species

Karnataka: 82 species

Arunachal Pradesh: 72 species

Island Biodiversity:

Andaman and Nicobar Islands: 43 faunal discoveries

Noteworthy Finds:

2 new genera and 37 species of reptiles

5 new amphibian species

Dravidoseps gouensis – new genus of skink

Anguiculus dicaprio – snake species named after Leonardo DiCaprio

Plant Discoveries 2024 Highlights:

Total Floral Additions: 433 taxa

410 new species

23 infra-specific taxa

Top States by Flora Discoveries:

Kerala: 58

Maharashtra: 45

Uttarakhand: 40

Biodiversity Hotspots:

Western Ghats and North-Eastern India contributed 35% of total discoveries

Significant Floral Discoveries:

Wild relatives of begonia, balsams (*Impatiens*), orchids, legumes, and zingibers

New orchid species:

Bulbophyllum gopalianum

Coelogyne tripurensis

Gastrodia indica

Gastrodia sikkimensis

Cell Broadcasting System for Disaster Management

The Department of Telecommunications and NDMA are testing a new Cell Broadcast (CB) system to deliver real-time disaster alerts across India.

What is Cell Broadcasting?

A technology used by mobile operators to send text messages to all mobile users within a specific geographic area.

Primarily used for sending emergency alerts.

In India, this system is part of a larger government initiative to improve real-time delivery of critical warnings during disasters like earthquakes, tsunamis, lightning, and industrial hazards.

The system is being developed indigenously by the Centre for Development of Telematics (C-DOT).

Unlike SMS alerts, CB messages are broadcast to all phones in an area simultaneously, ensuring quick delivery even when networks are congested.

The system enables almost instantaneous alerts, making it highly effective for urgent disaster situations.

CB will complement the existing Integrated Alert System called **SACHET**, which has sent over 6,899 crore SMS alerts in 19+ Indian languages across all 36 States and Union Territories.

SACHET uses the Common Alerting Protocol (CAP), recommended by the International Telecommunication Union (ITU).

Once fully deployed, the CB system will broadcast alerts in multiple Indian languages to ensure wide and inclusive public coverage.

Wandan Mud Volcano Eruption, Taiwan

The Wandan mud volcano recently erupted in Taiwan.

The eruption sent bubbling mud shooting into the air.

Locals ignite gases released from the volcano using burning rags.

About Mud Volcanoes:

A mud volcano is a small cone-shaped formation made of mud and clay, usually less than a few meters high.

Formed by a mixture of hot water and fine sediment that either flows gently from a vent or is explosively ejected by volcanic gas and boiling water.

Their craters are shallow and may erupt mud intermittently.

Eruptions build and rebuild the mud cones, which are easily eroded over time.

The term "mud dome" is similar and refers to landforms created by cooler geologically excreted liquids and gases.

Mud volcanoes, also called "sedimentary volcanoes" or "gas-oil volcanoes," are related to magmatic volcanoes.

Like magmatic volcanoes, they can erupt violently and send flames hundreds of meters high.

Known locations in Europe and Asia include southeastern Ukraine, Italy, Romania, Azerbaijan, Iran, Pakistan, Indonesia, and China.

In the Americas, mud volcanoes have been recorded in Alaska, California, Trinidad, Venezuela, and Colombia.

Factors Behind the Monsoon's Early Nationwide Arrival in 2025 Overview

The **southwest monsoon covered all of India by June 29**, a full **nine days ahead of the typical July 8 date**. This marks only the **tenth instance since 1960** that the monsoon has achieved full national coverage in June.

Timeline & Regional Patterns

Early Onset in Kerala

The monsoon began in **Kerala on May 24**, **eight days earlier** than normal.

This early onset was linked to an **active Madden-Julian Oscillation (MJO)** phase in mid-May, setting the stage for faster progress across the country.

Monsoon Progress by Region

South, East, and Northeast India: Saw **early arrival** of the monsoon.

Northwest India: Experienced **near-normal timing**.

Central India: Faced **slight delays**.

Key Drivers of the Monsoon's Early and Rapid Advancement

1. Increased Low-Pressure Systems

Five low-pressure systems formed in June.

These systems act as **moisture attractors**, pulling in rain-bearing winds and **accelerating inland monsoon movement**.

2. Active Madden-Julian Oscillation (MJO)

MJO is a **moving weather system** near the equator that enhances convection and rainfall.

An **active MJO** boosts monsoon by:

Increasing **cloud cover**

Enhancing **moisture availability**

Supporting **stronger and more widespread rainfall**

MJO remained active throughout June, helping push rains northward rapidly.

3. Favorable Position of the Monsoon Trough

The **monsoon trough**, a key low-pressure zone from northwest India to the Bay of Bengal, was consistently **south of its normal position**.

This **southern shift** allowed:

Stronger **moisture inflow** from oceans

Intensified rainfall across central and northern India

Faster spread of the monsoon across regions

4. Neutral ENSO (El Niño–Southern Oscillation)

ENSO was in a **neutral phase**, with **average sea surface temperatures** in the tropical Pacific.

This allowed **normal monsoon behavior**, without the suppressing effect of El Niño or the excess rainfall from La Niña.

5. Neutral Indian Ocean Dipole (IOD)

IOD conditions also remained **neutral**, meaning:

No major sea temperature contrast between eastern and western Indian Ocean

Minimal direct impact on the monsoon

Allowed other favorable systems (like MJO and low-pressure zones) to dominate rainfall patterns

Conclusion

The 2025 monsoon has stood out for its **early onset**, **swift progress**, and **weather variability**, including **sudden pauses** and **localized extreme**

events. While early arrival has benefited some regions, the remainder of the season will determine whether these patterns **stabilize or intensify**, especially in the context of climate variability.

Solar Energy Corporation of India (SECI)

Context:

SECI has successfully executed over **60 GW of Power Sale Agreements (PSAs)** for solar, wind, and hybrid energy projects.

About SECI

What is SECI?

A Central Public Sector Undertaking (CPSU) under the Ministry of New and Renewable Energy (MNRE).

Acts as the nodal agency for implementing India's renewable energy initiatives.

Established: 2011, initially to implement the National Solar Mission (NSM).

Aim:

Initially focused solely on solar energy.

Scope expanded to cover the entire renewable energy spectrum.

Soon to be renamed **Renewable Energy Corporation of India (RECI)**.

Functions and Roles

Power Sale Agreements (PSAs): Provides long-term power purchase guarantees to developers, boosting investor confidence in renewable energy projects.

Implementing Government Schemes: Manages schemes like Viability Gap Funding (VGF), solar parks, rooftop solar, solar canals, and defence & border projects.

Innovative Models: Develops hybrid renewable energy solutions such as solar-wind combos, Round-the-Clock (RTC) power, and Firm & Dispatchable Renewable Energy (FDRE) projects.

Project Development: Acts as a turnkey developer for Public Sector Undertakings (PSUs), expanding renewable energy reach across sectors.

Power Trading: Holds a power trading license to sell solar power from implemented schemes.

Mission-Driven: Aims to democratize clean energy access, enhance grid reliability, and promote a low-carbon economy through scalable renewable energy models.

Significance of the 60 GW PSA Milestone

Capital Infusion: Guarantees secure offtake, encouraging large-scale private and public investments in renewable energy.

Market Expansion: Boosts renewable energy adoption among states by offering customized power solutions tailored to regional needs.

Navratna Status (2024): SECI can independently invest up to ₹1,000 crore, enabling faster development of green infrastructure without requiring central approval.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) - 50 Years

Origins:

Conceived in 1963 at the IUCN meeting.

Entered into force in 1975 as the first global agreement of its kind.

Aim:

Voluntary international agreement to ensure that international trade in wild animals and plants does not threaten their survival.

Controls trade through a licensing system covering import, export, and re-export.

Secretariat:

Administered by the UN Environment Programme (UNEP) based in Geneva.

IUCN provides scientific and technical support.

Parties:

185 parties (countries or regional economic organizations).

India ratified in 1976.

CITES is legally binding but implemented through national laws.

Conference of Parties (CoP):

Highest decision-making body of CITES.

CoP3 was held in New Delhi in 1981.

CITES Trade Database:

Managed by UNEP World Conservation Monitoring Centre (UNEP-WCMC).

Key Initiatives:

Protects over 40,900 species (6,610 animals and 34,310 plants).

MIKE Programme (Monitoring Illegal Killing of Elephants), established at CoP10 in 1997.

International Consortium on Combating Wildlife Crime (ICCCWC), 2010.

CITES Tree Species Project, 2024.

Model Rules for Tree Felling on Agricultural Land: A Push for Agroforestry Reform Context:

In 2025, the **Ministry of Environment, Forest and Climate Change (MoEFCC)** introduced the *Model Rules for Felling Trees in Agricultural Lands* to simplify the regulatory landscape and promote **agroforestry**. The goal is to remove legal obstacles for farmers growing and harvesting trees on non-forest land.

What Are the Model Rules?

These rules outline a standardized, simplified process for **registering plantations, felling trees, and transporting timber** grown on agricultural land. Aligned with the **National Agroforestry Policy 2014**, they support India's commitments to climate action, sustainability, and rural development.

Key Provisions of the Model Rules

Integration with NTMS Portal: All plantation registrations and harvest requests must be submitted via the **National Timber Management System (NTMS)**, enabling digital tracking and reducing paperwork.

Simplified Felling Approvals

For **up to 10 trees**: Farmers can upload photos, and an **auto-generated No Objection Certificate (NOC)** is issued.

For **more than 10 trees**: An online application triggers a **field inspection**, followed by a **felling permit**.

State-Level Committee (SLC): A multi-disciplinary committee at the state level will oversee implementation, promote agroforestry, and monitor timber movement and compliance.

Third-Party Verification System: Accredited agencies with forestry expertise will verify plantations and issue eligibility certificates for felling and transit.

Farmer-Friendly Record Management: Farmers must regularly update data such as **tree species, height, and geotagged images** to ensure transparency and traceability.

Technology-Backed Monitoring: The rules incorporate tools like **GPS tagging, Google Earth imagery, and remote sensing** to validate tree growth and estimate timber yield.

Linking Farmers to Wood-Based Industries: The policy promotes direct market linkages to **wood and timber-based industries**, enhancing farmers' income potential.

Support for Climate Resilience and Soil Health: By integrating trees into farmlands, the rules aim to boost **biodiversity, water retention, and carbon sequestration**, reducing deforestation pressures.

Challenges and Concerns

NTMS Portal Not Fully Functional: Delays in portal development could hinder smooth implementation in the initial phase.

Digital Divide: Farmers lacking internet access or digital literacy may struggle to navigate online processes.

Varied State-Level Adoption: As these are **model rules**, implementation depends on individual state governments, leading to **non-uniform rollouts**.

Potential for Abuse: Without strong oversight, loopholes could be exploited by **commercial logging interests**, risking ecological damage.

Why These Rules Matter

Reduces Timber Import Dependence: India spends nearly **\$2 billion annually** on timber imports. These rules can help build a **self-sufficient timber economy**.

Makes Tree Farming Profitable: Farmers can grow and profit from **high-value trees** like teak, sandalwood, and poplar without bureaucratic red tape.

Strengthens Climate Action: Enhances India's **carbon sink capacity**,

contributing to its **Paris Agreement** commitments and SDG goals.

Boosts Rural Incomes: Agroforestry can create **new jobs and income streams**, especially in underdeveloped and climate-vulnerable regions.

Promotes Sustainable Agriculture: Encourages **resilient, mixed farming systems** that combine crops with tree cover, benefiting soil and water health.

Conclusion

The *Model Rules for Felling Trees in Agricultural Lands* represent a forward-looking policy to unlock the full potential of agroforestry in India. To translate this vision into reality, the government must ensure **timely digital infrastructure**, improve **awareness and capacity building**, and work closely with states for **uniform and fair implementation**. Done right, these rules can support both **ecological sustainability** and **rural economic transformation**.

Facciolella Smithi

Indian scientists recently discovered a new deep-sea eel species named *Facciolella smithi* (Smith's witch eel).

The discovery was made by ICAR-National Bureau of Fish Genetic Resources, Lucknow.

The specimen was collected between 260 and 460 meters deep off the Kerala coast in the Arabian Sea.

It belongs to the Nettastomatidae family.

The eel likely lives on the seafloor or burrows in soft sediment, relying on sensory adaptations instead of sight due to darkness.

The species is named to honor ichthyologist Dr. David G. Smith for his work on eel taxonomy.

Kariyachalli Island

The Tamil Nadu government has recently initiated efforts to save the sinking Kariyachalli Island.

Kariyachalli is located in the ecologically sensitive Gulf of Mannar region, home to one of India's four major coral reefs.

The island is part of the 21 islands in the Gulf of Mannar Marine National Park between Rameshwaram and Thoothukudi.

Kariyachalli Island features beaches, sand dunes, spits, and sandy plains.

It has experienced significant sinking over decades due to erosion, rising sea levels, and degradation of coral reefs and seagrass.

IIT Madras's 2024 report states the island lost over 70% of its landmass since 1969.

Coral bleaching around the island has affected about one-third of reefs, increasing vulnerability to erosion.

At current erosion rates, the island may submerge by 2036.

To prevent this, the Tamil Nadu Sustainably Harnessing Ocean Resources (TNSHORE) project will start in August 2025.

The project aims to restore reefs with artificial modules, plant seagrass beds, and revive marine life.

RECLAIM Framework

Context:

The Ministry of Coal will launch the RECLAIM Framework, a community engagement framework for mine closure and repurposing.

What is RECLAIM? RECLAIM stands for a structured Community Engagement and Development Framework designed for mine closure and repurposing. It provides a step-by-step guide for social and ecological transitions in mining areas.

Key Stages of RECLAIM: REACH OUT – ENVISION – CO-DESIGN – LOCALISE – ACT – INTEGRATE – MAINTAIN

Nodal Ministry: Launched by the Ministry of Coal in collaboration with the Coal Controller Organisation and the Heartfulness Institute.

Objective:

To ensure a just, inclusive, and locally relevant transition for communities affected by mining, promoting long-term sustainability and economic recovery after mining ends.

Key Features:

Structured Community Participation: Institutionalizes grassroots involvement throughout all phases of mine closure and transition.

Toolkit and Methodologies: Provides ready-to-use templates, tools, and models adapted to India's socio-economic context.

Gender & Vulnerability Focus:

Ensures representation of women and marginalized groups, aligned with Sustainable Development Goals (SDG) on equity.

Linkage with Local Governance:

Integrates Panchayati Raj Institutions to strengthen local accountability and planning.

Ecological Restoration Goals:

Emphasizes land reclamation, water table renewal, and afforestation to restore ecological balance.

Socio-economic Continuity:

Promotes alternative livelihoods, capacity building, and skill development to reduce dependency on mining.

Significance:

First framework of its kind in India providing a dedicated, people-centric policy for coal mine closure.

Supports environmental sustainability and India's climate adaptation and net-zero targets through ecological regeneration.

Empowers mining communities by turning mine closure from an economic setback into an opportunity for community-led development.

Namdapha National Park and Tiger Reserve

Recently, the rare and endangered white-eared night heron was camera-trapped in Namdapha National Park and Tiger Reserve in Arunachal Pradesh.

Namdapha is located on the India-Myanmar border in Changlang District, Arunachal Pradesh.

The park covers an area of 1985.23 square kilometers.

It lies at the junction of the Indian subcontinent and Indo-China biogeographic regions.

The park is situated between the Dapha Bum ridge of the Mishmi Hills and the Patkai Ranges.

It shares a boundary with Kamlang Wildlife Sanctuary (Arunachal Pradesh).

The Namdapha River, a tributary of the Noa-Dihing River, flows through the park from north to south.

Vegetation includes Northern Tropical Evergreen Forest, North Indian Tropical Moist Deciduous Forests, East Himalayan Moist Temperate Forests, and Moist Alpine Scrub Forests.

Unique plant species include *Pinus merkusii* and *Abies delavayi*.

The park houses the rare Blue Vanda orchid and medicinal plants like Mishimi Teeta used by local tribes.

Fauna includes elephants, Himalayan black bears, Himalayan sun bears, hoolock gibbons (India's only ape), slow lorises, and others.

Namdapha is the only park in the world with all four big cats: tiger, leopard, snow leopard, and clouded leopard, alongside smaller cat species.

The white-eared night heron (*Gorsachius magnificus*) is medium brown with a streaked breast and white patch on its head.

This bird is mainly found in southern China and northern Vietnam with fewer than 1,000 individuals globally.

It is highly secretive, nocturnal, rarely seen in the wild, and listed as Endangered by the IUCN.

Forest Advisory Committee (FAC)

FAC recommended streamlining forest clearance processes for major industry and infrastructure projects in or near forest areas.

About FAC

A statutory body under the Forest (Conservation) Act, 1980.

Role:

Examines and reviews proposals for non-forestry use of forest land (including mining).

Provides recommendations to the Government of India.

The committee's role is **recommendatory**.

Garcinia kusumae - New Garcinia Species Discovered in Assam

Overview:

Discovered in: Assam

Genus: *Garcinia* (locally known as *thoikora* in Assamese)

Species name: *Garcinia kusumae*

Key Features:

Type: Dioecious evergreen tree

Height: Up to 18 metres

Flowering Season: February to April

Fruit Maturity: May to June

Unique Traits:

Up to 15 **staminate flowers per fascicle**

Fewer stamens per flower (except *Garcinia assamica*)

Fruits produce **blackish resinous exudate**

Cultural and Medicinal Uses:

Sun-dried pulp: Used in sherbet with salt and sugar – prevents heat stroke, quenches thirst

Culinary use: Cooked with fish in curries

Medicinal value: Traditional remedy for **diabetes** and **dysentery**

Seed aril: Eaten raw with salt, chillies, and mustard oil

Roll Cloud Over Portugal

Recent Event:

A **rare roll cloud** was observed off Portugal's coast during an **extreme heatwave**, surprising onlookers.

About Roll Clouds:

A **type of arcus cloud** – tube-shaped, horizontal, and detached from parent thunderstorms

Altitude: Typically forms between 2,000 to 7,000 metres

Common in: Coastal and mountainous areas – Alps, Japan, Scotland, northern Australia

What is an Arcus Cloud?

Low, horizontal cloud associated with thunderstorm outflows or cold fronts

Two Types:

Shelf Cloud – attached to the storm

Roll Cloud – **detached**, appears to roll around a horizontal axis

Formed when **cold downdraft air** from a storm pushes into warm, moist air

Grand Ethiopian Renaissance Dam (GERD)

Ethiopia's Prime Minister announced that the GERD on the Blue Nile is complete and will be officially inaugurated in September.

About GERD:

Formerly called the Millennium Dam.

Located in Benishangul-Gumuz region of Ethiopia near the Sudan border.

Built on the Blue Nile, a major tributary of the Nile River.

Capacity: 6.45 Gigawatts, making it the largest hydroelectric power plant in Africa.

Construction began in April 2011.

Owned by Ethiopian Electric Power Corporation (EEPCO).

Dispute:

Egypt and Sudan fear the dam will reduce their Nile water share.

Both countries have repeatedly requested Ethiopia to halt filling the dam until a comprehensive agreement is reached.

Polar Anticyclone

Context: Chile and Argentina ranked among the coldest places on Earth outside the polar regions, due to polar anticyclones.

What is a Polar Anticyclone?

A high-pressure wind system formed by cooling of surface air layers.

Cooling makes surface air denser, causing sinking air and inflow of air at higher levels, increasing pressure.

High-pressure center surrounded by low-pressure areas, with winds flowing outward.

Wind rotation:

Northern Hemisphere: Outward and clockwise

Southern Hemisphere: Outward and anti-clockwise

Chhattisgarh Forest Department Withdraws Directive on Community Forest Resource Rights (CFRR)

Context:

The Chhattisgarh Forest Department withdrew a directive that restricted other government departments, NGOs, and private entities from working on Community Forest Resource Rights (CFRR), which undermined the Forest Rights Act (FRA).

About CFRR:

CFRR is part of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (FRA).

It grants communities the right to **protect, regenerate, conserve, and manage**

community forest resources via Gram Sabhas (village councils).

CFR areas are common forest lands traditionally protected by communities for sustainable use.

Communities can formulate rules for forest use, fulfilling their responsibilities under the FRA.

National Working Plan Code 2023:

A guiding document issued by the Ministry of Environment, Forest & Climate Change (MoEFCC) first in 2004, amended in 2014.

Provides scientific management principles for forest divisions.

The withdrawn directive tried to align CFRR with this code but was seen as restrictive.

Forest Rights Act, 2006:

Aim: To correct historical injustices faced by forest-dwelling communities, ensuring their livelihood, food security, and rights.

Rights recognized include:

Individual Rights: Self-cultivation, habitation, in-situ rehabilitation.

Community Rights: Grazing, fishing, access to water bodies, intellectual property, traditional knowledge, and protecting customary rights.

India Urged to Ease Emission Norms for Small Cars in Line with Global Standards

A new study by **Nomura researchers** has recommended that India revise its **Corporate Average Fuel Efficiency (CAFE)** norms to better reflect global standards. The proposed reforms aim to introduce **protection measures for small cars**, which currently face disproportionately strict emissions targets despite being more fuel-efficient.

Understanding India's CAFE Norms

What Are CAFE Norms?

Introduced by the **Bureau of Energy Efficiency (BEE)** in 2017, India's CAFE regulations set fleet-wide average fuel efficiency targets for all passenger vehicles weighing under 3,500 kg, including those powered by petrol, diesel, LPG, CNG, electric, and hybrid systems.

Timeline:

Phase 1: Enforced from 2017–18

Phase 2: Rolled out in 2022–23 with stricter standards

Objectives:

Reduce dependence on oil imports

Lower carbon emissions and air pollution

Encourage cleaner mobility options like EVs and hybrids

2022–23 Compliance Targets:

Fuel consumption ≤ 4.78 litres/100 km

CO₂ emissions ≤ 113 g/km

Disproportionate Burden on Small Cars

System Bias Against Small Vehicles

Under the current **linear weight-based model**, heavier vehicles are allowed to emit more CO₂.

This means:

A heavy **SUV emitting 130g/km** may be **compliant**,

But a **small car emitting 100g/km** might still be **non-compliant** due to stricter standards for lighter vehicles.

This penalises smaller, more efficient cars while letting larger, more polluting models off the hook.

Impact on Small Car Segment

Small cars already deliver high fuel efficiency.

However, manufacturers are penalised for making them even lighter (to improve efficiency), as this further tightens their emission targets.

This discourages **lightweighting**, a key decarbonisation strategy, and limits innovation in the **affordable vehicle** segment.

Automakers like **Maruti Suzuki** have been advocating for a revision of these norms.

What the Study Recommends

Nomura researchers urge India to **move away from a purely linear approach** and adopt **small car protection mechanisms**, as seen in other major auto markets. These reforms could help preserve India's affordable car segment while advancing decarbonisation goals.

Global Best Practices: Protecting Small Cars

United States

Uses a **piecewise linear model** based on **vehicle footprint**.

Cars below a certain size face **fixed fuel economy targets**, avoiding overly harsh limits for smaller vehicles.

China

Sets a **constant target** for vehicles below a certain **curb weight**, ensuring lighter vehicles are not disproportionately penalised.

South Korea

Applies **constant emission targets** for small cars under a specific weight.

Grants manufacturers **bonus credits (5–7 g/km)** based on their share of small car sales.

Japan

Employs **non-linear CAFE norms** that avoid punishing lightweight cars, encouraging the production of small, efficient vehicles.

European Union

Uses an **inverted slope (–0.0144)** in its CAFE formula.

Smaller cars benefit from looser targets, while larger vehicles are subjected to stricter emission controls.

Conclusion

India's current CAFE framework may inadvertently discourage the production of fuel-efficient small cars—a vital segment for both affordability and environmental impact. By adopting a more nuanced, **globally-aligned approach**, India can strike a better balance between sustainability, innovation, and consumer accessibility in its automotive policy.

Delhi's Ban on Fuel for Old Vehicles: Legal Framework, Challenges & Pollution Impact

Amid growing public criticism, the **Delhi Government has clarified that old vehicles will not be impounded** solely for being denied fuel. Instead, a new framework for managing **End-of-Life Vehicles (ELVs)** is in the works. The ongoing measures stem from **judicial orders** and directives by the **Commission for Air Quality Management (CAQM)**, aimed at curbing Delhi's severe air pollution problem.

Fuel Ban for Old Vehicles in Delhi

Beginning **July 1, 2025**, fuel stations in Delhi have stopped dispensing fuel to:

Diesel vehicles over 10 years old

Petrol vehicles over 15 years old

This is the **first phase** of a broader CAQM directive that will extend to:

High-density NCR districts from Nov 1, 2025

Remaining NCR areas from April 1, 2026

Tech-Based Enforcement Using ANPR Cameras

To enforce the ban, **Automatic Number Plate Recognition (ANPR)** cameras have been installed at:

498 fuel stations

3 Inter-State Bus Terminals (ISBTs)

These cameras:

Scan number plates

Check the **VAHAN database** for vehicle age

Trigger **audio alerts** if a vehicle is identified as an ELV

Fuel is then **denied automatically**

Operational Challenges and Government Concerns

The Delhi Environment Minister has flagged serious concerns:

"Premature and counterproductive" rollout of the fuel ban

Technical flaws in the ANPR system:

Camera misalignment

Faulty sensors and audio systems

Detection issues due to missing or unreadable

High-Security

Registration Plates (HSRP)

Lack of integration with vehicle databases from nearby NCR districts

These issues have allowed **banned vehicles to refuel in nearby areas**, undermining the policy and causing **public inconvenience**.

Why the Focus on Old Vehicles?

Experts say **older, pre-BS-VI vehicles** contribute disproportionately to Delhi's air pollution:

BS-IV vehicles emit 4.5–5.5 times more PM than BS-VI models

Transport is a major polluter:

28% of PM2.5

41% of SO₂

78% of NO_x emissions

Legal and Regulatory Foundation

The fuel ban is supported by multiple legal mandates:

NGT Ban (2015): Prohibits diesel vehicles >10 years and petrol vehicles >15 years in Delhi-NCR

Supreme Court Ruling (2018): Enforced impounding of violating vehicles

Motor Vehicles Act (1988): Registration for private vehicles valid for 15 years; renewal required afterward

Central Motor Vehicle Rules (1999): Expired registration renders a vehicle legally unfit

Vehicle Scrapping Guidelines (2023): Under Motor Vehicles Act and RVSF Rules

Environment Protection (End-of-Life Vehicles) Rules, 2025: Require scrapping within 180 days of registration expiry, effective April 1, 2025

Can This Solve Delhi's Pollution Crisis?

While the policy is legally sound and environmentally motivated, **experts caution against over-reliance** on a single solution:

The **Centre for Science and Environment (CSE)** notes that:

Not all old vehicles are major polluters
Even **newer vehicles can emit high levels** if poorly maintained
Age-based bans aren't scalable across India

The Need for a Holistic Strategy

CSE and other experts recommend a **multi-pronged approach**, including:

Upgrading vehicle **fuel and emission standards**

Stronger enforcement of **Pollution Under Control (PUC)** norms

Expanding **public transportation** systems to reduce vehicle dependence

Alaknanda River

Current Context

Due to **intense rainfall in Rudraprayag, Uttarakhand**, the **Alaknanda River's water level** has surged, leading to **flood-like conditions** in the region.

Geographical Profile

Location: Situated in the **Himalayan state of Uttarakhand, India**.

Role: One of the **two principal headstreams** of the **Ganges River** (the other being **Bhagirathi**).

Origin and Course

Source: Emerges from the **glacial meltwaters** of the **Satopanth and Bhagirath Kharak glaciers** in the **Garhwal Himalayas**.

Length: Travels approximately **190 km** before merging with the **Bhagirathi at Devprayag**.

Confluence with Bhagirathi: Marks the point where the river is officially known as the **Ganga**.

Hydrological Note: At this junction, the **Alaknanda contributes a larger volume** to the Ganga compared to **Bhagirathi**.

Major Tributaries and Panch Prayag

The Alaknanda is joined by several tributaries, five of which are considered sacred. These **five**

confluences (Panch Prayag) are revered and serve as key pilgrimage sites:

Vishnuprayag – Confluence with **Dhauliganga River**

Nandprayag – Confluence with **Nandakini River**

Karnaprayag – Confluence with **Pindar River**

Rudraprayag – Confluence with **Mandakini River**

Devprayag – Confluence with **Bhagirathi River**

Religious and Cultural Significance

The **Alaknanda Valley** plays a crucial role in the **Char Dham Yatra**, a sacred Hindu pilgrimage route that includes:

Badrinath

Kedarnath

Gangotri

Yamunotri

Notable pilgrimage destinations along its banks include:

Badrinath

Hemkund Sahib

Joshimath

Hydropower Projects in the Basin

The river basin supports several **hydroelectric power projects**, including:

Alaknanda Hydel Project (Badrinath)

Lata Tapovan

Devsari Dam

Nandprayag Langasu

Vishnugad Pipalkoti

Bukkapatna Chinkara Wildlife Sanctuary

Recent Development

300 acres of encroached forest land were recently **cleared**, marking a significant step in restoring the sanctuary's ecological integrity.

Location

Located in the **Tumakuru district** of **Karnataka**.

Declared a **wildlife sanctuary in 2019**, primarily for the conservation of the **Indian Gazelle (Chinkara)**.

Conservation Focus

Dedicated to the protection of the **Chinkara (Gazella bennetti)**, also known as the **Indian Gazelle**.

This is Karnataka's **second Chinkara sanctuary**, after the **Yadahalli Wildlife**

Sanctuary in Bagalkot district, which was notified in **2016**.

Habitat and Vegetation

Represents a **wooded savannah** ecosystem. Dominated by **grasses** and sparsely populated with **native tree species**, offering an ideal habitat for herbivores and other wildlife.

Fauna

In addition to Chinkaras, the sanctuary hosts:

Four-horned antelopes

Blackbucks

Sloth bears

Leopards

Other regional wildlife species

Flora

Prominent tree species in the sanctuary include:

Hardwickia binata (Anjan)

Phyllanthus emblica (Amla, from the Phyllanthaceae family)

Boswellia serrata (Shallaki)

Tamarindus indica (Imli)

Pterocarpus marsupium (Bijaka)

Anogeissus latifolia (Dhaura)

Shorea talura

Terminalia tomentosa

Mount Shinmoedake

Recent Event

Mount Shinmoedake, a volcano in **Japan's Kyushu Island**, recently erupted, sending a large plume of **ash** into the atmosphere.

Location & Background

It is part of the **Kirishima mountain range** in **Kagoshima Prefecture**, Japan.

Elevation: **1420.8 meters above sea level**

The volcano is known for **frequent eruptions**, with records dating back to **1716**.

It gained fame internationally as a **filming location** for the 1967 **James Bond movie** *"You Only Live Twice."*

What is a Stratovolcano?

Stratovolcanoes (also called **composite volcanoes**) are:

Steep, cone-shaped volcanoes

Made up of alternating layers of **lava and pyroclastic material**

Typically located **above subduction zones**

Found in volcanically active regions like the **Ring of Fire**

Characteristics

Usually capped with a **small crater**, which might contain:

Water, ice, or a volcanic dome

They account for about **60% of Earth's volcanoes**

Eruptions are often **explosive**, as they emit **cooler, thicker lava** (like **andesite** or **dacite**) which traps **gas pressure**

Chenab River and Sawalkot Hydroelectric Project (HEP)

The Forest Advisory Committee has granted 'in-principle' approval for the diversion of forest land required for the construction of the Sawalkot Hydroelectric Project on the Chenab River. This project is one among six strategic hydropower developments planned to maximize India's utilization of Indus water resources.

About

Chenab

River:

The Chenab River originates from Bara Lacha Pass, where two streams—Chandra and Bhaga—emerge from opposite sides of the pass and converge to form the river. The Chenab Valley is a structural trough situated between the Great Himalayan and Pir Panjal mountain ranges. Its tributaries include Miyar Nalla, Sohal, Thiro, Bhut Nalla, Marusudar, and Lidrari. In ancient times, the river was known by names such as Chandrabhaga, Ashkini, or Iskmati in Vedic texts.

Controversy Over ISFR 2023: Forest Rights Act (FRA) and Forest Cover Loss

Background:

The India State of Forest Report (ISFR) 2023, published by the Forest Survey of India, attributed part of the "negative" change in forest and tree cover to the implementation of the Forest Rights Act (FRA), 2006. This assertion has sparked a strong response from the Ministry of Tribal Affairs, which has questioned the scientific basis of the claim and expressed concern over its potential impact on the execution of the FRA.

Findings of ISFR 2023

The 18th biennial ISFR assessment reveals a significant decline in dense natural forests across India.

Within the Recorded Forest Area (RFA):

Loss of over 1,200 sq km of Mid-Dense Forest (MDF).

Loss of a similar area in Open Forest (OF).

However, there was an increase of over 2,400 sq km in Very Dense Forest (VDF).

Outside RFA:

Around 64 sq km loss of Dense Forest.
Over 416 sq km loss of Mid-Dense Forest.

The report cites the following reasons for forest cover decline in both RFA and non-RFA areas:

Human encroachments
Natural disasters such as storms, floods, and landslides
Harvesting of short rotation plantations or other logging activities
Titles granted to beneficiaries under the Forest Rights Act (2006)

The Forest Rights Act (FRA), 2006

Official name: The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

Objective:

To recognize and grant forest rights to Forest Dwelling Scheduled Tribes (FDST) and Other Traditional Forest Dwellers (OTFD) who have lived in forest areas for generations, thereby addressing historical injustices and ensuring their livelihoods.

Eligibility:

Rights can be claimed by individuals or communities who have lived in forests for at least three generations (75 years) before 13 December 2005.

Conservation Clause: Critical wildlife habitats within national parks and sanctuaries are to remain inviolate for wildlife conservation.

Authorities Involved:

Gram Sabha: Initiates the determination of individual or community forest rights.
Sub-divisional Level Committee: Examines gram sabha resolutions.
District Level Committee: Grants final approval for forest rights.

Points of Contention

ISFR 2023's claim: For the first time, FRA has been explicitly blamed for forest cover loss.

Ministry of Tribal Affairs' rebuttal:

The report lacks scientific evidence and proper "ground truthing."

The claim could reinforce administrative biases against the implementation of FRA.

FRA only recognizes pre-existing rights and does not legalize fresh encroachments.

The Act does not create new rights that harm ecological balance.

Responses from Civil Society and Official Clarifications

Civil society reaction: More than 150 organizations wrote to the government condemning the ISFR's claim. They accused the Ministry of Environment, Forest and Climate Change (MoEFCC) of undermining FRA through unsubstantiated conclusions.

Environment Ministry's clarification: ISFR 2023 also showed a substantial increase in forest cover, reflecting community-led conservation efforts. The Ministry dismissed the civil society's interpretations as "devoid of merit."

Conclusion

This controversy highlights the complex interplay between environmental conservation and tribal rights. It stresses the need for rigorous scientific evidence before making policy assertions that could impact forest governance and tribal livelihoods. The debate underscores the importance of evidence-based policymaking and better coordination between ministries to ensure sustainable forest management while safeguarding tribal rights under the FRA.

Lessons from the Telangana Blast: Safety, Regulation, and Environmental Impact:

The Telangana Blast Incident

Event:

A powerful explosion occurred at Sigachi Industries, a pharmaceutical factory in Pashamylaram near Hyderabad, flattening a three-storey building.

Casualties:

Of the 143 workers present, 39 lost their lives.

Initial Claims: Sigachi Industries denied that the blast originated from a reactor explosion.

Investigation: A four-member expert committee led by CSIR-IICT emeritus scientist B. Venkateshwar Rao is investigating the cause.

Context: A Part of a Larger Pattern of Pharma Industry Accidents

Previous Major Accidents:

- SB Organics, Sangareddy (2024): 6 deaths
- Anakapalli, Andhra Pradesh (Aug 2024): 17 deaths
- Parawada, Andhra Pradesh (June 2025): 2 deaths

Likely Cause of the Telangana Blast

Initial Theory: Boiling Liquid Expanding Vapour Explosion (BLEVE), later dismissed.

Current Hypothesis: Dust explosion caused by airborne **microcrystalline cellulose (MCC)**, a fine wood pulp powder used in pharma manufacturing.

Dust Explosion Background: Such explosions are well-documented in industries involving fine powders (e.g., flour mills, mining) since as early as 1785 (Turin, Italy).

Process Involved: The factory processed wood slurry into MCC using spray dryers. The MCC powder is highly combustible when suspended in air.

Regulatory and Safety Lapses Highlighted

Lack of Proper Signage: Emergency teams arrived without knowledge of hazardous materials due to missing or incomplete environmental display boards.

Compliance Failure: Both State and Central Pollution Control Boards mandate display of environmental and operational details for guiding disaster response, which Sigachi Industries failed to follow.

Impact: Delays and complications in firefighting and rescue operations increased risks to lives.

Need for Robust Framework: Periodic audits and strict enforcement could improve compliance and emergency readiness.

Implications for the Pharmaceutical Sector

Safety and Brand Trust: Safety lapses erode global trust in India's pharmaceutical manufacturing.

Telangana's Strategic Role:

- Produces 1/3rd of India's pharmaceuticals
- Accounts for 1/5th of pharma exports

Responsible for 1/3rd of global vaccine output

Attracted \$1.49 billion in life sciences investments in 4 years

Home to India's largest biotech incubator concentration (Hyderabad)

Challenges for Smaller Firms: Despite global success, many smaller pharma companies face ongoing safety and quality issues, risking the industry's overall credibility.

U.S. Market and Regulatory Pressure

Market Dependence: India's pharma exports are heavily reliant on the U.S. FDA-regulated market.

Compliance Requirements: Firms must adhere to strict standards under the United States Pharmacopeia-National Formulary.

Concerns:

Regulatory gaps and cost-cutting have led to unsafe production practices in some Indian firms, raising red flags internationally.

Pollution Control and Environmental Concerns

Regulatory Weaknesses: Growth in Telangana's pharma sector driven by permissive zoning and lax enforcement.

Industrial Encroachment: Industrial zones like IDA Pashamylaram are increasingly surrounded by residential areas, raising public health concerns.

Environmental Damage: Toxic chemicals and untreated effluents contaminate soil and water.

Water Pollution: The Musi River ranks 22nd globally for active pharmaceutical ingredient contamination.

Health Impact: Contamination linked to rising antimicrobial resistance — a serious global health threat demanding urgent regulatory action.

The Way Forward for India's Pharmaceutical Sector

Urgency of Reforms: Recent accidents are warning signals requiring a **strong, transparent, and enforceable regulatory framework**.

Balancing Growth and Safety: To maintain India's position as a trusted global pharma

supplier, growth must be aligned with strict safety, environmental, and quality standards.

National Imperative: Regulatory reform is crucial not only for industry success but also for protecting lives, preserving reputation, and ensuring long-term economic resilience.

Tokara Islands

In an unprecedented seismic event, more than 1,000 earthquakes have rattled the Tokara Islands in southern Japan over the past two weeks.

About Tokara Islands

The Tokara Islands are a small archipelago in Japan, south of Kyushu and north of the Amami Islands.

Also known as the Toshima Islands; name preserved in Toshima-mura administrative division.

Consists of seven inhabited islands:

Kuchinoshima, Nakanoshima,
Suwanosejima, Tairajima,
Akusekijima, Kodakarajima, and
Takarajima.

Five uninhabited islands: Gajajima, Kogajajima, Kojima, Kaminonejima, and Yokoatejima.

Toshima covers about 160 kilometers, making it "Japan's longest village."

Nakanoshima is the largest island by area and population.

Mount Otake (979 meters) is the highest mountain in the group, located in northern Nakanoshima.

Climate:

Lies between subtropical and temperate zones.

Average annual temperature: 20°C.

Warm weather with nearly no frost.

Annual rainfall: about 2,700 millimeters.

The islands are located in one of the most seismically active regions in the world.

Onge Tribe

The Andaman and Nicobar Islands administration recently established a **Van Dhan Vikas Kendra** for the Onge tribe at Dugong Creek under the **Pradhan Mantri Janjati Adivasi Nyay Maha Abhiyan**.

Objective: To make the Onge tribe self-sustainable through coconut-based products.

About the Onge Tribe:

One of India's most primitive tribes, belonging to the **Negrito racial stock**.

Inhabit **Little Andaman Island**, the southernmost island of the Andaman archipelago.

Semi-nomadic and fully dependent on natural food sources.

Religion: Simple **animism**; no ceremonial worship or propitiation practiced.

Believe in various spirits: wood, sea, disease, storm, and ancestors.

Language: Unique Onge language with **no script**.

Cultural Practice: Teeth are chewed with bark to impart a **red color** (white teeth symbolize death).

Body decoration with **white and ochre clay**, especially on special occasions.

Historically, until the 1940s, they were the sole permanent inhabitants of Little Andaman (called **Goubalambabey** by Onges).

Currently, they share the 732 sq km island with ~17,000 settlers from India, Bangladesh, and Nicobar Islands.

Population decline: From 670 (1900) to only 96 members in early 2000s, due to colonisation and settler contact.

In 1976, Onges were settled in a reserve at **Dugong Creek** for hygienic living and protection.

Their current living area is a small fraction of their original territory.

Notably, the Onge tribe suffers from **high infertility rates**, affecting over 40% of married couples, making them one of the world's least prolific communities.

Dudhwa Tiger Reserve (DTR)

Recent Update: The leopard population in Dudhwa Tiger Reserve has increased by nearly 199% since 2022.

About Dudhwa Tiger Reserve:

Location: Situated in the Terai region of Uttar Pradesh along the India-Nepal border.

Components: Comprises Dudhwa National Park and two wildlife sanctuaries — Katarniaghat and Kishanpur.

Habitat: Typical Tarai-Bhabar ecosystem of the upper Gangetic plains with vast alluvial plains.

Rivers: Includes Mohana, Suheli, Joraha, and Nagro rivers.

Fauna: Hosts species such as tigers, leopards, rhinoceros, swamp deer, elephants, sambar, hog deer, and sloth bears.

Wildlife Institute of India (WII): Strengthening Wildlife Research and Conservation

Recent Update

A review by the **Wildlife Institute of India (WII)** has called for integrated scientific, infrastructural, and community-based efforts to enhance the ecological management of **wildlife sanctuaries in Andhra Pradesh**.

Overview of WII

Established: In 1982

Governing Body: Autonomous institution under the **Ministry of Environment, Forest and Climate Change (MoEFCC)**, Government of India.

Location: Dehradun, Uttarakhand

Mandate and Role

Recognised as a **centre of excellence in wildlife science, conservation, and training**.

Provides expert input on wildlife policy, conservation planning, and field research.

Research and Training Areas

Key Domains:

- Biodiversity and endangered species
- Wildlife forensics and management
- Eco-development and community engagement
- Climate change impact studies
- Spatial and ecological modelling

Activities:

- Offers **academic programs** and **capacity-building training** for conservation professionals.
- Engages in **collaborative projects** with international conservation bodies.

Objectives of WII

- Build a robust **scientific foundation** for wildlife resource management.
- Train professionals at various levels in **wildlife conservation** techniques.
- Develop **India-specific management tools** and strategies.
- Provide technical support and **advice on wildlife-related challenges**.

Establish itself as a **regional hub** for wildlife science and natural resource conservation in South Asia.

Satkosia Tiger Reserve

Recent Development: The Odisha government recently issued a tender for the construction of a high-level bridge over the Mahanadi River, near the ecologically sensitive Satkosia Tiger Reserve, sparking fresh controversy.

About Satkosia Tiger Reserve:

Location: Situated centrally in Odisha, the reserve spans four districts: Angul, Cuttack, Boudh, and Nayagarh.

It comprises two adjoining sanctuaries: Baisipalli Sanctuary and Satkosia Gorge Sanctuary.

The reserve is part of the Mahanadi Elephant Reserve.

Geographical and Ecological Significance:

Satkosia is unique as the convergence point of two biogeographic regions in India: the Deccan Peninsula and the Eastern Ghats.

The terrain is hilly with moderate to steep slopes and narrow valleys.

The Mahanadi River runs through the valley in the reserve's center.

Elevation ranges from 37 meters at Katrang to 932 meters at Sunakhania.

Vegetation and Flora:

The forest predominantly consists of North Indian tropical moist deciduous forests and moist peninsular low-level sal forests. The main tree species is sal, often found in dense clusters.

Other notable species include Asan (*Terminalia alata*), Dhaura (*Anogeissus latifolia*), Bamboo (*Dendrocalamus strictus*), and Simal (*Bombax ceiba*).

Fauna:

The reserve is home to flagship species such as tigers, leopards, elephants, spotted deer, sambar, chowsingha, barking deer, bison, wild dogs, sloth bears, jackals, giant squirrels, and porcupines.

It also serves as the natural habitat for two endangered reptiles: the freshwater crocodile and the gharial.

Seine River

Recent Update: For the first time since 1923, swimmers officially returned to the River Seine on

Saturday, marking the reopening of this iconic French waterway for public bathing after more than a century.

About the Seine River:

The Seine is France's second-longest river, stretching 775 kilometers, after the Loire. It drains northern France through the Paris Basin, which covers about 79,000 square kilometers.

Course and Geography:

The river originates at an elevation of 446 meters in Burgundy, near Dijon, a famous wine-producing region.

Near Paris, the Seine is joined by one of its largest tributaries, the Marne River, on its right bank.

The river flows through Paris for roughly 13 kilometers from west to east.

It empties into the English Channel, the arm of the Atlantic Ocean separating northern France and southern England.

River Sections: The Seine's course is divided into five distinct sections:

Small Seine (Petite Seine): From the source to Montereau-Fault-Yonne.

Upper Seine (Haute Seine): From Montereau-Fault-Yonne to Paris.

Paris Waterway (Traversée de Paris): Passing through Paris.

Lower Seine (Basse Seine): From Paris to Rouen.

Maritime Seine (Seine-Maritime): From Rouen to the river's estuary at Honfleur and Le Havre, entering the English Channel.

Additional Details:

The basin mostly consists of permeable rocks, which help reduce flood risks by absorbing water.

Annual rainfall is moderate, ranging between 650 to 750 millimeters.

Approximately 62% of the basin is used for agriculture, hosting 25% of France's agricultural output and about 25–30% of the country's industrial activities.

The Seine is historically significant in Europe and supports the majority of France's inland waterway traffic.

Pethia dibrugarhensis**Discovery:**

Scientists have identified a new species of cyprinid fish in the Brahmaputra River near

Maijan, Dibrugarh, naming it *Pethia dibrugarhensis*.

About Pethia dibrugarhensis:

It belongs to the Cyprinidae family and is classified as a barb fish.

Habitat: Found in moderately fast-flowing parts of the river with substrates of mud, sand, and stones. It coexists with other indigenous small fish species.

Distinctive Features:

Characterized by an incomplete lateral line.

Displays a prominent black blotch extending on both the dorsal and ventral sides of the caudal peduncle (the narrow part of the fish near the tail).

Lacks humeral marks (shoulder spots) and barbels (whisker-like sensory organs).

What Are Barb Fishes?

Barbs are a diverse group of freshwater fishes within the carp family (Cyprinidae).

They are native across Europe, Africa, and Asia.

Typical features include one or more pairs of barbels near the mouth and large, shiny scales.

Kashmir's Unprecedented Heatwave: Analyzing Climatic Shifts and Environmental Implications**Introduction**

On July 5, 2025, the Kashmir Valley experienced its highest recorded daytime temperature in over seven decades, with Pahalgam registering its hottest day ever. This extreme event follows the warmest June in the region in nearly 50 years, signaling a significant and concerning deviation from Kashmir's historical climate patterns.

Climatic Profile of the Kashmir Valley

Kashmir traditionally exhibits a temperate climate, shaped by four distinct seasons:

Spring (March–May) and **Autumn (September–November)** are typically mild and conducive to agriculture and tourism.

Winter (December–February) is characterized by severe cold, frequent snowfall, and sub-zero temperatures, especially in the high-altitude regions.

Summer (June–August), in contrast to much of India, remains relatively moderate due to the frequent influence of western

disturbances that bring periodic rainfall, providing natural atmospheric cooling.

This equilibrium, however, appears to be deteriorating in the face of rising heat and declining precipitation.

Rising Heat and Climatic Disruptions

Recent climatic data point to a pronounced warming trend in the Valley:

June 2025 was the hottest in nearly half a century, with average temperatures approximately **3°C above normal**.

On **July 5, Srinagar recorded 37.4°C**, the **highest July temperature in over 70 years** and the **third-highest ever** in the city's history.

Unlike previous years where heat spikes were infrequent and short-lived, 2024 and 2025 have witnessed **persistent elevation in both maximum and minimum temperatures**, suggesting a systemic climatic alteration rather than a temporary anomaly.

Underlying Causes of Rising Temperatures in Kashmir

The persistent increase in temperatures across the Kashmir Valley can be attributed to a combination of global and regional factors:

Global Climate Change: Anthropogenic global warming continues to elevate baseline temperatures, with local manifestations becoming more severe.

Disrupted Weather Patterns: Historically, temperatures exceeding **35°C** in the Valley would be followed by rainfall, offering relief. However, extended **dry spells** now prevent this cooling, intensifying heat stress.

Reduced Snowfall and Accelerated Melt:

There has been a **significant decline in winter snowfall**, with snow cover retreating earlier in the year.

By March, most snow has melted, leaving **mountain slopes bare**, thereby reducing natural albedo-driven cooling and decreasing water vapor in the atmosphere.

Urban Heat Islands (UHIs):

Urbanization in cities like **Srinagar** has exacerbated the **UHI effect**, wherein built-up areas retain and radiate more heat than surrounding rural regions.

The **loss of vegetation and water bodies**, combined with increased **concretisation**, vehicular emissions, and reduced airflow, has intensified local warming.

Urban Heat Islands: Amplifying the Heat in Srinagar

Urban Heat Islands (UHIs) represent localized zones of elevated temperature caused by dense infrastructure, limited vegetation, and anthropogenic heat emissions. In Srinagar:

Rapid urban expansion has replaced natural landscapes with heat-retaining surfaces such as concrete and asphalt.

Green cover and water bodies, which naturally moderate temperature, have declined drastically.

Increased **vehicular traffic** and **industrial activity** contribute further to ambient heat levels.

Consequently, urban areas experience disproportionately higher temperatures compared to rural zones, exacerbating the public health and ecological impacts of climate change.

Conclusion

The record-breaking temperatures in Kashmir underscore a critical shift in the region's climatic dynamics. What was once considered a naturally moderated summer climate is now giving way to prolonged heat events, disrupted precipitation cycles, and intensified urban warming. The convergence of global climate change, regional environmental degradation, and urbanization-induced heat amplification demands urgent policy interventions focused on climate adaptation, urban planning, ecological restoration, and emission reduction.

Changing Patterns of Riverine Floods in India: Insights from IIT Delhi and IIT Roorkee Study (1970–2010)

Context

A joint study conducted by **IIT Delhi and IIT Roorkee**, analysing data from over **170 river monitoring stations** across India, reveals significant spatial and temporal shifts in **flood magnitude, timing, and intensity** between **1970 and 2010**. The findings underscore the influence of climatic variability and anthropogenic factors on India's evolving hydrological regime.

Key Findings

1. Decline in Flood Magnitude

Approximately **74% of monitored stations** recorded a **decrease in flood magnitude**, while 26% showed an increase.

Larger catchments exhibited a more prominent decline, suggesting widespread hydrological alterations.

Regional Trends:

Western and Central Ganga Basin:

Witnessed a **17% per decade decline** in monsoonal flood magnitudes.

Attributed to **reduced monsoon precipitation and soil moisture levels**.

Narmada Basin:

Experienced a **consistent decline in flood magnitude**, largely due to **dam construction and flow regulation**.

Marathwada Region:

Showed a **reduction in river flow by 8% during monsoon and 31% in the pre-monsoon season**, reflecting broader water stress patterns.

2. Increase in Pre-Monsoon Flood Intensity

The **Malabar Coast** (Kerala and parts of Tamil Nadu) has recorded an **8% per decade increase** in pre-monsoon flood intensity.

Rivers such as **Chaliyar, Periyar, and Bharathapuzha** are particularly affected.

This trend correlates with a **rise in pre-monsoon rainfall**, likely driven by localised climate change dynamics.

3. Shifts in Flood Timing

Upper Ganga Basin: Tendency toward **delayed flooding** during the monsoon.

Central India: Observes **earlier onset of floods**, likely due to shifting precipitation patterns.

Southern India: Generally experiences **later flooding**, suggesting seasonal rearrangement of rainfall.

Implications for Water Management and Infrastructure

1. Reservoir Operations and Water Security

Declining flood magnitudes may translate into **lower reservoir inflows**, affecting **irrigation, potable water supply, and hydropower generation**.

Strategic recalibration of reservoir operation protocols is necessary to optimise storage and release.

2. Flood Risk Management and Adaptation

The shift toward **pre-monsoon and off-season floods** necessitates an **overhaul of flood management frameworks**, with an emphasis on:

Early warning systems

Green buffers and riparian restoration

Climate-resilient infrastructure and urban planning

Real-time river basin monitoring

Conclusion

The study provides compelling evidence that **India's riverine flood patterns are undergoing complex transformations** in response to both natural and human-induced changes. These findings call for **adaptive, region-specific water management policies** that integrate **climate resilience, ecological conservation, and technological innovation**. As flood regimes shift, India must proactively align its hydrological governance with the emerging realities of a **warming and increasingly erratic climate system**.

Barilius imphalensis: New Freshwater Fish Species Discovered in Manipur

Discovery:

A new species of freshwater fish, named *Barilius imphalensis*, has been identified in the Imphal River of Manipur.

Key Details:

Locally known as "Ngawa" in the Meitei language.

Belongs to the Danionidae family, subfamily Chedrinae, commonly known as danionid fishes, which are known for their bright patterns and ecological role.

Endemic to the Imphal River, this species shows significant differences from related fish found elsewhere in India and Southeast Asia.

Habitat:

Inhabits clear, shallow river waters typically 3 to 5 feet deep.

Prefers riverbeds made up of gravel and cobbles.

The riverbanks where it lives are lined with dense vegetation, providing a suitable ecological niche.

Helgoland: Cradle of Quantum Theory

Location:

Helgoland is a small island made up of red-sandstone cliffs situated in the German Bay (Deutsche Bucht) of the North Sea. Although it spans less than one square kilometre, it historically served as a naval fortress.

Scientific Importance: Today, Helgoland is recognized by physicists as the origin place of quantum theory.

In June 1925, Werner Heisenberg, then 23 years old and suffering from hay fever in Göttingen, traveled to Helgoland to seek relief.

During his stay, he abandoned the classical notion that electrons revolve around an atom's nucleus. Instead, he focused exclusively on experimental evidence — the frequencies and intensities of light absorbed or emitted by atoms.

To organize this data, he arranged it into grids called matrices.

Heisenberg found that the multiplication of these matrices was non-commutative, meaning the order of multiplication mattered: position times momentum did not equal momentum times position.

This crucial discovery led to the formulation of equations that perfectly matched the hydrogen atom's spectral lines, marking the completion of the first version of quantum mechanics, later known as matrix mechanics.

Maize

Context:

The Union Minister for Agriculture and Farmers' Welfare emphasized the strategic value of **maize** at the **India Maize Summit 2025**.

About Maize

Crop Type: Kharif crop, used as both **food and fodder**

Global Recognition: Known as the "**queen of cereals**" due to its **highest genetic yield potential**

Soil Requirements:

Prefers **well-drained sandy loam to silt loam**

Grows well in **old alluvial soil**

Ideal **pH range:** 5.5 to 7.5

Climatic Conditions:

Optimal temperature: **21°C to 27°C**

Major Producing States in India:

Karnataka, Madhya Pradesh, Bihar,
Tamil Nadu, Telangana,
Maharashtra, Andhra Pradesh

Other Leading Producers Globally:

United States, Brazil, China, Russia, Canada, Mexico

Guadalupe River

Context:

Heavy rains triggered severe **floodings** along the **Guadalupe River** in **Central Texas**, causing significant damage.

About Guadalupe River

Origin: Begins from the **North and South Forks** in **Kerr County, Texas**

Mouth: Empties into **San Antonio Bay**, which connects to the **Gulf of Mexico**

Associated Water Bodies:

Canyon Reservoir

Edwards Aquifer (San Antonio section in the Balcones Fault Zone)

Flooding Zone:

The river lies in a region commonly referred to as "**Flash Flood Alley**", marked by:

Steep terrain

Shallow soils

High rainfall

Known for sudden and destructive flooding events

Panna Tiger Reserve, Madhya Pradesh

Recent Development:

The Panna Tiger Reserve in Madhya Pradesh recently made headlines following the death of 'Vatsala', reputedly the oldest elephant in Asia, who lived to be over 100 years old. Her longevity highlights the conservation standards maintained within the reserve.

Geographical Location and Significance:

Panna Tiger Reserve is situated in the northern region of Madhya Pradesh, specifically within the Vindhyan mountain range. Spanning an area of 542 square kilometers, it stands as the sole tiger reserve within the Bundelkhand region. Biogeographically, it belongs to the Deccan Peninsula Zone and the Central Highlands Biotic Province.

Historical Status:

The reserve was officially designated as a Project Tiger Reserve by the Government of India in 1994, under the broader initiative aimed at tiger conservation.

Topography and Landscape:

Panna is defined by its distinctive "table-top" landform, composed of expansive plateaus interspersed with deep gorges. The terrain features two parallel plateaus that extend in a southwest to northeast direction. The Ken River, a significant tributary, traverses the reserve from south to north, contributing to its ecological richness.

Archaeological and Cultural Significance:

Scattered across the reserve are prehistoric rock paintings, some dating back two millennia. The area is also culturally rich, being inhabited by indigenous tribes such as the Baiga and Gond communities, who maintain vibrant traditions and sustainable living practices.

Floral Diversity:

The reserve hosts predominantly dry deciduous forests, intermingled with patches of grassland. The northern boundary is bordered by teak-dominated forests, while the eastern part contains a mixed forest of teak and Kardhai. This area marks the northernmost natural limit of *Tectona grandis* (teak). The species *Acacia catechu* is notably prevalent on the arid and rugged slopes of the plateau.

Faunal Diversity:

Panna is home to a thriving population of apex predators such as the Bengal tiger (*Panthera tigris*), sloth bear (*Melursus ursinus*), leopard (*Panthera pardus*), and striped hyena (*Hyaena hyaena*). Other carnivores include the jackal, Indian wolf, wild dog, jungle cat, and the elusive rusty-spotted cat. This rich faunal presence underscores the reserve's ecological importance in central India.

Nyangai Island

Nyangai Island, a small landmass off the coast of Sierra Leone, has experienced significant erosion, resulting in the loss of approximately two-thirds of its surface area within the last decade. Presently, the island measures roughly 200 metres in length and 100 metres in width (approximately 650 by 330 feet).

Geographic and Historical Context

Nyangai Island is part of the Turtle Islands archipelago and is characterized by its low-lying topography. Positioned along a coastline exposed to strong ocean currents, the island has historically been vulnerable to erosion. Traditionally, it has served as a vital hub for trade, agriculture, fishing, and maritime transportation.

Additionally, Nyangai Island is known for its historical significance, particularly its ruins associated with the transatlantic slave trade, which have also made it a notable tourist destination.

Key Facts about Sierra Leone

Sierra Leone is a tropical country located in West Africa along the Atlantic Ocean. It shares borders with Guinea to the north and east, Liberia to the south, and the Atlantic Ocean to the west. The country's landscape primarily consists of lightly wooded hills, with extensive mangrove swamps concentrated along its coastal regions. Major rivers flowing through the nation include the Rokel, Taia, Moa, and Sewa Rivers.

Great Hornbill (*Buceros bicornis*)

A rare sighting of the Great Hornbill, Kerala's state bird, was recently reported in the coastal region of Kakkampara near Ezhimala in Kannur—a notable occurrence given the species' typical forested habitat.

Taxonomy and Distribution

The Great Hornbill, also referred to as the concave-casqued hornbill or great Indian hornbill, is a large avian species belonging to the hornbill family. It is distributed across the Indian subcontinent and Southeast Asia. Within the subcontinent, populations are primarily confined to forested areas of the Western Ghats and the Himalayan foothills.

Habitat and Physical Characteristics

These birds inhabit wet evergreen and deciduous old-growth forests at elevations ranging from 600 to 2,000 meters. For nesting, they select tall trees that extend above the forest canopy. Adults range from 95 to 120 centimeters in length, with a wingspan between 151 and 178 centimeters, and weigh approximately 3 kilograms on average. Their plumage is predominantly black with white markings on the neck, abdomen, and tail, which is distinguished by a black subterminal band.

One distinctive feature of the species is the casque, a hollow structure atop the bill, which males may use in combat and courtship. Both sexes have prominent eyelashes; however, males display red irises, whereas females have white irises,

and males typically possess larger bills and casques.

Diet and Conservation Status

The Great Hornbill is primarily frugivorous but opportunistically preys on small mammals, reptiles, and birds. According to the IUCN Red List, the species is classified as Vulnerable due to habitat loss and other threats.

Kharai Camels

A recent incident reported a herd of 33 rare Kharai camels from Singach village in Gujarat being caught in the Arabian Sea tide near Jamnagar while grazing on mangrove islands.

Overview of Kharai Camels

The Kharai camel is a unique and rare breed native to Gujarat, distinguished by its exceptional ability to swim and forage in saline coastal and marshy environments. It is recognized as India's ninth official camel breed and is especially adapted to survive and thrive in the saline habitats along the Kutch coastline.

Habitat and Distribution

These camels are predominantly found in the Kutch region of Gujarat, including areas such as Bhachau, Abdasa, Lakhpat, and parts of Devbhoomi Dwarka and Jamnagar. The total population is approximately 4,000 animals in Gujarat, with around 2,000 residing in the coastal Kutch area. They habitually inhabit mangrove islands and demonstrate remarkable swimming skills by crossing shallow sea waters to access grazing grounds.

Cultural and Ethnographic Significance

The Kharai camel holds significant cultural importance, particularly among the Rabari and Fakirani Jat communities, who have traditionally managed these animals through indigenous pastoral systems. The Maldhari community, a pastoralist group in Gujarat, is known for rearing Kharai camels alongside cattle and goats in Kutch and Gir forest regions. The term "Kharai" is derived from the Gujarati word "khara," meaning salty, reflecting the camel's adaptation to its saline environment.

Key Biological and Ecological Characteristics

Swimming Ability: Capable of swimming up to 3 kilometers in the Arabian Sea to reach mangrove grazing zones.

Physiological Adaptation: Unique among camel breeds for its ability to subsist on saline vegetation.

Physical Traits: A dromedary (single-humped) breed, muscular and weighing up to 500 kilograms.

Seasonal Behavior: Undertakes monsoon migrations to mangrove islands, often spending weeks grazing.

Diet: Primarily feeds on mangrove species, an uncommon dietary specialization among camelids.

Conservation and Ecological Importance

The Kharai camel plays a critical ecological role by maintaining the balance of fragile coastal ecosystems through sustainable grazing practices. It is a living symbol of indigenous pastoral livelihoods and cultural heritage, embodying the resilience of nomadic pastoral communities. Additionally, this breed is increasingly recognized as a climate-resilient livestock species, significant for advancing climate-smart agricultural practices in vulnerable coastal regions.

India's Rare Earth Element (REE) Reserves: Status and Challenges

Key Findings from the CareEdge Report

India possesses **8% of the world's total REE reserves**, making it the **third-largest holder globally**.

Despite this, India contributes **less than 1% to global REE mining**, highlighting a significant gap between potential and output.

In contrast, **China dominates** the REE sector with:

- 49% of global reserves**
- 69% of global mining**
- 90% of REE refining capacity**

Distribution of REE in India

Primary Source: Monazite sands, which also contain thorium.

Major Deposits: Found predominantly in **coastal states:**

- Tamil Nadu
- Kerala
- Andhra Pradesh
- Odisha

(As per the 2023 Indian Minerals Yearbook)

Why India Lags in REE Mining and Processing

1. Technical and Environmental Challenges

Radioactivity: REEs are often bound with radioactive elements, making **extraction complex, time-consuming, and costly**.

Regulations: Coastal mining is **restricted by Coastal Regulation Zone (CRZ) norms**, limiting access to rich deposits.

2. Incomplete Industrial Value Chain

India has capabilities to **mine, separate, and refine REEs into oxides**, and to some extent, extract metals.

However, it **lacks infrastructure** for producing **intermediate and end products** like alloys and permanent magnets — essential for high-tech applications.

3. Limited REE Type Availability

India primarily holds **Light Rare Earth Elements (LREEs)**.

Heavy Rare Earth Elements (HREEs), which are more valuable, are **not present in extractable quantities**.

4. Institutional Limitation

Indian Rare Earths Limited (IREL) is the sole entity authorized to process monazite and produce RE compounds in the country.

Hazardous and Other Wastes (Management and Transboundary Movement) Amendment Rules, 2025

Overview

Issued by: Ministry of Environment, Forest and Climate Change

Effective Date: From April 1, 2026

Introduces a detailed **Extended Producer Responsibility (EPR)** framework for **scrap of non-ferrous metals** such as **aluminium, copper, zinc**, and their alloys.

Key Features of EPR for Non-Ferrous Metal Scrap

Recycling Targets:

Starts at **10% in 2026–27**

Gradually increases to **75% by 2032–33**

EPR Certificate:

Issued by: Central Pollution Control Board (CPCB) via a digital portal

Validity: Two years from the end of the financial year in which it is generated

Significance of the EPR Framework

Promotes Circular Economy: Encourages resource efficiency and waste minimization.

Facilitates Industry Transition: Gradual increase in targets allows adaptation time.

Expands Scope: Applies to a broad range of products and materials.

Builds on Existing Policy: The EPR approach was first introduced in India under the **E-Waste (Management and Handling) Rules, 2011**.

Carrying Capacity

Recent Initiative

The **Uttarakhand government** has initiated studies to assess the **carrying capacity of urban areas** in the state.

Objective: To address **ecological imbalances** and ensure **sustainable urban planning** in the fragile Himalayan ecosystem.

What is Carrying Capacity?

Definition: Carrying capacity refers to the **maximum population size** or community an ecosystem can **sustain indefinitely** using the available natural resources and ecosystem services.

Key Determinants

Availability of Resources: Water, food, energy, and land within the ecosystem.

Population Size: The total number of individuals or communities residing in the ecosystem.

Resource Consumption per Individual: The rate at which each person or group utilizes resources.

Carbon Border Adjustment Mechanism (CBAM)

Recent Development

The **BRICS nations** have formally **criticized and opposed** the European Union's CBAM, labeling it a **unilateral and discriminatory trade barrier**.

What is CBAM?

Definition: CBAM is a proposed **carbon border tax** by the European Union (EU) designed to **penalize imports** of carbon-intensive goods.

Purpose

To **assign a carbon price** to emissions associated with the **production of goods outside the EU**.

Aims to:

Prevent carbon leakage (companies relocating to countries with looser climate regulations).

Promote cleaner industrial practices globally.

Implementation Timeline

Transitional Phase: 2023–2025

Full Enforcement: Begins from 2026
Catastrophe Bonds: A Novel Financial Strategy for Disaster Resilience in India**Introduction**

India is facing an increasing threat from natural disasters due to climate change, which is intensifying the frequency and severity of events such as floods, cyclones, and earthquakes. In light of limited traditional insurance coverage—particularly for individuals and small businesses—India is considering catastrophe bonds (cat bonds) as an innovative financial solution to strengthen disaster risk financing and enhance resilience.

What are Catastrophe Bonds?

Catastrophe bonds are financial instruments that blend characteristics of insurance and debt. They allow governments or other at-risk entities to transfer specific natural disaster risks to investors in the global capital market.

Mechanism: If a predefined disaster occurs, investors forfeit part or all of their principal, which is redirected toward disaster relief and reconstruction. If no event occurs, the investors receive their capital back with a higher-than-average interest (coupon) rate.

Benefits: These instruments make a country's disaster risk investable, attracting capital from outside the traditional insurance market. They reduce counterparty risk and ensure rapid disbursement of funds in the aftermath of a disaster.

Stakeholders and Operational Model

Catastrophe bonds typically involve multiple players:

Sponsors: Usually sovereign governments who pay premiums to issue the bond.

Issuing Platforms: Intermediaries like the World Bank or Asian Development Bank facilitate bond issuance and reduce risk.

Investors: Pension funds, hedge funds, and institutional investors are drawn to cat bonds for their high yields and low correlation with traditional market risks.

Risk factors and coupon rates: These vary depending on the disaster type and probability. For instance, bonds covering earthquakes may have lower premiums than those covering more frequent events like cyclones.

4. Global Trends and Investment Appeal

Introduced in the late 1990s after major U.S. hurricanes, catastrophe bonds have gained global traction, with over \$180 billion issued to date and about \$50 billion outstanding.

Diversification Advantage: Since natural disasters are uncorrelated with financial market movements, cat bonds offer portfolio diversification—a principle highlighted by Nobel Laureate Harry Markowitz.

Attractive Risk-Return Profile: Their unique characteristics provide stability during periods of financial market volatility.

Relevance for India

India's vulnerability to climate-related disasters is increasing, while insurance penetration remains low. This leaves communities exposed and stretches public resources for disaster recovery.

Cat bonds could help India:

Secure pre-arranged financing for emergency relief and reconstruction.

Utilize its strong sovereign credit standing to access capital on better terms.

Shift the financial burden of disasters from the government to global investors.

India's current annual disaster risk mitigation budget of ₹15,000 crore (\$1.8 billion) can be strategically used to support lower bond premiums.

Regional Potential: A South Asian Cat Bond Framework

India could take a leadership role in creating a regional catastrophe bond platform across South Asia, enabling countries to:

Pool Risks: Share exposure to disasters such as earthquakes, tsunamis, and cyclones across nations like Nepal, Bhutan, Bangladesh, Sri Lanka, and the Maldives.

Lower Premiums: Collective risk sharing could make bonds more affordable.

Enhance Preparedness: Promote regional financial resilience and quicker recovery post-disaster.

Challenges and Strategic Considerations

Despite their benefits, cat bonds come with certain challenges:

Trigger Sensitivity: Rigid payout conditions may result in no disbursement even when severe damage occurs just below the threshold.

Perception of Wasted Costs: If no disaster occurs during the bond's tenure,

governments may see premiums as sunk costs.

To address these, India should focus on:

Transparent evaluation of cat bonds vs. historical disaster recovery costs.

Designing flexible and relevant payout triggers.

Collaborating with credible partners for bond structuring, risk modeling, and management.

Reforming the UNFCCC: Challenges, Criticisms, and the Road Ahead**Introduction**

The United Nations Framework Convention on Climate Change (UNFCCC) is facing a growing credibility crisis. Despite decades of negotiations, many believe that it has failed to deliver meaningful progress—particularly in advancing climate justice for developing countries. This article examines structural shortcomings of the UNFCCC, recent criticisms, and reform efforts led by Brazil in the run-up to COP30.

The UNFCCC: Purpose and Evolution

Established in 1992 at the Rio Earth Summit, the UNFCCC is an international treaty aimed at limiting dangerous human interference with the climate system by reducing greenhouse gas emissions. It came into force in 1994 and, as of 2022, includes 198 parties. The Convention is managed by a Secretariat based in Bonn, Germany, and governed by the annual Conference of the Parties (COP), its highest decision-making body.

The Crisis of Credibility**Failure to Deliver Climate Justice**

Developed nations have consistently fallen short on emissions reductions and financial pledges.

Developing countries, particularly small island states and climate-vulnerable nations, feel excluded from decision-making processes and burdened by broken promises.

Impact of U.S. Withdrawal

The temporary exit of the U.S. under the Trump administration significantly weakened trust in the process.

Many now view the UNFCCC negotiations as slow-moving and disconnected from real-world climate urgency.

The Bonn Meeting and Brazil's Leadership Ahead of COP30**Bonn Climate Conference (June 2025)**

Held annually to prepare for the main COP negotiations.

This year's focus: restoring faith in the multilateral climate process ahead of COP30.

Brazil's Reform Agenda

As the host of COP30, Brazil is spearheading reform with a proposal outlining 30 ideas to streamline and democratize negotiations.

Aims include:

More efficient sessions

Reduced influence of powerful, fossil-fuel-reliant nations

Improved access and voice for developing countries

Proposed Reforms to the UNFCCC Process**Structural and Procedural Reforms**

Streamlining negotiations by eliminating repetitive agenda items and shortening timelines.

Limiting delegation sizes to prevent dominance by wealthier countries with large teams.

Hosting Restrictions

Proposal to disallow countries with poor climate records or heavy fossil fuel reliance from hosting COPs.

This comes in response to criticism over recent hosts like the UAE (COP28) and Azerbaijan (COP29).

Integrating Climate into Broader Institutions

Brazil proposes involving other global institutions (e.g., UN bodies, financial institutions) to mainstream climate discussions and speed up implementation.

Calls for complementary mechanisms outside the UNFCCC to bypass slow consensus-building.

The Climate Finance Gap**Ongoing Financial Shortfall**

Developed countries pledged \$100 billion annually (from 2020) to help developing nations transition and adapt to climate change.

However, the new pledge of \$300 billion per year from 2035, made at the Baku meeting, falls far short of the estimated \$1.3 trillion needed annually.

Demands from Developing Nations

Countries from the Global South, including the BRICS bloc, are calling for:

Urgent increases in accessible, predictable, and long-term climate finance

A binding decision on a new global climate finance goal

Civil Society's Role and Demands

NGOs and civil society organizations are pushing for greater transparency and inclusivity in negotiations.

They are advocating for limits on the influence of fossil fuel corporations and for restructuring the format of COP meetings to be more people- and planet-focused.

Conclusion

Meaningful reform of the UNFCCC process remains a complex and uphill task due to deep-seated divisions and institutional inertia. Still, Brazil's proactive stance and the growing chorus of demands from civil society and developing nations mark a turning point in the debate. While large-scale structural changes may not happen quickly, these efforts represent crucial momentum toward a more just, inclusive, and effective global climate governance framework.

Global Study on Banning Problematic Plastics: Trillions in Savings and Environmental Gains Context

A new global study commissioned by the **World Wide Fund for Nature (WWF)** and conducted by **Earth Action** reveals that eliminating harmful plastic products could generate **up to \$8 trillion in global savings** between 2025 and 2040. The study strengthens the case for urgent policy action ahead of the Global Plastics Treaty negotiations.

About the Study

Commissioned by: World Wide Fund for Nature (WWF)

Conducted by: Earth Action (EA)

Data Source: *Plasteax* dataset, a global plastic-use intelligence tool

Objective: Evaluate the **economic and environmental impacts** of banning or phasing out the most damaging plastic products globally.

Key Findings

Trillions in Global Savings

Immediate global ban: Could result in **up to \$8 trillion** in net savings by 2040.

Phased ban model: Yields **\$7 trillion** in savings.

Staggered (gradual) phase-out: Still delivers **\$4.7 trillion** in benefits.

These savings stem from avoided health costs, environmental damage, and waste management expenses.

Plastics Identified as "Problematic"

Expanded polystyrene

Polyvinyl chloride (PVC)

Polystyrene packaging

Common single-use items such as **plastic straws, cotton buds, cutlery, and stirrers**

Environmental Benefits

Plastic use reduction: 173–224 million tonnes

Cut in mismanaged waste: 51–74 million tonnes

These figures reflect significant reductions in marine litter, microplastic pollution, and ecosystem damage.

Economic Impacts of Inaction

Continuing with **business-as-usual plastic consumption** would cost the world **over \$10 trillion** by 2040.

In contrast, a **ban scenario** would cost only **\$2 trillion**, while saving **\$50 billion** in global waste management costs alone.

Private Sector Implications

Transitioning away from harmful plastics would cost businesses an estimated **\$143 million**.

However, this short-term investment is offset by **long-term economic and environmental gains**, along with **emerging opportunities in sustainable packaging markets**.

Conclusion

The Earth Action study commissioned by WWF makes a compelling case for **immediate global action** against harmful plastics. It shows that banning or phasing out high-risk plastic products is not only environmentally essential but also **economically smart**. With the potential to save trillions and prevent millions of tonnes of pollution, the findings offer clear guidance for policymakers, industry leaders, and negotiators working toward a **Global Plastics Treaty** and a **circular economy future**.

Draft Petroleum & Natural Gas Rules, 2025: A Modern Blueprint for India's Energy Future

Context

The Ministry of Petroleum & Natural Gas has unveiled the **Draft Petroleum & Natural Gas Rules, 2025**, seeking to overhaul India's outdated regulatory framework for upstream oil and gas operations. These draft rules aim to align the sector with global energy transition goals, enhance investor confidence, and support India's dual objectives of energy security and decarbonisation.

Key Features of the Draft Rules

Stabilisation Clause: Ensures fiscal predictability for investors by compensating license holders for any future increases in taxes or royalties.

Third-Party Infrastructure Access: Lessees must disclose underutilised capacity in pipelines and production facilities, allowing regulated third-party access to optimise infrastructure usage and reduce duplication.

Renewable Integration Within Oilfields: Permits co-development of **solar, wind, hydrogen, and geothermal** projects on oilfield sites—supporting hybrid energy ecosystems.

Enhanced Environmental Norms: Introduces strict mandates for:

- Greenhouse gas (GHG) emissions monitoring
- Carbon Capture and Storage (CCS) frameworks

- Site restoration funds with monitoring for **five years post-closure**

Data Ownership and Confidentiality: All operational data generated will be **owned by the Government of India**. External usage will require prior approval, and data will remain confidential for up to seven years.

Dedicated Adjudication Mechanism: A new authority (at Joint Secretary level) will handle **dispute resolution, compliance enforcement, and penalty decisions**.

Contractual Modernisation: Revised formats of the **Model Revenue Sharing Contract (MRSC)** and **Petroleum Lease** to accommodate:

- Lease mergers
- Reservoir unitisation
- Block relinquishments

Legal Replacement: The draft rules are set to replace the **Petroleum Concession Rules (1949)** and **Petroleum and Natural Gas Rules (1959)**, aligning the sector with amendments to the **Oilfields (Regulation and Development) Act, 1948**.

Why These Reforms Matter

Energy Security Backbone: The oil and gas sector supplies over **35% of India's energy needs**, making it critical for transportation, industry, and strategic reserves.

Economic Driver: A major source of **employment, foreign direct investment (FDI)**, and public revenue through royalties, taxes, and dividends from PSUs.

Strategic Diplomacy: Supports India's international engagement through **energy partnerships** with countries in West Asia, Africa, and Latin America.

Decarbonisation Enabler: Fossil infrastructure is increasingly expected to host **clean energy innovations** like green hydrogen and CCS technologies.

Rationale Behind the Overhaul

Outdated Norms: The 1949 and 1959 rules lacked provisions for modern exploration, investor rights, and energy transition pathways.

Climate Commitments: Needed alignment with **net-zero ambitions** and international climate goals.

Investor Expectations: Demands for **clarity, stability, and streamlined processes**.

Underutilised Assets: Shared pipeline access is crucial to cut costs and boost efficiency.

Preparation for OALP Round X: India's biggest-ever Exploration and Production (E&P) bidding round needs **updated legal backing** to attract global players.

Likely Impacts of the Draft Rules

Increased Investment Appeal: Clear fiscal terms, modern leases, and streamlined operations will make India a **more attractive destination for private E&P investment**.

Support for Green Transition: By enabling **co-location of renewables** and mandating GHG and CCS protocols, the rules align fossil fuel operations with India's climate goals.

Improved Sector Governance: Better oversight through **data regulation, third-party infrastructure access**, and a formal adjudicating body ensures transparency and accountability.

Operational Efficiency: Encourages **resource unitisation**, infrastructure-sharing, and more dynamic lease management to improve production efficiency.

Climate Resilience and Leadership: Mandatory emissions monitoring and CCS readiness

demonstrate India's commitment to **responsible fossil fuel use** amid global energy shifts.

Conclusion

The **Draft Petroleum & Natural Gas Rules, 2025** mark a transformative step toward modernising India's upstream energy sector. By balancing investor incentives with environmental safeguards, the new rules aim to bridge India's current energy demands with its long-term sustainability vision. As the country prepares for OALP Round X and deepens its climate commitments, these reforms lay the groundwork for a more **competitive, green, and future-ready petroleum landscape**.

Mahi River: A Vital West-Flowing River of India Recent Incident

A tragic incident occurred in Gujarat's **Padra taluka (Vadodara district)**, where a section of the **Gambhira-Mujpur bridge** collapsed, causing several vehicles to fall into the **Mahi (Mahisagar) River**, resulting in **11 fatalities**.

Geographical Overview

The **Mahi River** is one of India's significant **west-flowing interstate rivers**, traversing through **Madhya Pradesh, Rajasthan, and Gujarat**.

Known locally as **Mahisagar**, its name reflects the river's size and scale.

Course and Origin

The river originates from the **northern slopes of the Vindhya Range** in Madhya Pradesh at an altitude of about **500 meters above sea level**.

It flows **southward for about 120 km** in Madhya Pradesh before entering the **Vagad region of Rajasthan**, particularly through **Banswara district**.

Uniquely, the river makes a **U-shaped loop** in Rajasthan before heading into Gujarat.

It eventually **empties into the Arabian Sea** near **Khambhat** through a broad estuary.

Key Statistics

Total Length: 583 km

Drainage Area: Approximately **34,842 sq.km**

Boundaries:

North & Northwest: Aravalli Hills

East: Malwa Plateau

South: Vindhya

West: Gulf of Khambhat

Environmental and Economic Impact

The river has contributed significant **silt deposits**, narrowing the **Gulf of Khambhat** and causing the decline of once-thriving ports.

Its **deep riverbed** makes it **unsuitable for large-scale irrigation**.

Tributaries

Important tributaries include **Eru, Nori, Chap, Som, Jakham, Moran, Anas, Panam, and Bhadar**.

Major Infrastructure

The **Mahi Bajaj Sagar Dam** is a key dam constructed on this river, supporting power generation and water supply.

Lake Turkana: Extraction of Ancient Proteins

Scientific Breakthrough: Researchers have successfully extracted 18 to 20 million-year-old proteins from the tooth enamel of extinct mammals discovered near Lake Turkana.

About Lake Turkana:

Location: Primarily situated in Northern Kenya, with a portion extending into Ethiopia.

Significance: It is Africa's fourth-largest lake by surface area and the largest permanent desert lake globally.

Heritage Status: The Lake Turkana National Parks, including the lake, are recognized as UNESCO World Heritage Sites.

Hydrology: The Omo River is its only perennial tributary.

Tarragona Province Wildfire

Context:

A massive wildfire in Tarragona province, Catalonia, Spain, has led to a lockdown of over 18,000 people and burned nearly 3,000 hectares of forest.

About Tarragona Province:

Overview:

Tarragona is a coastal province in northeastern Spain, forming the southern region of Catalonia. Known for its rich Roman heritage, agriculture, and natural beauty, the area is also vulnerable to Mediterranean wildfires.

Location and Borders:

Country: Spain

Autonomous Region: Catalonia

Borders: Mediterranean Sea, providing an extensive coastline.

Geographical Features:

Rivers: The Ebro River runs through a major valley vital for farming and hydropower generation.

Mountains: The Catalan and Pauls mountain ranges create difficult terrain that complicates firefighting efforts.

Natural Parks: Includes protected areas such as Ports Natural Park, partially affected by the fire.

Climate: Mediterranean climate with hot, dry summers conducive to fires, and mild, wet winters.

Agriculture: Produces cereals, grapes, fruits, olives, hemp, and silk.

Minerals: The region has deposits of copper, lead, silver, limestone, and marble.

Cause of the Wildfire:

Heatwave: Spain recorded its hottest June ever, drying out vegetation and creating a tinderbox environment.

Wind: Strong winds (up to 90 km/h), particularly the Mistral wind, spread the fire rapidly.

Terrain: Rugged landscape and forest proximity hindered containment and firefighting access.

UNEP Frontiers Report 2025: "The Weight of Time": Flooding, Toxic Legacies, and Emerging Environmental Threats

Context

The 2025 edition of the *Frontiers Report* by the United Nations Environment Programme (UNEP), titled "The Weight of Time", underscores a critical but under-recognized environmental risk: climate-driven flooding is disturbing toxic pollutants long buried in river and coastal sediments. These reactivated chemicals endanger ecosystems and human health, especially as climate change accelerates the intensity and frequency of floods.

Key Insights from the Report

Buried Toxic Chemicals Resurfacing

Floodwaters are disturbing sediment layers that contain legacy pollutants such as **cadmium, lead, and persistent organic pollutants (POPs)**.

These pollutants were previously considered contained but are now

becoming mobile again due to stronger flooding.

Severe Health Impacts

Rivers like the **Ganga, Hindon, and Vaigai** have **cadmium concentrations beyond safe limits**.

These chemicals are linked to **cancer, kidney damage, hormonal imbalances, and pregnancy complications**.

Global Cases of Flood-Driven Contamination

Hurricane Harvey (2017) released mercury and carcinogens in Texas' Galveston Bay.

The **Niger Delta floods (2012)** redistributed toxic **polycyclic aromatic hydrocarbons (PAHs)**.

Pakistan's 2010 floods caused pesticide warehouses to collapse, scattering **2,835 metric tonnes of obsolete pesticides**.

Ongoing Storage of Hazardous Waste

Worldwide landfills and industrial sites still house **4.8-7 million tonnes of POP waste**, from outdated organochlorine and organofluorine industries.

Climate Change Worsens Risk

Increased rainfall, sea-level rise, and more intense cyclones are amplifying floods and, in turn, **escalating sediment disruption**.

Food Chain Contamination

Once disturbed, these chemicals **bioaccumulate in aquatic species**, entering human diets through fish and plants.

Longevity of Toxic Substances

Despite bans, many of these pollutants remain chemically stable and **persist in the environment for decades**.

Need for Adaptive Management

The report urges **adaptive flood management at the river-basin level**, integrating **hydrology, ecology, and community knowledge** to tackle this emerging threat.

Major Challenges Identified

Remobilisation of buried pollutants during extreme floods

Lack of real-time monitoring systems for sediment and chemical storage in river basins

Deteriorating infrastructure and waste storage facilities heightening risk

Unregulated urban development along riverbanks increasing flood vulnerability

High persistence of legacy pollutants, especially POPs and heavy metals, which resist natural degradation

UNEP's Recommendations and Calls to Action

Nature-Based Solutions

Restore **wetlands, riparian buffers, and floodplains** to naturally absorb floodwaters and filter pollutants.

Reinforce Flood Management Infrastructure

Use traditional tools such as **polders, dikes, and retention basins** to control sediment and water flow.

Integrated River Basin Planning

Create **comprehensive, basin-level strategies** that align flood control with water use, conservation, and pollution management.

Geo-Mapping and Sediment Profiling

Conduct detailed **chemical mapping of riverbeds** to identify and address contamination hotspots in advance.

Track Pollutant Pathways

Monitor the movement of toxins post-flood through **soil, water, and the food web**, and apply appropriate mitigation measures.

Safe Disposal of Toxic Waste

Prioritise the secure elimination of **obsolete pesticides and industrial by-products** before disasters can release them.

Conclusion

The UNEP Frontiers 2025 report delivers a strong message: **climate change and chemical pollution are converging threats**.

Floods today do more than damage infrastructure—they **resurrect buried**

toxic legacies that threaten people and the planet.

Countries like **India**, already vulnerable to both flooding and pollution, must act swiftly by embracing **science-driven, ecosystem-based, and community-led river basin governance**.

Protecting future generations requires **proactive planning**, effective monitoring, and systemic reform—before buried pollutants become tomorrow's crisis.

Laughing Dove

A rare sighting of a **laughing dove**, a small pigeon with partial white plumage, was recently reported in the Nagamalai hillock forest near Nambiyur in Erode.

About the Laughing Dove:

Scientific name: *Spilopelia senegalensis*.

Also known as laughing turtle dove, palm dove, Senegal dove, and in India often called the little brown dove.

Distribution spans across sub-Saharan Africa, the Middle East, the Indian subcontinent, and some introduced populations in Israel, Lebanon, Syria, UAE, Turkey, and Western Australia.

Preferred habitat includes dry scrub and semi-desert areas, where they feed on the ground in pairs or alone.

Physical Characteristics:

Size: Approximately 25 cm in length with a slim, long-tailed body.

Coloration includes reddish-brown back, wings, and tail with blue-grey highlights on the wings.

Underwings appear rich chestnut in flight.

The head and underside are pinkish fading to whitish on the lower belly.

Distinctive black spots are present on the throat; legs are red.

Juveniles show more rufous coloring and less throat spotting than adults.

Generally terrestrial, foraging on the ground in grasslands and cultivated areas.

Typically solitary or found in pairs rather than large groups.

Conservation Status:

Classified as **Least Concern** by the IUCN Red List, indicating a stable population.

Island Protection Zone (IPZ)

Context:

The Environment Ministry has extended the validity of infrastructure projects sanctioned under the 2011 IPZ notification.

About IPZ:

Introduced in 2011 under the Environment (Protection) Act, 1986.

Serves as a conservation and regulatory framework to protect the ecosystems of the Andaman & Nicobar and Lakshadweep islands.

Similar to the Coastal Regulation Zone (CRZ), which applies to mainland coastal areas.

Key Regulatory Components:**Island Coastal Regulation Zone (ICRZ):**

Applicable to major islands like Middle, North, South, and Little Andaman.

Integrated Island Management Plans (IIMPs):

Enforced for all other islands in Andaman & Nicobar and the Lakshadweep archipelago.

Financial Assistance under SDRF and NDRF**Context:**

The Centre has released ₹1,000 crore to Assam, Manipur, and Uttarakhand from the State Disaster Response Fund (SDRF) for flood and landslide relief.

Disaster Relief Framework:

Under the **National Policy on Disaster Management**, disaster response primarily rests with State Governments.

State Disaster Response Fund (SDRF): Used for immediate relief activities as per norms approved by the Centre.

National Disaster Response Fund (NDRF):

Additional funds can be allocated for major calamities based on assessments by Inter-Ministerial Central Teams (IMCTs).

Note: These funds are exclusively for relief and do not cover individual compensation.

Uttarakhand Cabinet Approves Geo-Thermal Energy Policy 2025**Objective**

The policy aims to encourage scientific and technological research to explore and develop geothermal energy resources that are both economically feasible and environmentally sustainable.

About Geothermal Energy

Definition: Geothermal energy is heat derived from beneath the Earth's surface. This heat originates partly from residual energy from the Earth's formation and

partly from ongoing radioactive decay within the Earth's core and mantle.

Applications:

Used for heating, cooling, electricity generation, and energy storage.

Conventional Technologies: Utilize hydrothermal reservoirs where heat is transferred to the surface via natural underground fluids.

Next-Generation Technologies:

Extract heat from deeper layers by circulating fluids through engineered systems independent of natural reservoirs. Examples include Enhanced Geothermal Systems (EGS) and Closed-Loop Geothermal Systems (CLGS).

India's Geothermal Potential

The **Geothermal Atlas of India (2022)** estimates around 10,600 MW of potential energy.

Notable geothermal fields include **Puga** and **Chumathang** in Ladakh.

Benefits

Continuous electricity generation (24/7 availability).

High utilization rate (over 75% in 2023).

Low environmental emissions.

Challenges

High costs of technology and infrastructure.

Limited research and development.

Environmental and regulatory hurdles including complex licensing processes.

India's Initiatives

Mapping geothermal resources via the Geothermal Atlas of India.

Formation of a dedicated Task Force for geothermal energy development.

Launch of the Renewable Energy Research and Technology Development Programme (RE-RTD) focusing on advanced geothermal technologies.

International collaborations with countries like Iceland, Saudi Arabia, and the USA (through RETAP).

Kuno National Park: Progress in India's Project Cheetah**Park Profile**

Located in Sheopur district, Madhya Pradesh, near the Vindhyan Hills.

Encompasses approximately 750 square kilometers.

Named after the Kuno River, a significant tributary of the Chambal River, which divides the park into two parts.

Project Cheetah

Kuno National Park was selected as the site for India's 'Action Plan for Introduction of Cheetah,' aiming to reintroduce the species into its historic range.

In 2022 and 2023, a total of 20 cheetahs were introduced: eight from Namibia and twelve from South Africa.

Recent videos shared by the Union Minister of Environment indicate promising adaptation and thriving populations.

Flora and Fauna

The park hosts rich tropical dry deciduous forests, with over 129 tree species including *Anogeissus pendula* (Kardhai), *Senegalia catechu* (Khair), and *Boswellia serrata* (Salai).

Faunal diversity includes jungle cats, Indian leopards, sloth bears, Indian wolves, striped hyenas, golden jackals, Bengal foxes, dholes, and more than 120 species of birds.

Rhino Horn

Context

The Assam Forest Department, collaborating with the Wildlife Institute of India (WII), has commenced genetic analysis of 2,573 rhino horn samples previously confiscated and stored before their destruction in 2021. This initiative aims to establish India's **Rhino DNA Index System (RhoDIS)**, an important tool for rhino conservation and anti-poaching operations.

What is a Rhino Horn?

The rhino horn is a unique and defining feature of rhinoceroses, composed not of bone but primarily of **keratin**—the same protein found in human hair and nails.

Rhino horns grow continuously at an average rate of about 2 centimeters per year.

Key Characteristics

Solid Composition: Unlike deer antlers, rhino horns are solid structures made from densely packed keratin fibers.

Tough Core: The horn's core contains melanin and calcium, which provide enhanced durability and protect it from ultraviolet (UV) damage.

Shape Formation: The horn's cone-like shape develops over time due to

behaviors such as scraping, grazing, and environmental wear.

Unique Identifier: Each horn has a distinct pattern of keratin layers, influenced by factors like diet and climate. This uniqueness allows for genetic fingerprinting through RhoDIS.

Conservation Challenge: Rhino horns are highly prized in the illegal wildlife trade, fueled by unfounded medicinal claims, making rhinos targets for poaching.

Greater One-Horned Rhinoceros

Also called the **Indian Rhinoceros** (*Rhinoceros unicornis*), this species is the largest among the five existing rhinoceros species.

It is native exclusively to South Asia, primarily found in northeastern India and parts of Nepal.

Habitat and Distribution

The Greater One-Horned Rhino inhabits tropical and subtropical grasslands, savannas, and riverine floodplains.

Significant populations reside in protected areas such as **Kaziranga National Park (Assam)**, **Jaldapara Wildlife Sanctuary (West Bengal)**, and **Chitwan National Park (Nepal)**.

Conservation Status

Classified as **Vulnerable** on the IUCN Red List due to habitat loss and poaching threats.

Distinctive Features

Possesses a **single black horn** ranging from 8 to 25 inches in length, a key identifying characteristic.

Displays an **armored appearance**, with thick, grey-brown skin segmented by prominent folds resembling plates.

Primarily **herbivorous**, feeding on grasses, aquatic plants, fruits, and shrubs.

Exhibits a mostly **semi-solitary lifestyle**, coming together mainly during wallowing or feeding.

Ecologically important as a **keystone grazer**, playing a critical role in shaping and maintaining wetland ecosystems.

Mount Rainier: Recent Seismic Activity and Geographical Profile

Recent Seismic Developments

The United States Geological Survey (USGS) reported a recent earthquake swarm at Mount Rainier, consisting of over 300

minor tremors. This marks the most intense seismic activity at the volcano since 2009.

Geographical and Geological Features

Mount Rainier is the highest peak in the state of Washington, USA, standing at 4,392 meters.

It encompasses approximately 260 square kilometers and is encircled by the largest single-mountain glacier system in the continental United States outside Alaska.

Geologically young, the volcano was formed through successive lava flows beginning roughly one million years ago.

Classified as an active stratovolcano, Mount Rainier's last eruption occurred approximately 150 years ago.

Hazards and Significance

Due to its proximity to the densely populated Seattle metropolitan area, Mount Rainier is considered one of the most hazardous volcanoes globally.

It is one of sixteen volcanoes listed under the "Decade Volcanoes" program by the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI), highlighting its potential for catastrophic eruptions and the necessity for close monitoring.

Natural Environment

The mountain features about two dozen named glaciers, including the Nisqually Glacier, whose historical advances and retreats have contributed valuable data to climate change studies.

Its terrain includes three prominent peaks: Liberty Cap, Point Success, and Columbia Crest (the summit, located on the caldera rim).

The lower slopes are densely forested with coniferous trees, while the higher elevations feature alpine meadows, waterfalls, and diverse wildlife, making the region ecologically rich and scenically significant.

Vulnerability of Delhi-NCR to Earthquakes **Context**

A recent 4.4 magnitude earthquake with its epicenter in Jhajjar, Haryana, shook the Delhi-NCR region, raising renewed concerns about the area's significant susceptibility to seismic activity.

Seismic Risk of Delhi

Delhi falls within **Seismic Zone IV**, designated by the Bureau of Indian Standards (BIS) as a high-risk zone for earthquake damage.

The region is vulnerable to moderate and strong earthquakes, with magnitudes typically ranging from 5 to 6, and the potential for quakes exceeding magnitude 7.

Factors Contributing to Vulnerability

Population Density and Infrastructure:

High population density combined with unregulated construction practices and aging buildings increase the risk of earthquake damage.

Frequent Tremors: The National Center for Seismology (NCS) reports regular minor tremors from shallow quakes caused by active nearby fault lines.

Causes of Earthquake Susceptibility

Proximity to Himalayan Frontal Thrust:

Delhi's closeness to the tectonically active Himalayan belt, where the Indian and Eurasian plates converge, results in deep-seated geological stresses.

Active Fault Lines: Key faults such as the Delhi-Haridwar Ridge, Delhi-Moradabad Fault, Sohna Fault, and Mahendragarh-Dehradun Fault increase seismic risk across the region.

Subsurface Weak Zones: Faults along major rivers like the Yamuna and Ganga reveal underlying crustal weaknesses.

Historical Earthquakes: Delhi has experienced at least five significant quakes (magnitude 5.5–6.7) since 1720, indicating a recurring seismic threat.

Rapid Urban Growth and Code Violations:

Unplanned expansion and poor enforcement of seismic safety codes (IS-1893) amplify structural vulnerabilities.

Inclusion of Gharial and Sloth Bear under Species Recovery Programme (CSS-IDWH)

Background

The Standing Committee of the National Board for Wildlife (SC-NBWL), constituted under the Wildlife Protection Act (WPA) 1972, has recommended the inclusion of the gharial and sloth bear in the Species Recovery Programme under the Centrally Sponsored Scheme for Integrated Development of Wildlife Habitats (CSS-IDWH).

About Gharial

Habitat: Freshwater rivers, predominantly in tributaries of the Ganga River such as Chambal and Girwa (India), and Rapti-Naryani rivers (Nepal).

Conservation Status:

IUCN: Critically Endangered
WPA, 1972: Schedule I
CITES: Appendix I

Distinctive Features:

Longest and thinnest snout among crocodilians
Adult males have a bulbous nasal growth called the 'ghara'
Most aquatic species among crocodilians

About Sloth Bear

Habitat: Native to India, Sri Lanka, and Nepal, spread across five biogeographic zones in India including the Western Ghats and Gangetic Plain.

Conservation Status:

IUCN: Vulnerable
WPA, 1972: Schedule I
CITES: Appendix I

Distinctive Features:

Small bear with a shaggy coat
Primarily feeds on termites and ants
Mostly solitary and nocturnal

About CSS-IDWH

Objective: To provide financial and technical support to State/UT governments for wildlife conservation activities.

Key Components:

Protection and management of protected areas
Conservation outside protected zones and mitigation of human-wildlife conflict

Species recovery programmes for critically endangered wildlife (currently including 22 species such as the Snow Leopard and Asiatic Lion)

Pir Panjal Range

Context:

Security forces have intensified operations in the Pir Panjal Range to track down hiding terrorists.

About Pir Panjal Range:

Geographical Location: Lies in Jammu and Kashmir; the Kashmir Valley is situated between the Pir Panjal and Zaskar Ranges.

Part of: The Lesser Himalayas.

Extent: Stretches from the **Jhelum River** in the northwest to the **upper Beas River** in the southeast.

Elevation: Peaks rise up to **5,000 metres**.

Geology: Dominated by **volcanic rocks**.

Key Mountain Passes:

Pir Panjal Pass
Banihal Pass
Bidil Pass
Golabghar Pass

Important Rivers: Several rivers such as the **Kishanganga, Jhelum, and Chenab** cut through this range.

UN Environment Programme's Frontiers 2025: The Weight of Time Report Overview

The report identifies emerging environmental challenges that risk escalating into serious global or regional crises.

Key Environmental Concerns Highlighted

Microbial Reactivation in a Warming

Cryosphere: Climate warming may thaw frozen habitats, reactivating dormant microbes (psychrophiles) that could disrupt ecosystems, introduce pathogens, or cause biodiversity loss if some microbes cannot survive thawing.

Impact of River Barriers: Structures like dams and barrages alter river flow, temperature, sediment transport, and aquatic habitats, displacing local communities and obstructing fish migration.

The report endorses **barrier removal** as a proven method to restore river ecosystem connectivity and reduce fragmentation affecting nearly 89% of global river volume.

Demographic Challenges and Climate

Risks: Older adults, whose numbers are growing globally, face heightened vulnerability to climate-related hazards such as heatwaves, air pollution, and floods.

Remobilization of Legacy Pollutants by Floods:

Flood events can release persistent pollutants like heavy metals and organic compounds from sediments back into water bodies, causing bioaccumulation in plants and animals and biomagnification through food chains.

Revisiting Eco-Sensitive Zone (ESZ) Guidelines: Balancing Ecological Integrity with Socio-Economic Realities

Introduction

The recent deliberations of the Standing Committee of the National Board for Wildlife (SC-NBWL), chaired by the Union Minister for Environment, Forest and Climate Change, have emphasized the need to review the 2011 Eco-Sensitive Zone (ESZ) guidelines. This initiative responds to growing concerns over the inflexibility of existing norms and aims to promote more context-sensitive ecological governance around protected areas in India.

Understanding Eco-Sensitive Zones (ESZs)

ESZs—also referred to as Ecologically Fragile Areas (EFAs)—are regulated buffer regions established around protected areas, national parks, and wildlife sanctuaries by the Ministry of Environment, Forest and Climate Change (MoEFCC). Although the Environment (Protection) Act of 1986 does not explicitly mention ESZs, it serves as the legislative foundation for their declaration.

Purpose of ESZs:

Serve as ecological shock absorbers that mitigate external environmental impacts on core conservation zones.

Facilitate a gradual transition from areas under strict environmental protection to regions with relatively relaxed restrictions.

2011 Guidelines:

These guidelines provide a general framework for determining the extent and regulatory mechanisms of ESZs, which may extend up to 10 kilometers from the boundary of a protected area. They categorize human activities into permitted, regulated, and prohibited zones.

Rationale for Revising ESZ Guidelines

The SC-NBWL has directed the Union Environment Ministry to prepare a revised framework that incorporates region-specific ecological and socio-economic parameters. This includes drafting updated guidelines for ESZ identification and management, consulting relevant environmental divisions, engaging stakeholders, and submitting recommendations for further policy deliberation.

Criticism of the 10-km Uniform Rule:

The blanket application of a 10-km radius around all protected areas has proven both ecologically

inconsistent and developmentally restrictive, particularly in urban and hilly regions.

Regional Concerns and Contextual Variations

States have expressed specific concerns regarding the impact of rigid ESZ norms on development and livelihoods:

Himachal Pradesh: With over 65% forest cover, stringent ESZ regulations risk impeding essential economic activity.

Kerala: Public resistance to ESZ expansion has discouraged the notification of new sanctuaries.

Tamil Nadu and Karnataka: Have called for more adaptable and context-sensitive implementation approaches.

Issues in Compliance and Monitoring

The SC-NBWL has mandated that Chief Wildlife Wardens in all states submit compliance reports on infrastructure projects cleared within or around ESZs. States that fail to comply risk the suspension of future project proposals.

Concerns Raised:

Inadequate monitoring of the conditions imposed during project approvals.

The need for stricter enforcement and accountability mechanisms.

Emerging Ecological Challenges

Contemporary ecological dynamics demand updated policy responses:

Renewable Energy Installations: While environmentally beneficial, large-scale solar and wind projects near protected areas may disrupt wildlife habitats and migratory routes. Authorities have recommended their inclusion under "regulated activities" subject to ecological assessments.

Marine Protected Areas: Existing ESZ frameworks are primarily terrestrial, and do not adequately address the unique conservation requirements of marine ecosystems. A distinct regulatory framework for marine sanctuaries has been proposed.

Critical Reflections on Existing Guidelines

While the 2011 ESZ guidelines were initially intended to be flexible and adaptable, concerns have been raised that further relaxation could undermine key ecological safeguards. The challenge lies in striking an optimal balance

between conservation goals and developmental priorities.

Role of the SC-NBWL

As an advisory body, the SC-NBWL plays a critical role in formulating wildlife policies, conservation strategies, and in evaluating development projects in and around protected areas. As of the previous year, 347 final ESZ notifications have been issued by the Ministry, based on the committee's guidance.

Air India Crash: Investigation into Fuel Control Switches

Crash Overview

On June 12, Air India flight AI 171, a Boeing 787-8 en route from Ahmedabad to London, tragically crashed shortly after takeoff, resulting in the death of all 260 people on board. Preliminary findings from the Aircraft Accident Investigation Bureau (AAIB) point to a critical incident involving the aircraft's engine fuel control switches, which both shifted from the 'RUN' to 'CUTOFF' position shortly after liftoff.

Key Findings from the AAIB Report

Cockpit voice recordings reveal one pilot questioning the other about whether the fuel was deliberately shut off—an action that was denied. Both pilots were experienced, and data from the flight data recorder and cockpit voice recorder is currently being analyzed to determine the cause and context of the switch movement.

Function and Importance of Fuel Control Switches

Fuel control switches are essential components that regulate the flow of fuel to an aircraft's engines. On Boeing 787s, they are spring-loaded and protected by brackets and stop-lock mechanisms to prevent accidental engagement. These switches are typically only used on the ground during engine startup or shutdown. Mid-flight usage occurs only in cases of engine failure or major damage.

RUN Position: Supplies fuel to the engine for standard operation.

CUTOFF Position: Terminates fuel flow, shutting down the engine.

The switches require deliberate manual operation and are not designed for casual or accidental activation.

Use of Switches During Flight

In normal operations, only one fuel control switch might be turned off during flight—such as in the event of a single engine failure—since aircraft like

the Boeing 787 can fly with one engine. Simultaneously shutting down both engines is highly irregular and dangerous. Aviation experts emphasize that such an action would follow strict checklists and require deliberate input from both pilots.

In the case of AI 171, both engines lost power due to both switches being in the 'CUTOFF' position—a rare and catastrophic scenario. Investigators are now exploring whether this was due to pilot error, mechanical malfunction, or a system failure.

Questions Over Possible System Faults

Experts widely agree that it is nearly impossible for both switches to be accidentally triggered mid-flight, particularly during the takeoff climb. This raises questions about cockpit protocol, possible mechanical failure, and the reliability of safety systems designed to prevent such incidents.

Manufacturing and Regulatory Concerns

The switches under scrutiny—part number 4TL837-3D—are manufactured by Honeywell. A 2018 advisory by the U.S. Federal Aviation Administration (FAA) flagged possible faults in the locking mechanisms of these switches. However, the advisory did not mandate inspections, and Air India did not conduct any on its fleet.

The FAA warning suggested that a disengaged locking mechanism might allow unintentional movement of the fuel control switches, posing a risk of inadvertent engine shutdown during flight. The AAIB is now examining whether this previously flagged design issue played a role in the AI 171 tragedy.

Pong Dam Lake Wildlife Sanctuary

Recent Issue

Reports have surfaced of buffaloes grazing freely in restricted sections of the Pong Wildlife Sanctuary in Samkehar, Bathu, and Panalath, indicating non-compliance with sanctuary regulations.

Sanctuary Profile

Pong Dam Lake, also known as Maharana Pratap Sagar, is a man-made reservoir situated on the Beas River in Himachal Pradesh's Kangra district. The reservoir was formed following the construction of the Pong Dam in 1975, the tallest earth-fill dam in India.

Spanning approximately 245 sq. km., the sanctuary encompasses both the water body and its surrounding wetlands. It was recognized as a

Ramsar site in 2002, signifying its international ecological importance.

Biodiversity

Flora: The region supports submerged vegetation, grasslands, and forests with species such as eucalyptus, acacia, and shisham.

Fauna: Located on a major migratory flyway, the sanctuary hosts over 220 avian species, including 54 types of waterfowl like bar-headed geese, pintails, pochards, and cormorants. Terrestrial fauna include sambar, barking deer, wild boar, nilgai, clawless otter, and leopards.

Blackbuck Conservation

Population Decline

Wildlife authorities have acknowledged a sharp decline in the blackbuck population at Abohar Wildlife Sanctuary in Punjab.

Species Overview

Scientific Name: *Antelope cervicapra*. The blackbuck is native to India and Nepal and primarily inhabits grasslands and open scrub areas. It is the state animal of Punjab, Haryana, and Andhra Pradesh.

Physical Characteristics

Males exhibit dark brown or black fur with white underparts and ringed spiral horns. Females are lighter in color and have smaller, non-spiraled horns. Blackbucks are agile runners with keen vision, making them well-adapted to evade predators.

Conservation Status

IUCN: Least Concern

Wildlife Protection Act, 1972: Schedule I

CITES: Appendix III

Abohar Wildlife Sanctuary

Located in Punjab, the sanctuary spans land owned by 13 Bishnoi villages. Flora includes species like *Acacia nilotica* and *Albizia lebbbeck*, while fauna includes wild boars, blue bulls, porcupines, and jackals.

Bhadrakali Lake

Current Concern

Environmental activists have raised objections to the proposed development of an island within Bhadrakali Lake, citing concerns about shrinking water levels.

Lake Characteristics

Located in Warangal, Telangana, Bhadrakali Lake is an artificial reservoir believed to have been constructed during the reign of the Kakatiya ruler Ganapati Deva in the 12th century. Covering an

area of around 32 acres and extending approximately 2 km, the lake is linked to the Maneru Dam via the Kakatiya Canal.

The Bhadrakali Temple, situated on an island in the lake, dates back to the 7th century (Chalukyan period) and is dedicated to Goddess Bhadrakali, an incarnation of Durga.

Aircraft Accident Investigation Bureau (AAIB): India's Aviation Accident Authority Explained Recent Case: Air India AI 171 Crash

One month after the tragic crash of Air India flight AI 171 in Ahmedabad—where 241 of the 242 onboard perished—the Aircraft Accident Investigation Bureau (AAIB) released its preliminary findings. According to the report, both engine fuel control switches moved from the 'RUN' to 'CUTOFF' position just seconds after takeoff. One pilot questioned the other about this action, but the second pilot denied having done so. Given that these switches rarely shift unintentionally, the event has triggered deeper analysis, particularly of the cockpit voice recorder (CVR) and flight data recorder (FDR), as the AAIB continues its investigation.

International Framework for Air Crash Investigations

Aircraft accident investigations are governed by the **1944 Chicago Convention**, under the oversight of the **International Civil Aviation Organization (ICAO)**—a UN agency that sets global standards for aviation safety and regulation.

Per **Annex 13** of the Convention:

The **State of Occurrence** (where the accident takes place) leads the investigation.

Other involved states also have the right to participate:

State of Registry – where the aircraft is registered

State of the Operator – the airline operating the flight

State of Design – the country responsible for the aircraft's design and airworthiness oversight

State of Manufacture – the nation where the aircraft was assembled

AAIB: India's Independent Air Crash Investigation Body

Established in **2012**, the **Aircraft Accident Investigation Bureau (AAIB)** operates under India's **Ministry of Civil Aviation**. It was formed

to separate accident investigations from regulatory authorities like the **Directorate General of Civil Aviation (DGCA)**, in line with ICAO's guidelines for independent inquiry.

Legal Authority and Governance

The AAIB's powers derive from **Section 7 of the Aircraft Act, 1934**, allowing the government to set rules for investigating air accidents involving Indian aircraft or occurring within Indian territory.

Initially, investigations were handled by the DGCA's Air Safety Directorate under the **Aircraft Rules, 1937**.

The **Aircraft (Investigation of Accidents and Incidents) Rules, 2012** formally established the AAIB's role. These rules were later amended in **2017** and **2021**.

The AAIB now functions as an "**Attached Office**" under the Ministry of Civil Aviation.

Role and Responsibilities

The AAIB is tasked with investigating:

All **Accidents** and **Serious Incidents** involving aircraft with an **All Up Weight over 2,250 kg** or powered by **turbojet engines**.

Safety occurrences are classified into:

Accidents
Serious Incidents
Incidents

Key Principles:

Investigations are **not intended to assign blame**, but rather to improve aviation safety (as per Rule 3 of the 2017 Rules).

AAIB has **immediate and unrestricted access** to all relevant information and evidence—without needing prior approval from judicial or government entities.

Investigation Process

On-Site Inspection: Investigators are dispatched promptly to secure wreckage and perishable evidence, including flight recorders.

Data Collection: The AAIB collects information from airline operators, maintenance personnel, regulatory bodies, and others.

Expert Analysis: Collaboration with technical experts and institutions like **Hindustan Aeronautics Limited (HAL)** or **DGCA labs** is common.

Report Compilation: After internal reviews, a final investigation report is published and submitted to ICAO and relevant states.

Additional Functions

Conducting in-depth **safety studies**.

Issuing **safety recommendations** to domestic regulators like the DGCA or international bodies, aimed at preventing future occurrences.

Monitoring the **implementation** of these safety measures.

Recognising India's Open Ecosystems: A Call for Conservation and Policy Reform

Introduction: Misunderstood Landscapes at Risk

India's deserts, grasslands, and savannas—collectively known as **open ecosystems**—are rich in biodiversity and cultural significance. Yet, these landscapes continue to be misclassified as "**wastelands**", leading to their degradation through inappropriate land-use policies. Environmental experts and ecologists are calling for an urgent reassessment of this outdated classification to protect these ecologically vital regions.

What Are Open Ecosystems and Why They Matter

Open ecosystems include **deserts, scrublands, grasslands, and savannas**, defined by limited tree cover and dominated by herbaceous or shrubby vegetation. While often perceived as barren, these landscapes are highly adapted to their harsh environments and support complex ecological systems.

Globally, deserts cover about one-third of Earth's land surface and sustain unique biodiversity. Historically, such regions supported great civilizations—like the Indus Valley, Mesopotamia, and ancient Egypt—demonstrating their capacity to support both nature and human societies.

The Colonial Legacy of "Wastelands"

India's land-use classifications still reflect colonial frameworks that labelled vast open ecosystems as **unproductive wastelands**. This label implies these lands require transformation—often through **tree plantations, agriculture, or infrastructure projects**—rather than protection. Millions of hectares of **grasslands and scrublands** have been designated as wastelands in official records, justifying their conversion. This misclassification has led to widespread

ecological degradation, compromising essential services like:

- Soil fertility**
- Water retention**
- Carbon storage**
- Wildlife habitats**

Ecological and Cultural Value of Open Landscapes

India's open ecosystems are home to several **endangered species**, including:

- Great Indian Bustard**
- Caracal**
- Indian Wolf**
- Chinkara**

These species depend on the structure and dynamics of open habitats, which tree-planting schemes often disrupt.

Moreover, open ecosystems are critical **carbon sinks**, storing substantial amounts of carbon in their **soils**—a factor often ignored in climate policies focused solely on forest biomass.

Culturally, these landscapes sustain the livelihoods of **millions of pastoralists**, such as:

- Dhangars** (Maharashtra)
- Rabaris** (Gujarat)
- Kurubas** (Karnataka)

These communities have acted as **traditional stewards** of these ecosystems through sustainable practices like rotational grazing and local water management. However, conservation policies that favour fencing or afforestation have resulted in displacement, marginalisation, and the loss of traditional ecological knowledge.

Rethinking Restoration and Greening Goals

The current push to "green" open ecosystems through **tree plantations** stems from a misconception that all ecosystems should resemble forests. Such efforts often produce **monoculture plantations** that harm biodiversity and alter local ecology.

Experts propose an alternative, **ecologically informed restoration model** that is:

- Low-tech and community-led**
- Based on **natural regeneration**
- Focused on **soil and moisture conservation**
- Grounded in **indigenous knowledge systems**
- Inclusive of **soil carbon** as a key climate metric

Afforestation should not be a **one-size-fits-all** solution. Restoration must respect and reflect the **diversity of India's ecosystems**.

Policy Recommendations: Charting a New Course

To safeguard open ecosystems and the communities that depend on them, India must adopt a **revised land management approach**.

Key policy reforms include:

Eliminating the "wasteland" label from land classification systems.

Creating ecosystem-specific conservation frameworks tailored to deserts, grasslands, and savannas.

Recognising pastoralist communities as co-managers, with legal rights and incentives for conservation.

Integrating open ecosystems into national climate, biodiversity, and land degradation strategies.

Accounting for soil carbon in India's climate mitigation and restoration targets.

Symbolic changes also matter. Experts recommend renaming the "**World Day to Combat Desertification and Drought**" to "**World Day to Combat Land Degradation**", to reflect the ecological legitimacy of deserts and grasslands.

Conclusion: Towards a More Inclusive Conservation Ethic

India's open ecosystems are not empty lands waiting to be "fixed" but **living landscapes** vital to biodiversity, climate resilience, and cultural identity. Recognising their value—ecologically and socially—demands a **paradigm shift** in policy and public perception. Moving away from colonial legacies and afforestation-centric thinking is essential to conserving these ecosystems for future generations.

Climate Migration in South Asia: A Rising Crisis

Context

An increase in climate-related disasters—such as prolonged droughts in Bundelkhand and recurring floods along the Jamuna River in Bangladesh—has brought attention to climate migration as an escalating livelihood challenge in South Asia.

Understanding Climate Migration

Definition: Climate migration involves the involuntary movement of individuals or communities due to environmental changes triggered by climate-related events. These include sudden-onset disasters like floods, droughts, and

cyclones, as well as gradual changes such as rising sea levels and land degradation.

Annual Impact: According to the 2022 report by the International Refugee Assistance Project, approximately 20 million people are internally displaced each year due to climate-induced disasters.

Patterns: These migrations may be temporary or long-term, recurring seasonally or becoming permanent. Vulnerable populations, especially those with fewer resources, are most affected.

Examples and Data Points

Bundelkhand (India): Between 1998 and 2009, the region experienced 8 to 9 droughts. The Indian Meteorological Department (IMD) projects a temperature increase of 2–3.5°C by the year 2100.

Charpauli (Bangladesh): In 2022, over 500 homes were destroyed within a week due to riverbank erosion caused by the Jamuna River. The river erodes its banks by 12 to 52 meters annually.

Vidarbha and Marathwada (India): Migrants from these areas travel extensive distances, often on foot, for seasonal sugarcane cutting work. They endure extreme heat, with temperatures exceeding 50°C and unpredictable rainfall patterns.

Primary Drivers of Climate Migration

Drought and Rainfall Instability: In Bundelkhand and Marathwada, agricultural collapse due to weak or delayed monsoons has driven mass outmigration.

Flooding and Riverbank Erosion: Villages like Charpauli demonstrate how increased river swelling—exacerbated by glacial melt and floods—leads to significant displacement.

Extreme Heat and Water Scarcity: In Maharashtra's sugarcane-producing areas, rising temperatures and shrinking water availability reduce farm viability and trigger seasonal migration.

Debt Burden and Economic Collapse: Repeated crop failures have led to bonded labour practices, where sugarcane workers accept advances between ₹50,000 and ₹5 lakh, effectively tying them into exploitative contracts.

Loss of Livelihood Assets: The degradation of soil, erosion of cultivable land, and escalating input costs in climate-sensitive regions compound vulnerability and drive migration.

Consequences of Climate Migration

Rural Depopulation: Entire families are abandoning their native villages, transforming local demographics and land-use patterns.

Urban Informality: Migrants frequently end up in slums lacking basic amenities such as sanitation, housing, and public services. For instance, many from Bundelkhand relocate to informal settlements in Delhi.

Gender-Specific Risks: Women left behind in villages face increased risks of sexual violence, take on financial responsibilities, and often must withdraw children—especially girls—from school.

Labour Exploitation: Seasonal workers bound by sugarcane contracts operate under forced labour conditions, with no right to exit.

Erosion of Community Networks: Sustained outmigration fractures rural support systems, dismantling shared practices like collective farming and communal water use.

Challenges in Addressing Climate Migration

Absence of Legal Framework: India does not officially recognize climate migrants, excluding them from disaster relief or migration-related welfare policies.

Inaccessibility of Welfare Schemes: Migrants frequently lose entitlements such as ration cards, pensions, and MGNREGA eligibility after moving to new regions.

Substandard Living and Working Conditions: Migrant workers, like cane cutters in Maharashtra, often reside in makeshift tents without clean water, sanitation, or electricity.

Entrapment in Debt Cycles: As payments are tied to productivity in low-yield conditions, many migrant families accrue debt over multiple years.

Lack of Reliable Data: The absence of a national mechanism to track climate-induced migration hinders timely and informed policymaking.

Pathways Forward

Legal Recognition: Incorporate climate-displaced individuals into national migration and disaster management laws, such as the Disaster Management Act (NDMA).

Portable Social Protection: Ensure access to entitlements during migration through mechanisms like the One Nation One Ration Card scheme and eShram registration.

Climate-Resilient Employment in Rural Areas: Strengthen MGNREGA's scope to include activities like water conservation, agroforestry, and drought mitigation.

Skills and Mobility Support: Offer mobile skill development and job placement services tailored to seasonal migrants, particularly sugarcane cutters.

Creation of a Climate Migration Index: Develop a district-level vulnerability index by integrating data from IMD, Census, and SECC to enable early warning and policy response.

Conclusion

Climate migration has already become a pressing reality in India, especially among agrarian and rural populations. In the absence of targeted policies and social protections, migration driven by climate stress will remain a form of involuntary displacement rather than a livelihood choice. A sustainable and inclusive development approach must recognize the interplay between mobility, dignity, and climate resilience.

Carbon Credit Trading Scheme (CCTS): India's New Carbon Market Framework

Overview

The Indian government has launched the **Carbon Credit Trading Scheme (CCTS)** under the **Indian Carbon Market (ICM)** to reduce **GHG emission intensity** in high-emission industries.

It replaces the older **Perform, Achieve, and Trade (PAT)** scheme.

Purpose and Function

CCTS sets **GHG emission reduction targets** (not just energy efficiency) for specific industries.

It introduces **Carbon Credit Certificates (CCC)**, each equivalent to **1 tonne of CO₂** emissions reduced.

Key Authorities

Bureau of Energy Efficiency (BEE)

National Steering Committee for Indian Carbon Market (NSCICM)

Shift from PAT to CCTS

Feature	PAT Scheme	CCTS
Focus	Energy efficiency	GHG emissions intensity
Credits	ESCCerts	Carbon Credit Certificates (CCC)
Applicability	Energy-intensive sectors	Emission-intensive sectors

Sectors Under Compliance Mechanism

Aluminium
Cement
Pulp & Paper
Chlor-alkali
Iron & Steel
Textiles
Petrochemicals
Petroleum Refineries

These sectors contribute about **16% of India's GHG emissions**.

Power Sector:

Despite contributing **~40%** of national emissions, the **power sector is currently excluded** from the CCTS but may be added in the future.

Mechanisms within CCTS

Compliance Mechanism:

Obligated industries must **meet targets** or **buy CCCs** if they fall short.

Overachievers can **trade surplus credits** in the carbon market.

Offset Mechanism:

Allows **non-mandated entities** to participate voluntarily by reducing emissions and earning credits.

National Commitments

Under India's **Nationally Determined Contributions (NDCs)**:

Goal: **45% reduction** in emissions intensity of GDP by **2030** (compared to 2005 levels).

CCTS is a key mechanism to meet this target.

Barak Valley: Connectivity Crisis in Assam's Southern Region

Recent Developments

Gaurav Gogoi, President of Assam Pradesh Congress Committee (APCC) and Lok Sabha MP, has urged the **Prime Minister to intervene** in the worsening **transportation and infrastructure issues** in the **Barak Valley**, citing an emerging connectivity crisis.

Geographic Overview

The **Barak Valley** lies in the **southernmost part of Assam**, named after the **Barak River**, which flows through the region.

It comprises **three districts**:

Cachar
Hailakandi
Karimganj

Together, these districts make up around **9% of Assam's total area**.

Bordering States and Nations

North: Meghalaya

South: Mizoram

East: Manipur

West: Tripura and the **Sylhet Division of Bangladesh**

Key Features

Known for its **fertile lands**, the region heavily relies on **agriculture**.

Silchar serves as the primary **urban and educational hub** in the valley.

Barak River: Lifeline of the Region Overview

The **Barak River** is the **second largest river system** in Northeast India after the **Brahmaputra**.

It passes through **Manipur, Nagaland, Mizoram, and Assam**, before entering **Bangladesh**.

River Course

Source: Rises in the **Manipur Hills**, near Mao in Senapati district, at an elevation of **2,331 meters**.

Flows along the **Nagaland-Manipur border**, traverses **hilly terrain**, and enters **Assam**.

In **Bangladesh**, the river splits into the **Surma** and **Kushiyara**, later rejoining as the **Meghna**, eventually merging with the **Ganga-Brahmaputra system** before draining into the **Bay of Bengal**.

Key Stats

Total Length: ~**900 km**, of which **564 km** lies in India.

Major Tributaries:

Jiri
Dhaleswari
Singla
Longai
Sonai

Katakhal

Weather Derivatives in India Context

India is set to launch its **first weather derivatives**.

A collaboration between **NCDEX** (National Commodity and Derivatives Exchange Ltd) and the **India Meteorological Department (IMD)** will enable the creation of **rainfall-based derivative contracts**.

Purpose

To help **farmers and agri-based businesses** **hedge against weather-related risks**, such as:

Irregular rainfall
Heatwaves
Unseasonal weather events

Key Features

Based on **location-specific weather data** from IMD.

Contracts will be **seasonal** and rely on **historical and real-time weather indices**.

These are **non-traditional derivatives**, where:

The **underlying asset is a weather index** (e.g., rainfall or temperature).

They **do not carry inherent market value**, placing them in the category of **incomplete markets**.

Globally, over-the-counter trading in such derivatives began in the **1990s**.

Nano-Fertilisers and Biostimulants Government Advisory

The **Union Agriculture Minister** urged states to halt the **forced promotion of nano-fertilisers and biostimulants** among farmers.

Nano-Fertilisers

Nano-fertilisers are nutrients encapsulated in **nanoparticles (less than 100 nm)**.

They offer **controlled and efficient nutrient release**, improving crop absorption and reducing waste.

Biostimulants

Biostimulants are **substances or microorganisms** that **stimulate plant growth** and improve stress tolerance, independent of nutrient content.

Common examples:

Humic acids

Seaweed extracts

Beneficial fungi and bacteria

Liquid compost manure

Sigandur Bridge: Karnataka's New Connectivity Lifeline

Introduction

The **Sigandur Bridge** (also known as the **Ambaragodlu-Kalasavalli Bridge**) was recently inaugurated in **Shivamogga district**, Karnataka. It spans the **Sharavati River backwaters**.

Key Features

Type: Cable-stayed bridge (India's **second-longest**)

Length: 2.44 km | **Width:** 16 m

Cost: ₹473 crore

Location: Connects Sagar town to Sigandur, home to the **famous Chowdeshwari temple**

Significance

Reconnects communities separated by the **Linganamakki Dam**, built in the 1970s, which submerged key land routes

Reduces dependence on boats or long detours for accessing **taluk headquarters**

About Sharavati River

Origin: Western Ghats

Flow: Northwest into the Arabian Sea at **Honavar**, Uttara Kannada district

Length: 128 km | **Basin area:** 2,985 sq km

Notable Feature: **Jog Falls**—India's one of the highest waterfalls (253 m drop)

Tributaries: Nandihole, Haridravathi, Mavinahole, Hilkunji, Yennehole, Hurlihole, Nagodihole

Wular Lake

Overview:

After nearly 25 years since the devastating floods of 1992, vibrant pink and green lotus beds have reemerged in Wular Lake, Jammu & Kashmir.

About Wular Lake:

Size & Rank: Largest freshwater lake in India; second largest in Asia.

Location: Situated in Bandipore district, Jammu and Kashmir.

Source: Fed by the Jhelum River.

Geography: Located at 1,580 meters altitude at the foothills of Haramuk Mountain.

Dimensions: Spans approximately 200 sq. km, about 24 km long and 10 km wide.

Formation: Originated from tectonic activity; believed to be a remnant of the ancient Satisar Lake.

Island: Contains 'Zaina Lank,' a small island built by King Zainul-Abi-Din.

Conservation Status: Declared a Wetland of International Importance under the Ramsar Convention in 1990.

Ecological Importance:

Vital habitat for wintering, staging, and breeding birds.

Home to various terrestrial birds such as black-eared kite, Eurasian sparrow hawk, Himalayan golden eagle, Himalayan monal, and more.

Significant fish habitat, responsible for 60% of Jammu & Kashmir's fish production.

Klyuchevskoy Volcano

Overview

A 2023 false-color satellite image captured a dramatic scene: two fiery lava flows and a massive smoke plume erupting from **Klyuchevskoy**, the tallest active volcano in both **Europe and Asia**.

Location & Geology

Klyuchevskoy Volcano is located on the **Kamchatka Peninsula** in **far eastern Russia**.

It is an **active stratovolcano**, notable for its **steep, cone-shaped structure** formed by layers of hardened lava and volcanic ash.

Standing at **15,584 feet (4,750 meters)**, it is the **highest active volcano in Eurasia** and the **tallest peak** on the Kamchatka Peninsula.

The mountain features a **central crater** and is ringed by about **70 smaller craters and cones** on its lower slopes.

Volcanic Activity

Klyuchevskoy has erupted over **50 times since 1700**.

It is known for its **constant plume of smoke** rising from the summit.

The **Kamchatka Volcanological Station**, one of the oldest volcano research facilities in the world (founded in 1935), is located at its base.

Kamchatka Peninsula – The Land of Fire

Geography

Situated in **eastern Russia**, Kamchatka is bordered by:

The **Sea of Okhotsk** (west)

The **Pacific Ocean** and **Bering Sea** (east)

Dominated by two major mountain ranges:

Sredinny Range (Central)

Vostochny Range (Eastern)

It ranks among the **largest peninsulas globally**.

Climate

The region has a **harsh climate**:

Long, frigid winters

Cool, wet summers

Volcanic Significance

Kamchatka is the **northern section** of the **2,000 km long Kuril-Kamchatka volcanic arc**.

Hosts **68 active volcanoes**, making up **over 10%** of Earth's land-based active volcanoes.

Part of the **Pacific Ring of Fire**, a tectonically active zone known for frequent earthquakes and volcanic eruptions.

Cabo Delgado – LNG Projects and Environmental Impact

Context

A new study reveals that four proposed **LNG projects** in Mozambique's **Cabo Delgado** province could consume around **17%** of the **remaining global carbon budget**.

About Cabo Delgado

Location: Northernmost province of **Mozambique, East Africa**

Bordered by **Rovuma River** (North, near Tanzania)

Coastline along the **Indian Ocean** (East)

Population: Women constitute **51%** of residents.

Ethnic & Cultural Significance:

Home to the **Makonde tribe**, renowned for **wood and ivory carving**

Ecological Features:

Quirimba Archipelago

Quirimbas National Park (historical slave trade region)

Security Situation: Region has witnessed an **insurgency since 2017**

Kaziranga National Park

Location and Recognition

Located in **Assam**, northeastern India.

Recognized as a **UNESCO World Heritage Site in 1985**.

It is the **largest undisturbed floodplain** in the **Brahmaputra Valley**.

Landscape

The terrain includes:

Dense elephant grasslands

Marshes, pools, and wetlands

Tropical moist broadleaf forests

River Systems

Traversed by:

Diffalu River, a tributary of the Brahmaputra.

Moradifalu River, forming part of its southern boundary.

Flora and Fauna

Flora: Notable for tall elephant grass, water lilies, lotus, and hyacinths.

Fauna: Home to several endangered and iconic species:

One-horned rhinoceros (world's largest population)

Bengal tiger

Eastern swamp deer

Wild elephants

Water buffalo

Hoolock gibbon, capped langur

Gangetic river dolphin

Kaziranga Grassland Bird Survey – 2024 Report Highlights

Survey Insights

Conducted by bird experts, scientists, and conservationists across the park's **three wildlife divisions**.

43 species of grassland birds were recorded.

Key Findings

Finn's Weaver (*Ploceus megarhynchus*), locally known as **Tukura Chorai**, was found **breeding successfully**.

This bird is listed as **Endangered** by the IUCN. It serves as a **vital indicator species** for grassland ecosystem health.

Known for its **elaborate nest-building** on trees, Finn's Weaver reflects the overall quality of the park's grassland habitat.

Pavana River and Rejuvenation Concerns

Context

Citizens in **Akurdi, Pune** held a creative protest against the recently sanctioned **₹1,500 crore Pavana River Rejuvenation Project**, approved by the **Pimpri-Chinchwad Municipal Corporation (PCMC)**. Protesters argue that the project threatens biodiversity and undermines the ecological integrity of the river.

About Pavana River

Location: Pune district, Maharashtra.

Origin: 6 km south of **Lonavala** in the **Western Ghats**.

Course: Flows eastward, then south, passing through **Dehu, Chinchwad, Pimpri, Dapodi**, and finally merging with the **Mula River** near Pune.

River System Hierarchy

Pavana → Mula → Mula-Mutha → Bhima → Krishna River

Tributaries

No major tributaries; it is fed primarily by **seasonal streams** from the surrounding hills.

Environmental & Social Concerns

Ecological Threats:

Project allocates over **80% of funds** to hard construction (walls, walkways).

Risk to native species such as **birds, turtles, and reptiles**.

Cultural Impact:

Sacred riverbanks and heritage-linked areas, especially around **Chinchwad**, may be disturbed.

Potential loss of **sacred trees** and **local rituals** traditionally associated with the river.

Critique of Urban Aesthetics:

Citizens argue the project emphasizes **beautification** over genuine **river health**.

They see it as a **cosmetic overhaul** that conceals ongoing ecological damage.

Pollution and Mismanagement:

River faces serious pollution from **silt and industrial effluents**.

In 2018, the **Bombay High Court** criticized illegal diversion of Pavana water to maintain a cricket stadium.

Corporate Average Fuel Efficiency (CAFE) Norms

Context

Several automobile manufacturers are seeking a relaxation in emission targets under the upcoming **CAFE-III norms**, citing concerns over feasibility.

Overview of CAFE Norms

First Introduced: In 2017, under the **Energy Conservation Act, 2001**.

Primary Objective: To **curb fuel consumption** and **lower CO₂ emissions**, thereby reducing oil dependency and improving air quality.

Mechanism: It calculates the **average fuel consumption** across all vehicles sold annually by a manufacturer.

Coverage: Applies to all **passenger vehicles** (petrol, diesel, LPG, CNG, hybrid, and electric) with **Gross Vehicle Weight (GVW) < 3500 kg**.

Current Update: CAFE-III norms will apply for a **five-year period (2027–2032)**.

CWC Reports Rising Water Spread in Glacial Lakes: NGT Informed

Context

The **Central Water Commission (CWC)** has informed the **National Green Tribunal (NGT)** about increasing water spread in a significant number of glacial lakes across India. This update has raised concerns regarding the risk of **Glacial Lake Outburst Floods (GLOFs)** in the Himalayan region and beyond.

Key Findings from the CWC Report

Out of **100 glacial lakes** (each over **10 hectares** in area):

34 lakes show an **increasing trend** in water spread.

20 lakes exhibit a **decreasing trend**.

44 lakes show **no significant change**.

The CWC **monitors 902 glacial lakes and water bodies** across Indian states and transboundary regions using **remote sensing technologies**.

National GLOF Risk Mitigation Program (2021–2026)

90 GLOF-related studies have been approved under this program.

Currently implemented in **four high-risk Himalayan states:**

Arunachal Pradesh
Himachal Pradesh

Sikkim

Uttarakhand

Focus areas include:

Early warning systems

Risk mapping

Community preparedness

Infrastructure protection

Understanding Glacial Lakes and GLOFs

What are Glacial Lakes?

Formed by **melting glaciers**, typically located near or beneath the glacier.

These lakes are often held back by **moraines** (debris dams) or **ice barriers**.

What are GLOFs?

A **Glacial Lake Outburst Flood (GLOF)** is a sudden flood caused by the **collapse of a moraine or ice dam** that holds a glacial lake.

Can lead to **catastrophic downstream flooding**, damage to infrastructure, and **loss of life**.

Example:

South Lhonak GLOF (2023) in Sikkim damaged the **Teesta III Dam**, highlighting the severe consequences of such events.

Geographical Context

GLOFs are a common risk in **glaciated mountainous regions** such as:

The **Himalayas** (India, Nepal, Bhutan)

The **Andes** (South America)

The **Alps** (Europe)

Major Causes of GLOFs

1. Glacial Surging

Sudden and rapid forward movement of glaciers, disrupting the stability of glacial lakes.

Example: **Gilkey Glacier**, Alaska.

2. Moraine Dam Failure

Collapse of loosely packed glacial debris (moraine) due to saturation or internal pressure.

Example: **South Lhonak Lake**, Sikkim.

3. Seismic Activity

Earthquakes can trigger landslides or dam breaches in glacial regions.

4. Anthropogenic Factors

Human-induced changes such as:

Deforestation

Unplanned infrastructure development

Mining

Climate emissions

These disrupt **natural drainage** and destabilize mountain slopes.

Conclusion

The CWC's findings underscore the **growing risks of GLOFs** in India's Himalayan states due to rising water levels in glacial lakes. As climate change accelerates glacier melt, a **proactive risk management strategy**—including surveillance, infrastructure planning, and early warning systems—is essential to **prevent disasters** and **protect vulnerable mountain communities**.

Grandala: The Rare Electric-Blue Bird

Recent

Sighting:

A rare electric-blue bird known as the **Grandala** was recently observed in the **Sainj Valley of Himachal Pradesh**.

Biological Classification & Features:

Scientific Name: *Grandala coelicolor*

Family: Thrush family (*Turdidae*)

Genus: It is the sole species under the genus *Grandala*.

Diet & Behavior: An arboreal insectivore, it primarily feeds on insects and is known for forming large flocks of up to 200 individuals during non-breeding seasons.

Physical Characteristics:

Size: Body length ranges from 20.5 cm to 23 cm; weighs between 38 g and 52 g.

Male Plumage: Blue-gray body with black wings and tail.

Female Plumage: Brownish with white streaks, a gray-blue rump, and white tips and undersides of wing feathers.

Habitat & Distribution:

Range: Found across the northeastern Indian subcontinent and adjoining regions, including **India, Bhutan, Nepal, Myanmar, Tibet, and parts of China**.

Preferred Habitat: Alpine and subalpine regions, typically between **3,000 to 5,000 meters** elevation.

Conservation Status:

Listed as '**Least Concern**' by the **IUCN Red List**.

Tadoba-Andhari Tiger Reserve: AI-Driven Tiger Alerts

New

Initiative:

An **AI-based warning system** using **loudspeakers** has been deployed in **20 villages** within the **Tadoba-Andhari Tiger Reserve (TATR)** to alert residents of nearby tiger movements.

About the Reserve:

Location: Chandrapur district, Maharashtra
Significance: Oldest and largest **tiger reserve** in the state.

Etymology:

Tadoba is named after the local deity "Taru."

Andhari comes from the **Andhari River** flowing through the reserve.

Constituents: Comprises **Tadoba National Park** and **Andhari Wildlife Sanctuary**.

Geography & Biodiversity:

Biogeographic Zone: Central Plateau of the **Deccan Peninsula**

Topography: Undulating terrain in the north; rich in biodiversity

Vegetation: Dominated by **Southern Tropical Dry Deciduous forests**

Water Bodies: Includes **Tadoba Lake, Kolsa Lake**, and the **Tadoba River**

Flora: Notable trees include **teak, crocodile bark, salai, tendu, karaya gum, and mahua**

Fauna: Hosts species such as **tiger, leopard, sloth bear, wild dog, gaur, chital, and sambar**
Tanimbar Islands Earthquake

Recent

Event:

A **6.7 magnitude earthquake** struck near the **Tanimbar Islands** in Indonesia.

Geographical Overview:

Location: Part of the **Maluku Province** in Indonesia, situated at the end of the island arc stretching from **Sumatra through Java, Bali, and Timor**.

Island Group: Comprises around **30 islands**, lying between the **Banda Sea** and **Arafura Sea**.

Largest Island: **Yamdena**, about 70 miles long and 40 miles wide.

Terrain: Eastern coast features forested hills, while the western side is generally low-lying and swampy.

Seismic Context:

Indonesia lies along the **Pacific Ring of Fire**, a major zone of tectonic activity known for **frequent earthquakes and volcanic eruptions** due to the interaction of multiple tectonic plates.

Pacific Ring of Fire

A 7.3-magnitude earthquake struck off Alaska, part of the Pacific Ring of Fire.

About the Pacific Ring of Fire:

It is a chain of volcanoes and seismic activity sites encircling the Pacific Ocean.

Spanning over 15 countries including the Americas, Alaska, Russia, Japan, Philippines, Indonesia, Papua New Guinea, New Zealand, and Antarctica.

About 90% of the world's earthquakes and 75% of active volcanoes occur along this ring.

The Ring results from plate tectonic activity.

It includes deep ocean trenches such as the Mariana Trench, the world's deepest point.

Gujarat's Banni Grasslands Prepared for Cheetah Translocation

Context:

Gujarat is ready to translocate cheetahs to the Banni grasslands by the end of the year. The forest department has enhanced the prey base and constructed an enclosure.

Background:

Earlier, cheetahs were relocated to Gandhi Sagar Sanctuary in Madhya Pradesh (MP) from Kuno National Park (MP).

Other potential sites for cheetah introduction include various national parks and sanctuaries across Chhattisgarh, Madhya Pradesh, Rajasthan, and Uttar Pradesh.

About Banni Grassland:

Located in Kutch district, Gujarat, it is Asia's largest tropical salt-tolerant grassland formed by tectonic activity lifting land from the sea.

The area is home to pastoral communities such as Maldharis, Rabaris, Mutwas, and Meghwals.

About Project Cheetah:

Launched in 2022 to reintroduce African cheetahs into India (starting with Kuno National Park) from Namibia and South Africa.

This is the first-ever intercontinental reintroduction of a large wild carnivore species.

Managed by the National Tiger Conservation Authority (NTCA), which formed a Cheetah Project Steering Committee in 2023.

NTCA is a statutory body under the Ministry of Environment, Forests, and Climate Change, created under the Wildlife (Protection) Act of 1972 (amended 2006).

About the Cheetah:

Known as the fastest mammal globally and the only large carnivore extinct in India since 1952.

Unlike lions, tigers, leopards, and jaguars, cheetahs do not roar.

Two species exist: African Cheetah (IUCN Vulnerable) and Asiatic Cheetah (IUCN Critically Endangered).

Asiatic cheetahs survive only in eastern Iran; African species are widespread in Africa.

Earthquake Swarm in Iceland

Context:

Lava erupted from a large fissure in Iceland after a series of powerful earthquake swarms.

About Earthquake Swarms:

Defined as numerous earthquakes occurring over a short period without a mainshock.

Swarms can last for weeks, generating thousands of quakes.

Common in volcanic, hydrothermal, and geothermal active areas.

Why Iceland is Seismically Active:

Iceland sits on the Mid-Atlantic Ridge tectonic boundary and overlies a mantle plume, leading to high seismic and volcanic activity

Reykjanes Peninsula Volcanic Activity

Context:

The **Reykjanes Peninsula** in southwest Iceland recently experienced its **ninth volcanic eruption since late 2023**, as reported by local meteorological agencies.

Geological Features:

Located where the **Mid-Atlantic Ridge** emerges above sea level.

Marked by:

Lava fields

Geothermal features

Cone-shaped volcanic mountains

Seismic and Volcanic Activity:

The peninsula sits at the **junction of North American and Eurasian tectonic plates**, causing frequent minor earthquakes and volcanic eruptions.

Eruptions have become more frequent since 2021.

Population and Heritage:

Sparsely populated, except for the **Reykjavik metropolitan area**.

Home to the **Reykjanes Geopark**, a **UNESCO Global Geopark**.

Notable site: **Gunnahver Geothermal Field**.

Mount Kilimanjaro

Context:

The **Defence Secretary of India** recently flagged off mountaineering expeditions to **Mount Everest and Mount Kilimanjaro** from New Delhi.

About Mount Kilimanjaro:

Africa's highest peak and the world's tallest free-standing mountain (not part of a range).

Location: **Northeast Tanzania**, near the **Kenya border**.

Width: ~80 km (east to west).

Volcanic Structure:

A **stratovolcano** comprising **three cones**:

Kibo (dormant and tallest)

Mawenzi (extinct)

Shira (extinct)

Uhuru Peak (on Kibo) is the highest point in Africa.

Natural Features:

Famous for its **snow-capped summit**.

Five vegetation zones from base to peak:

Lower Slopes

Montane Forest

Heath and Moorland

Alpine Desert

Summit

Conservation Status:

Declared a **UNESCO World Heritage Site** in **1987** as part of **Kilimanjaro National Park**.

Global Wetland Outlook 2025 - Ramsar Convention

Key Findings

Coverage: Over **1,800 million hectares** of wetlands globally.

Degradation: 22% of global wetlands lost since 1970.

Poorer conditions noted in **LICs and LMICs**, especially in **Africa**.

Challenges

Urbanization

Industrialization

Infrastructure development

Best Practices

Regional Flyway Initiative: \$3B project restoring 140+ wetlands.

Seychelles Blue Bond: World's first sovereign "blue bond" for ocean conservation.

Recommendations

Integrate wetlands into **national natural capital planning**.

Embed wetlands into **green and blue financial instruments**.

Ramsar Convention (1971)

India joined in 1982

Promotes wise use and conservation of wetland ecosystems.

Polavaram-Banakacherla Link Project

Context

The **Centre** will establish a **high-level technical committee** to address unresolved inter-state river disputes between **Telangana** and **Andhra Pradesh**.

About the Polavaram Project

Location: **Godavari River**, Andhra Pradesh

Aims:

Irrigation

Drinking water

Hydropower

Diverting water to **Krishna Basin** to support **Rayalaseema**

Controversy

Telangana alleges violations of the **2014 AP Reorganisation Act** over river sharing.

Legal Framework

Inter-State River Water Disputes Act (1956)

River Boards Act (1956)

Article 262 of the Constitution (dispute adjudication by tribunal, not courts)

Entry 56 (Union List): Empowers Centre over inter-state water regulation

Urban Wind Stilling Effect

Key Finding

A recent study has revealed that the **Urban Wind Stilling Effect** contributes to the formation of **Urban Aerosol Clean Islands (UACIs)** in northern India.

Key Observations

43% of cities in **northwest and northern Indo-Gangetic Plains** have **lower aerosol levels** compared to adjacent rural areas.

These urban centers are classified as **Urban Aerosol Clean Islands**.

What Are Aerosols?

Aerosols are suspensions of fine solid particles or liquid droplets in a gas.

Common examples include **fog, smoke, and clouds**.

Understanding the Urban Wind Stilling Effect

Caused by **urban infrastructure** that weakens surface wind speeds.

This creates **invisible wind barriers** that reduce the movement of long-range dust and pollutants into the cities.

Allographa effusosoredica

Recent Discovery

A team of Indian researchers has identified a **new species of lichen**, *Allographa effusosoredica*, in the **Western Ghats**, a region known for its rich biodiversity.

About the Species

It is a **crustose lichen** noted for its **distinct effuse soredia** (a vegetative reproductive structure) and **rare chemical properties**.

The species contains **norstictic acid**, a compound uncommon among morphologically similar members of the genus *Allographa*.

Scientific Analysis

The discovery was based on an **integrative approach**, incorporating **morphological, chemical, and advanced molecular techniques**.

This analysis also identified its **algal symbiont**, a species of *Trentepohlia*, thereby contributing to the limited but growing knowledge of **photobiont diversity** in tropical lichens.

Significance

It is the **first Indian species of Allographa** to be **genetically sequenced**.

Sheds light on **lichen-alga symbiosis**, supporting the idea of **locally adapted photobionts**.

Becomes the **53rd Allographa species** reported in India, and the **22nd from the Western Ghats**.

What are Lichens?

Lichens are **composite organisms** formed by a **fungus** and a **photobiont** (typically a green alga or cyanobacterium) in a **mutually beneficial relationship**.

Ecological role: Lichens contribute to **soil formation, support insect life, and act as bioindicators of environmental health**.

Monkey Puzzle Butterfly

Recent Sighting

A **Monkey Puzzle butterfly** (*Rathinda amor*) was recently spotted in **Pench Tiger Reserve (PTR)**,

Madhya Pradesh—home to the legendary **Mowgli** of *The Jungle Book*.

About the Species

A small lycaenid (blue) butterfly, endemic to South Asia.

Geographic distribution: Found in Western Ghats, southern Indian plains, Bangladesh, and Sri Lanka.

Habitat

Prefers jungles with moderate to heavy rainfall.

Typically seen below 900 metres elevation, staying in undergrowth, forest paths, and clearings.

Conservation Status

Not protected under the Wildlife (Protection) Act, 1972.

Physical Characteristics

Wingspan: 26–28 mm; sexes look alike.

Upperside: Dark brown with a white spot at the end of the cell.

Underside: White to dark yellow-brown with irregular markings and a distinct curved white discal line.

Hindwing: Features silvery margins, irregular black lines and spots, and three tails (2 mm, 6 mm, and 2.5 mm), all white-tipped.

Mangarh Dham

Recent Event

A major tribal congregation from Rajasthan, Madhya Pradesh, Maharashtra, and Gujarat took place at Mangarh Dham, calling for the creation of a separate Bhil Pradesh.

About Mangarh Dham

Located in Banswara district, Rajasthan, on the Rajasthan-Gujarat border in the Aravalli hills.

A tribal pilgrimage site and memorial, associated with Saint Govind Guru.

Historical Significance

Govind Guru led the Mangarh Rebellion against British rule.

On 17 November 1913, British forces massacred thousands of Bhils gathered at Mangarh Hill—an event often called the “Adivasi Jallianwala Bagh.”

Annual Observance

A large fair is held every November to honour the martyrs.

Activities include prayers, bhajans (devotional singing), and community meals.

Reassessing Indian Aviation Safety: A Wake-Up Call Post-Ahmedabad Crash

Context

The Air India crash in Ahmedabad in June 2025 has once again brought India's aviation safety under scrutiny. A preliminary report by the Aircraft Accident Investigation Bureau (AAIB) has so far been inconclusive, pointing toward deeper, systemic challenges within India's aviation regulatory framework.

Understanding the Aviation Sector

India's aviation sector encompasses:

Airline operators

Airport infrastructure

Air traffic management

Regulatory bodies, notably the Directorate General of Civil Aviation (DGCA) and Ministry of Civil Aviation (MoCA)

It is a vital component of national infrastructure, facilitating connectivity, economic mobility, and strategic logistics.

India's Aviation Landscape and Safety Overview

India is the third-largest domestic aviation market globally, serving over 350 million passengers annually.

In 2024, daily air traffic surpassed 500,000 passengers.

Passenger traffic trends:

Domestic traffic rose by 5.9%

International traffic grew by 11.4%

Crash investigations—such as the Kozhikode crash (2020) and Ahmedabad (2025)—have exposed critical safety oversights.

India has one of the highest proportions of women pilots globally (13–18%).

Only 80 airports currently operate on renewable energy, while physical infrastructure continues to expand faster than safety regulations can adapt.

Significance of the Aviation Sector

National Connectivity: Through initiatives like UDAN, aviation links remote and underdeveloped districts.

Economic Engine: Drives tourism, trade, cargo movement, and the service economy.

Employment Generator: India's pilot demand is projected to exceed 34,000 by 2040; Flying Training Organisations (FTOs) are expanding to meet this need.

Strategic Importance: Aviation supports defence logistics, disaster relief, and emergency operations.

Global Image Builder: A robust aviation sector is central to India's rise as a global logistics and transit hub.

Initiative	Description
Bharatiya Vayuyan Adhiniyam 2024	Replaces Aircraft Act 1934; promotes indigenous safety regulation.
Aircraft Objects Bill 2025	Aligns aircraft leasing laws with global standards (Cape Town Convention).
DFDR & CVR Lab	₹9 crore modern crash analysis lab at AAIB, supported by HAL.
Digi Yatra	Seamless travel for 4 crore passengers at 24 airports.
UDAN Scheme	619 operational routes; 88 airports connected; expanding to 120 new destinations.
Pilot Licensing Expansion	More Flight Training Organizations (FTOs) and student outreach programs launched.
Green Airports Mission	80+ airports on renewable energy; ACI Level 5 accreditation achieved by Bengaluru.

Major Safety Challenges in Indian Aviation

Weak Regulatory Framework

The **DGCA** lacks technical autonomy and depends on global regulators like the **FAA** and **EASA** for major safety decisions.

This dependence limits India's capacity to **proactively develop indigenous safety standards**.

Obstruction Around Airspaces

Over **1,000 vertical structures** near **Mumbai airport** breach **International Height Surface (IHS)** norms.

Legal petitions reveal that **MoCA** and **DGCA** have previously **sidestepped statutory limits**, allowing construction in restricted zones.

Pilot and Crew Fatigue

Airlines routinely exploit **Flight Duty Time Limitation (FDTL)** exemptions approved by DGCA.

Whistle-blowers raising fatigue or safety concerns are often **penalised or dismissed**, discouraging transparency.

Aircraft Maintenance Shortcomings

Aircraft Maintenance Engineers (AMEs) are **overburdened** and lack regulated duty hours.

Technicians with **lesser training** are employed to cut costs, increasing the risk of **missed mechanical faults**.

Shortage of Air Traffic Controllers (ATCOs)

India faces a **severe deficit of trained ATCOs**.

Key reforms recommended after the **Mangalore crash**—including duty-time regulation and better licensing—are still **pending**.

Unsafe Urban Infrastructure

High-rise buildings around airports continue to receive approvals, **compromising mandatory safety buffer zones**.

Proposed Reforms and the Way Forward

Create an Independent Aviation Safety Authority

A **regulator outside the control of MoCA** should be set up to ensure **impartial oversight** and rigorous investigations.

Reinstate Obstacle Regulations

Aircraft Act provisions and directives like **S.O. 988** should be restored to **legally enforce building height restrictions** around airports.

Protect Whistle-blowers

Introduce **institutional mechanisms** to guard against **retaliation**, and promote **anonymous reporting** of safety violations.

Workforce Reforms in ATCOs and AMEs

Fix working hours according to **international fatigue management norms**.

Expand hiring and streamline **licensing** to reduce manpower gaps.

Adopt Global Best Practices with Local Adaptation

Fully implement **ICAO and FAA safety protocols**—customised for **Indian operating conditions**.

Improve **audit systems, compliance mechanisms**, and **public transparency** in accident reporting.

Conclusion

Aviation safety must be treated as a **critical national priority**, not a bureaucratic obligation. With India's aviation sector poised for continued growth, reforms must match this expansion to **protect lives, maintain trust**, and build a **world-class safety culture**. The lessons from recent accidents demand **accountability, urgency, and system-wide overhaul**—further delay is not an option.

Pale-Capped Pigeon: Rare Sighting in Assam Recent Sighting

A significant discovery for ornithologists and conservationists occurred with the **photographing of the Pale-capped Pigeon in Dehing Patkai National Park, Assam**—highlighting its elusive nature.

About the Pale-Capped Pigeon

Scientific Name: *Columba punicea*

Common Names: Pale-capped Pigeon, Purple Wood Pigeon

Physical Traits:

Large body, dark purplish-maroon tone

Males feature a whitish-grey crown; females have a brownish-grey cap

Exhibits a green or amethyst-like feather sheen

Feeding: Primarily **frugivorous**, foraging in **small flocks** in tree canopies, but also descends for seeds and fallen fruit.

Habitat & Distribution

Habitat: Prefers **evergreen forests**, bamboo groves, and nearby farmlands

Elevation Range: Up to **1,600 meters**

Geographical Range: Locally distributed across **northern and northeastern India, Bangladesh, Myanmar, Thailand, Laos, Cambodia, and Vietnam**

Conservation Status

Listed as '**Vulnerable**' on the **IUCN Red List**, due to habitat loss and declining population.

Dehing Patkai National Park: 'Amazon of the East'

Location: In **Dibrugarh and Tinsukia districts, Assam**

Geography: At the base of the **Patkai Hills**, along the **River Dehing**, adjacent to **Namdapha Wildlife Sanctuary**

Area: Covers **231.65 sq. km**

Climate: Tropical with annual rainfall exceeding **4,000 mm**

Ecological & Cultural Highlights

Flora: Tropical deciduous rainforest with lush vegetation including **Hollong, Nahor, Mekai, Simul**, orchids, ferns, bamboo, and cane

Fauna: Rich in biodiversity—includes **elephants, tigers, leopards, slow loris, macaques, pangolins**, and more

Cultural Diversity: Home to over a dozen ethnic communities including **Tai Phake, Khamti, Singpho, Moran, Ahom**, and **Nepali** settlers

Lyriothemis Abrahamsi: New Dragonfly Discovery in Kerala

Overview

Discovery: New species *Lyriothemis abrahamsi*, earlier mistaken for *Lyriothemis flava*

Habitat: Breeds in **tree-hole water pools** within **lowland to mid-elevation forests** (50–1,100 m)

Key Features

Dimorphism:

Males: Distinctively shaped hamules

Females: Jet black body with **yellow triangular spots**

Ecological Significance

Forest Health Indicator: Dragonflies reflect **ecosystem integrity**

Predatory Role: Control populations of **mosquitoes and pests**

Kerala's Record: Raises the state's **odonate species count to 191**, including **78 endemics**

Shettihalli Wildlife Sanctuary: **Legal and Ecological Controversy**

Recent Issue

The **Karnataka government** has allegedly violated the **Wildlife (Protection) Act** and **Supreme Court directives** by approving a proposal to reduce the sanctuary by **300 sq. km**, without ensuring compensatory conservation, as required by the **National Board for Wildlife (NBWL)**.

About the Sanctuary

Location: Shimoga District, Karnataka

Established: Declared in 1974

Total Area: 395.6 sq. km

Notable Features

Dams and Water Bodies: Includes Tunga Anicut Dam and Mandagadde Bird Sanctuary

Human Settlements: Inhabited by families displaced during Sharavathi Dam construction in the 1960s

Vegetation: Dry and moist deciduous, with semi-evergreen patches

Flora: Includes teak, silver oak, thorny bamboo, Calcutta bamboo, amla

Fauna: Hosts species like tigers, leopards, elephants, wild dogs, sloth bears, sambar deer, and various birds (hornbills, parakeets, babblers, etc.)

Guryul Ravine Fossil Site: Under Threat
Current Concern

The Geological Survey of India (GSI) has raised alarms over quarrying and land-use changes that threaten this globally significant Permian-Triassic fossil site in Kashmir.

Site Overview

Location: Khonmoh, near Srinagar, Jammu & Kashmir

Geological Era: Dates to 260 million years ago, capturing the Permian-Triassic boundary (PTB), the time of Earth's largest mass extinction

Key Features

Great Dying Evidence: Fossils show the 90% marine and 70% terrestrial species extinction

Oldest Tsunami Record: Contains strata with earliest tsunami evidence

Global Research Importance: Attracts scientists from countries like USA, Japan, China

Protection Status: Notified in 2017 under Government Order, covering 9.8 lakh sqm

Significance

Scientific: Critical to studying ancient climate shifts

Heritage: Strong candidate for UNESCO Global Geopark and National Geological Monument

Tourism: Potential to rival China's Meishan fossil site in academic and tourism value

Kamchatka Peninsula: Earthquake-Prone Geothermal Zone

Recent Activity

Five earthquakes recently struck near Russia's Kamchatka Peninsula, a region renowned for its volcanic and tectonic activity.

About Kamchatka

Location: Far eastern Russia, between the Sea of Okhotsk and the Pacific Ocean

Geography: Part of the Pacific Ring of Fire with 150+ volcanoes (29 active)

Size: Approx. 370,000 sq. km—comparable to New Zealand

Population: ~300,000, with extremely low population density

Climate: Harsh winters, cool and wet summers

Highest Point: Klyuchevskaya Sopka

Capital: Petropavlovsk-Kamchatsky

Adjacent Feature: The Kuril Islands, close to Japan's Hokkaido

Biostimulants: Regulation Tightens Amid Misuse Reports

Recent Action

The Union Agriculture Minister directed states to stop forced sales of biostimulants amid rising concerns over unproven efficacy and retail malpractice.

What Are Biostimulants?

Substances or microorganisms that enhance plant growth, yield, and stress tolerance

Non-nutrient: Do not supply direct nutrition like fertilisers

Derived from natural sources—e.g., seaweed, microbes, plant residues

Regulatory Framework

Governed by Fertiliser Control Order (FCO), 1985 (amended in 2021)

Must undergo:

5 acute toxicity and 4 eco-toxicity tests

Field trials across 3 agro-ecological zones, with 3 dosage levels

Oversight Mechanism

Central Biostimulant Committee (2021-2026): Advises on approval and standards

Recent Enforcement:

Only 650 products approved out of 30,000+ previously unregulated

March 2024 deadline for provisional licenses has expired

May 2025: Crop-specific specifications notified (for **paddy, chilli, cotton, soybean**, etc.)

Market Potential

Valued at **USD 410 million (2025)**, projected to hit **USD 1.13 billion by 2032**

Driven by demand for **low-input, climate-resilient agriculture**

China's Brahmaputra Dam: Environmental and Strategic Concerns

What's Happening?

China has begun building what could become the **world's largest hydropower dam** on the **Yarlung Tsangpo (Brahmaputra)**, near **India's Arunachal Pradesh border**.

Potential Issues

Seismic Threats: Located in an earthquake-prone zone

E.g., the **1950 Assam-Tibet Earthquake**

Ecological Impact: May disrupt **biodiversity** and **downstream agriculture**

Geopolitical Risks: China could **weaponize water** in conflict

Cultural Displacement: Threatens indigenous communities like the **Adi Tribe**

India's Response

Expert Level Mechanism (2006): Bilateral data-sharing on Brahmaputra/Sutlej

Hydropower Projects: India also planning strategic dams

Guryul Ravine Fossil Site: GSI Issues Warning Amid Environmental Threats

Latest Update

The **Geological Survey of India (GSI)** has expressed concern over potential **threats to the Guryul Ravine fossil site**, located in the **Khonmoh area near Srinagar, Jammu and Kashmir**.

About Guryul Ravine

Location: In the **Vihi district** of Kashmir, near **Dachigam National Park**

Lies within the **Khonmoh Conservation Reserve**, an environmentally sensitive area

Renowned as a **fossil repository** of global geological importance

Scientific and Historical Significance

Contains evidence of the **Permian-Triassic extinction event** (~260 million years ago)

Documents the **"Great Dying"**, the most catastrophic extinction event in Earth's history

Preserves **rock layers showing the world's first known tsunami**, still visible in geological formations

About the Permian-Triassic Extinction

Also called the **End-Permian Extinction**

Occurred approximately **251.9 million years ago**

Marked the transition between:

Permian and Triassic geological periods

Paleozoic and Mesozoic eras

Caused the extinction of over **90% of marine species** and many terrestrial organisms

Empowering Urban India for Climate Resilience

Overview

India's fast-paced urbanisation is creating significant climate adaptation challenges. A joint report by the **World Bank** and the **Union Ministry of Housing and Urban Affairs (MoHUA)**, titled *"Towards Resilient and Prosperous Cities in India"*, underscores the urgent need to build **climate-resilient urban infrastructure**. The report calls for **greater autonomy for Urban Local Bodies (ULBs)** and estimates a **\$2.4 trillion investment** requirement by 2050 to meet resilience goals.

Key Findings from the Report

1. Need for Urban Autonomy in Climate Governance

Decentralised governance improves climate resilience outcomes.

World Bank India Director Auguste Tano Kouame highlighted that cities with **greater decision-making power** are better equipped to handle climate risks.

The report advocates the **effective implementation of the 74th Constitutional Amendment Act (1992)**, tailored to local conditions.

Decentralisation enhances:

- Resource mobilisation
- Revenue generation
- Asset monetisation
- Transparency and accountability

2. Climate Risks and Economic Impact

Urban India faces **two primary climate threats**:

Pluvial Flooding: Caused by inadequate drainage and excess concretisation.

Extreme Heat Stress: Exacerbated by the urban heat island effect.

Economic and human impacts include:

Annual flood-related losses projected at:

\$5 billion by 2030

\$30 billion by 2070

Heat-related fatalities may **double** to over **300,000 deaths annually by 2050**

3. Financial and Demographic Projections

Investment requirement: \$2.4 trillion by 2050 for resilient urban infrastructure.

Flood resilience alone will need **\$150 billion** over the next 15 years in **60% of high-risk cities**.

Urban population is expected to **nearly double to 951 million by 2050**.

By 2030, **70% of new employment** in India will originate from cities.

Best Practices in Indian Cities

Ahmedabad: Implemented a **Heat Action Plan** including early warning systems, green cover expansion, health system preparedness, and shift adjustments for outdoor workers.

Kolkata: Launched a **city-level flood forecasting and early warning system**.

Indore: Invested in modern **solid waste management**, improving sanitation and creating green jobs.

Chennai: Adopted a **Climate Action Plan** based on risk assessment, aiming for both adaptation and low-carbon development.

Recommendations from the Report

For National and State Governments

Develop a **comprehensive financing roadmap**

Set **uniform standards and frameworks** to enhance municipal capacity

Engage the private sector in resilient infrastructure development

For Cities and Urban Local Bodies

Conduct **localised climate risk assessments**

Mobilise capital, including **private investments**, for mitigation and adaptation

Adopt effective urban climate strategies:

Cool roofs, urban greening, early warning systems

Rescheduling work hours to reduce heat exposure

Stormwater management and reduced impervious surface area

Conclusion

The **World Bank-MoHUA report** stresses that a **climate-resilient urban India** requires:

Empowered and autonomous city governance

Targeted and substantial investments

Institutional reforms to ensure sustainability, inclusivity, and economic productivity in urban growth.

Global Wetland Outlook 2025 - Alarming Trends and Indian Context

Context

The **Global Wetland Outlook 2025**, released by the **Ramsar Convention**, raises serious concerns about the global decline of wetlands. Since 1970, **over 35% of wetlands have been lost**, endangering biodiversity, climate resilience, and livelihoods.

What Are Wetlands?

Definition: Ecosystems characterized by land saturated or covered with water, either permanently or seasonally.

Types: Marshes, swamps, peatlands, bogs, mangroves, estuaries.

Key Characteristics:

High water saturation

Unique hydric soils

Wetland vegetation (reeds, grasses, mangroves)

Serve as ecological transition zones

Key Findings from Global Wetland Outlook 2025

Loss Rate: Wetlands are disappearing **three times faster than forests**.

Biodiversity Collapse: Wetland species populations declined by over **80% between 1970-2022**.

Carbon Storage: Peatlands, though covering just **3% of land**, store **30% of global soil carbon**.

Agriculture Threat: Around **50% of wetland degradation** is linked to agriculture and water extraction.

India's Wetlands: 19 Ramsar sites are under stress, including **Keoladeo National Park** and **Chilika Lake**.

Opportunities

Biodiversity Refuges: Lakes like Loktak and Sundarbans support endangered species and migratory birds.

Flood Regulation: Wetlands act as buffers during monsoons (e.g., **Kolleru Lake**, Andhra Pradesh).

Climate Mitigation: Peatlands help meet India's net-zero goals via carbon sequestration.

Livelihoods: Wetlands sustain over **1 billion people** through agriculture, fisheries, and tourism.

Challenges

Fragmented Policy Oversight: Multiple ministries govern wetlands, causing poor coordination.

Urban Encroachments: Lakes like **Bellandur** in Bengaluru are degraded by encroachment and pollution.

Data Gaps: The last comprehensive national wetland mapping was done over a decade ago.

Climate Stress: Rising temperatures and erratic rainfall are increasing salinisation and desiccation.

Overextraction: Ganga plains wetlands suffer from groundwater depletion.

Recommendations

Unified Wetland Authority: Establish a central governance body under MoEFCC.

Update Wetland Rules (2017): Expand legal protection to small urban and seasonal wetlands.

Community Incentives: Introduce carbon credits to reward local conservation.

Advanced Monitoring: Use AI and satellite tools for real-time mapping.

Integration into Climate Policy: Embed wetlands into State Climate Action Plans (e.g., Kerala's Blue Carbon pilot).

Grassroots Engagement: Encourage eco-clubs and initiatives like **Wetland Mitras** in schools.

Conclusion

Wetlands are critical ecosystems that support biodiversity, climate action, and human livelihoods. Their protection is essential for achieving **SDG-13 (Climate Action)**, **SDG-15 (Life on Land)**, and India's **Net-Zero by 2070** target.

Tracking India's Progress on Climate Goals
Context

India has met a key climate milestone by ensuring **more than 50% of its installed electricity capacity** comes from **non-fossil fuel sources**, achieving a major **2030 Paris Agreement target five years early**.

India's Updated Nationally Determined Contributions (NDCs) for 2030

Electricity Capacity: At least **50% from non-fossil sources**.

Emissions Intensity: **45% reduction** from 2005 levels.

Carbon Sink: Create an additional **2.5 to 3 billion tonnes CO₂ equivalent** via forests and trees.

Current Achievements

1. Installed Electricity Capacity

Total capacity: **484.82 GW**

Non-fossil sources: **242.78 GW**

In 2024, India added **30 GW** of renewables, including **24 GW solar**, surpassing the 2030 target by 2025.

2. Carbon Sink Progress

India added **2.29 billion tonnes** of additional carbon sink by 2021.

ISFR data shows ~150 million tonnes added annually, suggesting the **2.5 billion target could be met by 2023**.

3. Emission Intensity Reduction

As of 2020, emissions intensity had already fallen **36%**.

On track to achieve **45% reduction by 2030**.

Ground Reality

Metric	Status
Electricity in total energy use	<22%
Share of non-fossil in power generation	28%
Clean energy in total energy consumption	≈6%

Despite success in electricity, **industry, transport, and cooking** still depend heavily on **coal, oil, and gas**.

Importance of Progress

Enhances India's credibility at global climate platforms (e.g., COP, UNFCCC).

Demonstrates a **development-compatible climate model**, even without adequate international climate finance.

Key Challenges

Global Competition: China is expanding renewables at **10× India's pace**.

Power Intermittency: Solar and wind are weather-dependent, unlike stable coal or nuclear power.

Slow Sectoral Transition: Hard-to-abate sectors (industry, transport) lag behind in decarbonization.

SMR Delays: Small Modular Reactors (SMRs) unlikely to be commercially deployed before 2030.

Way Forward

Beyond Power Sector: Push clean tech in **transport, industry, cooking** (e.g., EVs, hydrogen, biomass).

Stable Power Expansion: Accelerate **nuclear and hydroelectric** investments.

Secure Climate Finance: Demand concessional funding and tech transfer from developed nations.

Carbon Market: Build a regulated **domestic carbon credit system** to incentivise voluntary cuts.

Conclusion

India's early fulfilment of its Paris Agreement commitments signals a leadership role in global climate policy. Yet, **real transformation** requires decarbonizing the **entire economy**, ensuring **just transitions**, and compelling richer nations to uphold their promises on **finance and technology**. Sustaining this progress will demand bold policy, innovation, and cooperative governance.

Winter Fog Experiment (WiFEX)

Overview

Launched: Winter of 2015

Location: Indira Gandhi International Airport (IGIA), New Delhi

Lead Agency: Indian Institute of Tropical Meteorology (IITM)

Supported by:

Ministry of Earth Sciences (MoES)

India Meteorological Department (IMD)

National Centre for Medium Range Weather Forecasting (NCMRWF)

Objective

Improve **now-casting (up to 6 hours ahead)** and **forecasting** of dense winter fog in **North India**, particularly across the **Indo-Gangetic Plain**

Minimize fog-related **accidents, transport delays, and economic losses**

How It Works

Utilizes **micrometeorology towers, ceilometers, and high-frequency sensors**

Gathers data on:

Temperature layers

Humidity

Wind and turbulence

Aerosol concentration

Soil heat flux

Achievements

Developed a **high-resolution (3 km)** probabilistic fog forecasting model

Achieves over **85% accuracy** in predicting **very dense fog** (visibility below 200 meters)

Enhances preparedness for aviation, rail, and road sectors by predicting:

Fog onset

Intensity

Duration

Dissipation time

Ambrosia Beetle Infestation in Kerala's Rubber Plantations

Context

Kerala's **rubber plantations** are under threat from a harmful association between the **ambrosia beetle** and a **fungal complex**, leading to extensive **leaf fall** and **tree drying**.

About Ambrosia Beetles

Origin: Native to Central and South America

First reported in India: 2012, in cashew trees in Ponda, Goa

Ecological Association: These beetles live in symbiosis with fungi, particularly:

Fusarium ambrosia

Fusarium solani

How the Beetle-Fungus Alliance Works

Beetles do not feed on tree bark; instead, they cultivate fungi inside tunnels (galleries) they bore into the wood

The **fungi digest the wood**, releasing nutrients for the beetles and their larvae

The fungi also produce enzymes that **weaken tree structure** and allow deeper penetration

Some beetles carry fungi in special pouches called **mycangia**

Impact on Rubber Trees

Target **stressed or already infected trees**, which often emit **ethanol**, attracting beetles

Result in:

Severe **leaf drop**

Trunk desiccation

In extreme cases, **tree death**

Decline in **latex yield**, leading to
economic and agricultural damage

Control and Prevention

To manage the outbreak, experts recommend:

Use of antifungal agents

Physical removal of infected wood

Burning or chipping affected tree parts

Deploying traps to capture beetles

Early detection and **preventive care** for vulnerable trees

IUCN World Conservation Congress 2025

Context

The **International Union for Conservation of Nature (IUCN)** will host its **World Conservation Congress 2025** in **Abu Dhabi**, where global leaders and experts will deliberate on crucial conservation issues, including the **application of genetic technologies in biodiversity protection**.

About the IUCN Congress

The IUCN Congress is the **largest international gathering** of conservation experts, decision-makers, and leaders.

Held **once every four years**, it plays a pivotal role in setting global **conservation and climate action priorities** for the coming decade.

Structure of the Congress

Forum

Acts as a global marketplace for knowledge exchange in conservation, sustainability science, innovation, and practice.

Exhibition

A space where **IUCN Members**, Commissions, businesses, academia, and partners host booths, pavilions, and side events.

Members' Assembly

IUCN's **highest decision-making body**, where Members vote on key environmental motions, adopt policy resolutions, and elect the governing Council.

Theme of IUCN Congress 2025

"Powering Transformative Conservation"

The Congress will address **five critical thematic areas**, each focused on driving **bold, systemic**

change for a sustainable future for both people and the planet.

What is IUCN?

The **International Union for Conservation of Nature (IUCN)** is a global membership organization composed of **government and civil society entities**.

Founded in 1948, it is the world's **largest and most inclusive environmental network**, leveraging science, policy, and partnerships for conservation action.

Governance Structure

Council: Serves as IUCN's principal governing body between Congress sessions.

President: Chairs the IUCN Council.

World Conservation Congress (Members' Assembly): The supreme authority where Members:

Debate major issues

Approve strategic programs

Amend IUCN's statutes

Elect the IUCN Council

IUCN Statutes: Define the legal framework and structure for governance

Influence of the Plastic Industry on Environmental Policies: A Growing Global Concern

Introduction: Mounting Concerns Over Industry Influence

The plastic industry is facing intensifying global criticism for allegedly manipulating environmental policy to serve its own interests—particularly during negotiations for an international treaty to combat plastic pollution.

Environmental advocates warn that the industry, closely tied to fossil fuel interests, is employing a **well-documented playbook of tactics**—similar to those used historically by the **tobacco industry**—to undermine meaningful regulation. These include **spreading misinformation, delaying reforms, and deflecting accountability onto consumers**.

Tactics Borrowed from the Tobacco Industry

1. Shifting Blame to Consumers

Much like tobacco companies that pushed personal responsibility despite promoting harmful products, plastic producers emphasize consumer recycling behavior to deflect blame for systemic overproduction and unsustainable packaging.

2. Promoting Misleading Science and Public Relations

Documents reveal that major plastic manufacturers have known since the 1980s that plastic recycling is technically and economically limited. Yet, they continued to champion it publicly as a viable solution—effectively **stalling bans and regulations**.

3. Greenwashing and Mislabeling

Claims about **biodegradable or compostable plastics** often prove false, especially in countries like India lacking robust waste treatment systems. This **greenwashing** misleads consumers while masking the continued production of non-sustainable materials.

A telling example is **Coca-Cola**, which promoted a sustainable brand image but **quietly abandoned its 2030 goal** of 25% reusable packaging and scaled back key recycling targets.

Expanding Influence in the Global South

As regulations tighten in developed nations, the plastic industry is increasingly targeting **low- and middle-income countries** for market expansion.

OECD Global Plastic Outlook (2022) Findings:

Plastic consumption projected to:

More than **double in Sub-Saharan Africa** by 2060

Triple in Asia during the same period

By comparison:

Growth in **Europe** expected at just **15%**

North America at **34%**

Countries in the Global South are more vulnerable due to **weaker regulations, low public awareness, and limited waste infrastructure**—conditions ripe for industry exploitation.

India's Plastic Policy Framework: Progress and Challenges

1. Role of the Informal Sector

In India, around **70% of plastic recycling** is handled by the **informal sector**—ragpickers, sorters, and grassroots recyclers—who often operate in hazardous conditions.

To support and formalize their work, the **NAMASTE scheme (2024)** aims to:

Integrate waste workers into formal waste systems

Provide **Ayushman Bharat health insurance, safety gear, and social benefits**

As of **May 2025**:

Over **80,000 workers** have been registered

More than **45,700 received protective equipment**

26,400+ were issued health cards

2. Extended Producer Responsibility (EPR)

Under the **Plastic Waste Management Rules (2016, amended 2022)**, producers are legally bound to manage the waste generated by their products.

However, enforcement gaps remain:

Only **11%** of banned single-use plastics are effectively covered

Fewer than **half of producers** comply with EPR guidelines

This lax oversight allows large-scale non-compliance and delays significant environmental progress.

Industry Lobbying in Global Treaty Negotiations

During recent sessions of the **UN Intergovernmental Negotiating Committee (INC)**—tasked with drafting a global plastics treaty—industry influence has grown more prominent.

At **INC-3**, fossil fuel and chemical industry lobbyists increased their presence by **36%** compared to previous rounds.

Civil society groups reported that **industry-aligned delegates were instrumental in slowing progress** on binding commitments.

Investigations by groups like the **Centre for Climate Integrity** and **CIEL** have revealed that the plastic industry has long known the **inadequacy of recycling** as a long-term solution. Nonetheless, it continued to promote recycling as a strategy to **avoid regulatory scrutiny** and **sustain plastic production**.

Conclusion: A Call for Stronger Oversight and Transparency

The global community stands at a crucial juncture. While international and national efforts to combat plastic pollution are intensifying, the **plastic industry's strategic influence poses a serious obstacle** to effective policymaking.

Without stronger enforcement, transparency, and inclusion of vulnerable groups like informal waste workers, policies risk being co-opted—**undermining environmental goals and delaying meaningful change**.

ICJ Issues Landmark Advisory on Climate Change and State Responsibility

Context: A Nation on the Frontlines

In Vanuatu's Havannah Harbour, veteran diver John Warmington recalls once swimming through

thriving coral ecosystems. Today, those reefs are reduced to skeletal remains—bleached and broken by climate-induced cyclones, invasive species, and a recent earthquake. On land, climate change has upended daily life: schools are forced to operate in tents dismantled before each storm, and subsistence farmers like Kaltang Laban struggle with infertile soil and failed harvests.

Survival at Stake

With over 70% of the population dependent on subsistence agriculture, Vanuatu faces existential threats. Yet the country refuses to remain a passive victim. Instead, it has taken bold action by leading over **130 countries** in a **historic case before the International Court of Justice (ICJ)**, seeking legal accountability from major carbon emitters.

the Pacific Island nation of **Vanuatu**, joined by over **130 countries**, brought a case to the **International Court of Justice (ICJ)** seeking legal clarity on global obligations toward climate action—particularly to safeguard vulnerable **Small Island Developing States (SIDS)**.

In **2023**, the **UN General Assembly** passed a resolution requesting the ICJ to issue an **advisory opinion** on:

The **duties of states under international law** to protect the environment.

The **legal consequences** for failing to fulfil these duties.

Key Takeaways from the ICJ Advisory Opinion (2025)

1. Environmental Protection is a Human Right

The ICJ affirmed that the **right to a clean, healthy, and sustainable environment** is protected under international human rights law, including the **Universal Declaration of Human Rights**.

States are legally obligated to act on climate change to uphold these rights.

2. States Must Limit Greenhouse Gas Emissions

Countries are required to **prevent environmental harm**, including from **GHG emissions**, and must work toward achieving the **Paris Agreement goal** of keeping global warming below **1.5°C**.

With global temperatures already up by **1.3°C**, urgent action is legally and ethically imperative.

3. Consequences for Inaction

Failure to comply with climate obligations can trigger **legal responsibility**.

States may be required to **halt harmful practices**, offer **assurances of non-repetition**, and provide **reparations** based on the extent of damage.

While some nations, including the **United States** and **Russia**, opposed binding court mandates, the ICJ's ruling intensifies **legal and moral pressure** for accountability.

About the International Court of Justice (ICJ)

Aspect	Details
Established	1945, as the principal judicial organ of the United Nations
Headquarters	Peace Palace , The Hague, Netherlands
Core Functions	- Resolves legal disputes between states - Issues advisory opinions
Jurisdiction Limits	Can only hear cases brought by or referred by states or UN bodies
Composition	15 judges, elected for 9-year terms by the UN General Assembly and Security Council
Judicial Independence	Judges act independently , not as representatives of their governments

Why This Decision Matters

The ICJ's opinion, while **non-binding**, sets a powerful legal precedent by reinforcing that:

Climate action is a **legal duty**, not just a political or voluntary commitment.

Countries may be **held accountable** under international law for environmental harm.

It marks a significant step in the **global climate justice movement**, offering small and climate-vulnerable nations a **legal framework** to demand action from major polluters.

New Discoveries in Marine Biodiversity: Sea Slugs Identified in Indonesia

Recent Discovery

Scientists have recently discovered and described **two new species** of wart sea slugs—**Phyllidia ovata** and **Phyllidia fontjei**—off the coast of **North Sulawesi, Indonesia**.

About Sea Slugs (Nudibranchs)

Belong to **Phylum Mollusca** and **Class Gastropoda**.

Soft-bodied marine molluscs, often referred to as **"naked snails"** due to their lack of shells.

Found across global oceans, from shallow waters to deep-sea ecosystems.

Ecological Role and Adaptations

Common in **coral reef ecosystems**, serving as indicators of reef health.

Feed on algae, sponges, and small invertebrates.

Known for **vibrant colours and patterns**, which act as warnings to predators due to their **toxicity**.

Toxicity is derived from their diet; some can retain **jellyfish stingers** for self-defense.

Notable features include:

Photosynthesis in some species.

Ability to **regenerate lost body parts**.

Some species can **absorb genes from their prey** and integrate them into their own genome.

Mostly **diurnal**, but some are **nocturnal** as well.

Kanniyakumari Wildlife Sanctuary: A Biodiversity Haven

Recent Observation

A researcher recently recorded around **450 species of moths** in the **Kanniyakumari Wildlife Sanctuary**, highlighting the area's ecological richness.

About the Sanctuary

Location: Kanniyakumari district, Tamil Nadu.

Lies at India's **southernmost tip**, where the **Arabian Sea, Bay of Bengal, and Indian Ocean** converge.

Borders include:

North: **Kalakkad-Mundanthurai Tiger Reserve**

South: **Kodayar and Thovalai channels**

West: **Kerala state boundary**

Key Features

Rivers: Origin of seven rivers, including **Pahrli and Thamirabarani**.

Vegetation Types:

Southern thorn forests

Dry and moist deciduous forests

Semi-evergreen and evergreen hill shola forests

Fauna Highlights:

Indian Bison, Elephants, Nilgiri Tahr, Sambar Deer

Lion-tailed Macaque and Indian Rock Python

Home to **indigenous communities** living in and around the reserve.

Toxic Algal Bloom in Australia: Karenia mikimotoi Outbreak

Recent Event

A **massive bloom of Karenia mikimotoi** has caused widespread death of marine life off the **coast of South Australia**, impacting both **fisheries and tourism**.

About Karenia mikimotoi

A **dinoflagellate species** commonly responsible for **red tides**, especially in the **North Atlantic** and waters around **Japan**.

Produces **hemolytic and ichthyotoxic** compounds, leading to:

Deaths of fish, shellfish, echinoderms, and crustaceans

Anoxic conditions when blooms die off and decay, depleting oxygen levels

Global Presence

Reported in diverse locations: **Ireland, Norway, Japan, India, Australia, Korea, Alaska, Texas, and U.S. east coast**.

Less acutely toxic to humans, but ecologically **devastating**.

Key Characteristics

Photosynthetic, with **yellow-brown chloroplasts** and a prominent ellipsoidal nucleus.

Thrives in a **variety of environmental conditions**, including varying light, temperature, salinity, and nutrients.

Invasive Species Threat: Lantana camara in Himachal Forests

Recent Development

Lantana camara has spread over **3.25 lakh hectares** of forest land in **Himachal Pradesh**, endangering **native biodiversity**.

About Lantana camara

A **pantropical weed** native to **Central and South America**.

Introduced in **18th century India** as an ornamental plant; now a **highly invasive alien species**.

Forms dense thickets that choke native vegetation.

Ecological Impact

Releases **allelochemicals** that inhibit the growth of surrounding plants.

Leads to **homogeneous vegetation**, severely impacting **biodiversity**.

Now spreading **from lowland to higher altitudes**.

Control and Utilisation

Potential economic uses include:

Fuelwood and **furniture** from its woody biomass.

Organic and vermicomposting material for sustainable agriculture.

National Crisis Management Committee (NCMC)

Recent Development

The Ministry of Home Affairs has notified the **Disaster Management National Crisis Management Committee (Procedure) Rules, 2025**.

About NCMC

Legal Status: Granted statutory backing through the **Disaster Management (Amendment) Act, 2025**.

Chairperson: Cabinet Secretary

Members: Includes Home Secretary, Defence Secretary, and other senior officials.

Functions and Powers

Serves as the central authority for handling major disasters with national impact.

Reviews national preparedness for emergencies and disasters.

Coordinates and oversees the disaster response operations across ministries and agencies.

ICJ Climate Change Ruling: Legal Accountability, Compensation, and a Global Wake-Up Call

Overview

In a historic move, the **International Court of Justice (ICJ)** has issued an **advisory opinion** affirming that **states have binding legal obligations under international law to combat climate change**. Although non-binding, the opinion has wide-reaching legal and moral influence and is expected to bolster **climate litigation**, shape national policies, and support compensation claims from vulnerable nations.

This ruling follows a **2023 UN General Assembly request**, led by Vanuatu, to clarify states' responsibilities regarding environmental harm and climate inaction.

Background: Vanuatu's Push for Climate Justice

Origin of the Initiative

In **September 2021**, the Pacific island nation of **Vanuatu** launched a campaign to seek an advisory opinion from the ICJ, highlighting the urgent need for legal clarity to protect **climate-vulnerable nations**, particularly small island states facing rising sea levels and existential threats.

UNGA Resolution (March 2023)

With broad support, the **UN General Assembly** adopted a resolution requesting the ICJ's legal opinion on two questions:

What are states' obligations under international law to protect the climate system and environment?

What legal consequences arise when states fail to meet these obligations and cause environmental harm?

Legal Foundation and Authority of ICJ Advisory Opinions

Legal basis: Under the **UN Charter**, both the **UNGA** and **Security Council** can request advisory opinions from the ICJ.

While **not enforceable**, these opinions carry **substantial legal authority** and help shape **customary international law** and future treaties.

Key Findings of the ICJ's Advisory Opinion

1. Climate Action as a Legal Duty

The ICJ affirmed that addressing climate change is not merely a policy choice but a **binding legal responsibility** under international law. This obligation is derived from:

UNFCCC, Kyoto Protocol, Paris Agreement

Other treaties including **UNCLOS** (Law of the Sea) and the **Montreal Protocol**

2. Emissions Reductions: A Shared but Differentiated Responsibility

All states must reduce greenhouse gas (GHG) emissions.

Developed (Annex I) countries bear a higher duty to lead in cuts and provide **financial and technological support** to developing nations.

3. Accountability and Compensation

Failure to act on climate change may constitute an **"internationally wrongful act"**, triggering state responsibility.

This opens pathways for **compensation** or **reparations** to countries suffering climate-induced loss and damage.

4. Oversight of Private Actors

Governments may also be held accountable for **failing to regulate private corporations** that

contribute to environmental harm, if they lack or neglect to enforce necessary laws.

Implications of the Ruling

A Global Legal and Moral Shift

The ICJ's opinion is now the **most authoritative legal interpretation of climate responsibilities**, setting a precedent for:

National and regional courts

Public interest litigation

Future international negotiations

Reinforcement of Climate Commitments

The ruling underscores that countries must treat **climate commitments as legal obligations**, not just political pledges—particularly important as many developed nations fall behind their 2030 emission targets.

Validation of "Loss and Damage" Claims

For the first time, a major legal body affirms the right of **climate-affected nations**—or "injured states"—to seek **reparations**. This could empower future legal claims against:

Historically high-emitting nations

Major polluting corporations

Challenges and Legal Tensions

The ICJ emphasized that climate efforts must be **adequate**, not just symbolic.

This may clash with the **Paris Agreement**, which allows nations to set their own targets without external enforcement.

As a result, legal disputes may arise around **what qualifies as "adequate" climate action**, potentially triggering resistance even among developing states.

Conclusion: A Precedent for Climate Accountability

Though advisory, the ICJ's opinion represents a **landmark moment in international environmental law**. It redefines climate action as a **legal imperative**, not merely a matter of policy or goodwill. Its true impact will unfold as:

Courts reference the ruling in climate litigation

Governments reconsider their climate obligations

Developing nations seek reparations or accountability for climate harm

The ruling has laid the groundwork for a **more just, accountable, and legally grounded global response to climate change**.

Coral Cover Decline in Lakshadweep: Study Reveals 50% Loss Over 24 Years

A recent study highlights a significant **50% reduction in coral cover** across parts of the **Lakshadweep archipelago** — particularly in **Agatti, Kadmat, and Kavaratti islands** — over a span of 24 years, raising serious concerns about coral sustainability and resilience in the region.

Key Findings of the Study

Coral Recovery Weakened: The main cause of the long-term decline is the **reduced recovery rate** following each coral bleaching event.

ENSO Impact: The region's corals were significantly impacted by **three major El Niño Southern Oscillation (ENSO) events**, which caused stress and repeated bleaching.

Ideal Conditions for Coral Growth

Factor	Optimal Condition
Temperature	23°C to 29°C is ideal for coral survival and health.
Water Depth	Best suited to depths less than 50 meters to allow adequate sunlight.
Salinity	Stable salinity levels are essential for reef ecosystem stability.
Water Clarity	Clear water is vital for sunlight penetration and photosynthesis by symbiotic algae.
Substrate	Corals require hard substrates like volcanic rocks for anchoring and growth.

Key Reasons for Coral Depletion

Marine Heatwaves: Increasing ocean temperatures from climate change have intensified **marine heatwaves**, leading to coral bleaching.

Pollution and Runoff: Storm-induced precipitation causes **freshwater runoff**, diluting seawater and bleaching near-shore coral systems.

Extreme Low Tides: Coral exposure to air during low tides causes bleaching, especially in shallow reefs.

Other Stressors:

Overexposure to sunlight

Sedimentation

El Niño events

Changing ocean currents

Importance of Coral Reefs

Biodiversity Hotspots: Though they cover only **1% of the ocean**, coral reefs support **25% of all marine species**.

Ecosystem Services:

Provide habitat and shelter to marine organisms.

Host filter feeders like **sponges** that cleanse ocean water.

Act as sources for **biomedical research** and **pharmaceutical development**.

Economic Value:

Support **tourism and fisheries**, boosting coastal livelihoods.

Help generate **oxygen** and maintain oceanic balance.

Major Coral Reef Areas in India

Region	Highlights
Andaman & Nicobar Islands	Largest coral reef area in India.
Lakshadweep Islands	Atoll-type coral formations around remote islands.
Gulf of Kachchh (Gujarat)	Includes fringing reefs; impacted by high turbidity.
Gulf of Mannar & Palk Bay	Protected under Gulf of Mannar Marine National Park .
Others	Smaller reefs also found off Malvan coast in Maharashtra .

Conclusion

The sharp decline in coral cover across Lakshadweep highlights the urgency of **climate-resilient conservation measures**. With increasing global temperatures and human-induced stressors, safeguarding these fragile ecosystems is essential for marine biodiversity, coastal livelihoods, and ecological stability.

Long-Billed Bush Warbler

Recent Sighting

First **confirmed Indian sighting in 46 years** recorded in **Suru Valley, Ladakh** by a team of birders.

Species Profile

Scientific Name: *Locustella major*

IUCN Status: Near Threatened

Distribution: Found in parts of **China, India, Pakistan, and Tajikistan**

Habitat:

Grassy slopes with bushes and weeds

Alpine meadows and upland cultivation (2400–3600 meters)

Physical Characteristics

Medium-sized with **long tail and bill**

Plumage: **Brownish-olive** with fine streaks; **whitish underparts**

Size: **15–17 cm**

Secretive nature; more likely to run than fly when disturbed

Call: A soft clicking sound, not loud or melodic

Environmental Flow (E-Flow)

Context

The **Union Jal Shakti Minister** recently chaired a review meeting on the environmental flow of the **Ganga River and its tributaries**.

What is Environmental Flow?

Definition: The **required quantity, timing, and quality** of water flow needed to sustain **freshwater ecosystems** and the **communities dependent on them**.

Significance

Preserves the **ecological health of rivers** and their estuaries.

Counters negative effects of **dams, pollution, and encroachments** on river systems.

E-flow policy helps restore **natural balance** in regulated rivers like the Ganga.

Maritime Development Fund (MDF)

Context

India proposed the **Maritime Development Fund** during the **Maritime Financing Summit 2025** held in New Delhi.

About MDF

A **blended finance mechanism** aimed at:

Lowering **capital costs** for maritime infrastructure.

Attracting **long-term investments** into **shipyards, coastal ports, and inland waterways**.

Related Developments

Ports' turnaround time in India reduced to under 1 day.

India has permitted **100% FDI in shipping**, boosting private participation.

A Grove Revived: The Story of Sirawas

Introduction: A Forest Once Lost

Fifteen years ago, the sacred grove of **Chudasidh Adavad** in **Sirawas village**, Alwar district (Rajasthan), lay barren and broken. The soil was cracked, native vegetation had vanished, and livestock wandered without shade or water. Yet, the village elders remembered a different past—

of flowing streams, dense native trees, and a grove that served not only nature but also spiritual and communal life.

A Silent Movement Begins

When despair loomed, a **quiet grassroots movement** emerged—not through official schemes, but through collective memory and spiritual belief. In partnership with local NGO **KRAPAVIS**, the villagers took action:

Soil and water conservation: Boulders were placed to control erosion.

Water revival: Small ponds and check dams were carved into the dry earth.

Afforestation: Native grasses and indigenous trees were replanted.

Community leadership: Women led the way, children joined, and farmers worked with deep conviction.

The grove was treated not as property, but as a **sacred ancestor**—a living part of the community deserving respect and protection.

Today: A Grove Reborn

Chudasidh Adavad is now a thriving ecological and cultural landscape:

Over 3,400 native trees now grow in the area.

2,000 livestock depend on its restored pastures.

Water once again flows, aided by check dams and rainwater harvesting.

Biodiversity has returned: peacocks, robins, hill birds, and local fauna now inhabit the grove.

Livelihoods are revitalized, blending agro-ecology with sustainability.

Without waiting for external mandates, the people of Sirawas have restored **not just a forest, but an entire way of life**—one based on devotion, equity, and resilience.

Key Themes and Insights

1. The Silent Strength of Community Action

Local, voluntary efforts can achieve what large-scale interventions often struggle with.

The initiative shows the power of **collective custodianship** over common resources.

2. Valuing Nature Through Culture

The grove was revived not as a utility but as a **sacred, cultural landscape**.

Spiritual reverence provided a powerful, sustainable foundation for ecological action.

3. Community Conservation as a Model

Demonstrates a replicable model of **grassroots afforestation and pastureland revival**.

Contributes to biodiversity conservation, climate resilience, and sustainable livestock-based livelihoods.

4. Agro-Ecological Synergy

Restored native grasses and water sources support **sustainable farming and grazing**.

Reinforces traditional **agro-pastoral systems** vital for rural livelihoods.

5. Governance and Legal Recognition

The revival occurred **without formal legal backing**, highlighting the **gap in governance** for community-managed commons like *orans* (sacred groves).

Echoes the need for **legal protection** under forest or revenue laws, aligning with **Supreme Court directives**.

6. Ethical and Environmental Stewardship

Embodies ethical land-use values: **custodianship over exploitation, tradition over extraction**.

Ensures **equitable access** to common resources across gender and generational lines.

Conclusion: A Local Story with Global Lessons

The revival of Sirawas's grove is more than a tale of environmental restoration—it is a **living testament to the power of cultural ecology, grassroots leadership, and community resilience**. As similar efforts begin to ripple through other villages in Alwar, the Sirawas model offers inspiration for a world in search of climate solutions that are not just technical, but **deeply human and rooted in place**.

Discovery of *Chamaegastrodia reiekensis*: A Rare Orchid from Northeast India

Overview

Scientists from **Mizoram University** and **Manipur University** have discovered a **new and critically endangered orchid species**, *Chamaegastrodia reiekensis*, in the Reiek forests of Mizoram. The finding contributes to the understanding of rare holomycotrophic plant species.

Key Characteristics

Genus: *Chamaegastrodia*

Species Name: *reiekensis*, named after **Reiek**, a biodiversity-rich mountain in Mizoram.

Type: Holomycotrophic orchid

Lacks **chlorophyll** and leaves.

Incapable of **photosynthesis**.

Completely dependent on **symbiotic underground fungi** for nutrients.

Global Context

With this discovery, the total known *Chamaegastrodia* species now stands at **eight**.

Found sparsely in regions like the **Eastern Himalayas, South-Central China, Japan, Korea, Myanmar, Nepal, and Thailand**.

In India, all species from this genus have been recorded only in **Northeast India**.

Habitat and Ecology

Grows in **moist, humus-rich soil**, typically near **bamboo clumps** at an altitude of approximately **1,500 meters**.

The **Reiek forest** is characterized by:

Multi-layered canopies,

Tall emergent trees,

Dense undergrowth supporting high biodiversity.

Climatic Conditions:

Temperature: **20–28°C**

Annual rainfall: **200–250 cm**

Flowering occurs from **August to September**, and **fruiting** from **September to October**.

The plant's **small size and camouflage** make it difficult to detect, emerging only during a short reproductive period.

Conservation Status

Provisionally listed as **Critically Endangered (CR)** under IUCN guidelines due to its rarity, short visibility period, and ecological specificity.

Environmental Flow (E-Flow): Ensuring River Health

Definition

Environmental flow (e-flow) refers to the **quantity, timing, and quality** of water required in a river system to maintain the health of **ecosystems** and support the **communities that depend on them**.

Challenges in Indian Rivers

River flows are severely disrupted by:

Dams and barrages

Pollution

Encroachments

These changes have led to degradation in **biodiversity, water quality, and ecosystem services**.

Significance

E-flow helps maintain:

Aquatic biodiversity (e.g., sustaining key fish species)

Wetland and estuarine ecosystems

Human livelihoods, especially in water-stressed areas

Supports **long-term ecological balance** and **economic sustainability**.

Policy Measures

A recent high-level meeting led by the **Union Jal Shakti Minister** emphasized the importance of e-flows for the **Ganga River and its tributaries**, signaling policy-level commitment to ecological restoration.

Mycorrhizal Fungi: The Invisible Pillars of Soil Health

Overview

A recent report, the '**Underground Atlas**' by **SPUN (Society for the Protection of Underground Networks)**, underscores the ecological value of **mycorrhizal fungi** and the urgent need for their conservation.

Key Facts

Found in **symbiosis with over 80% of plant species**.

Constitutes up to **30% of the living microbial biomass** in the soil.

Essential for:

Nutrient uptake (especially phosphorus),

Carbon sequestration, using CO₂ released by plant roots.

Conservation Gap

Over **90% of mycorrhizal fungi hotspots** lie **outside protected areas**, making them vulnerable to land-use change and degradation.

Their critical role in **soil health, plant growth, and climate regulation** is often overlooked in mainstream conservation efforts.

New Species Discovery: *Piratula acuminata* in the Sundarbans

Overview

Researchers from the **Zoological Survey of India (ZSI)** have discovered a new species of spider—*Piratula acuminata*—on **Sagar Island** in the **Sundarbans delta**.

Key Features

Taxonomy: Belongs to the **Lycosidae** family, commonly referred to as **wolf spiders**.

Hunting Strategy: Unlike spiders that spin webs, wolf spiders are **ground-dwelling predators** that rely on speed and stealth to ambush prey.

Appearance:

Size: Medium, approximately **8–10 mm** in length.

Coloration: **Pale creamy-white** body with distinctive **brown and chalk-white spots** on the abdomen.

Notable Markings: A pair of **light brown longitudinal stripes** toward the rear of the body.

Scientific Significance

First Record in India: This marks the **first documented occurrence** of the genus *Piratula* in India.

Geographic Range: Members of this genus are primarily distributed across **Asia**, with **limited presence in Europe and North America**.

Macquarie Island: **Earthquake and Geoconservation Importance**

Recent Event

A **6.0 magnitude earthquake** was reported west of **Macquarie Island**, drawing attention to its geotectonic relevance.

Geographic and Geological Profile

Location: Situated in the **Pacific Ocean**, about **1,500 km southeast of Tasmania**, midway between **Australia and Antarctica**.

Dimensions: Approximately **34 km long** and **5 km wide**.

Geological Uniqueness:

Formed at the boundary of the **Indo-Australian and Pacific tectonic plates**.

Represents the **only known location on Earth** where **mantle rocks from 6 km beneath the ocean floor** are **actively exposed above sea level**.

Part of the **Macquarie Ridge**, which disrupts the **Antarctic Circumpolar Current**, creating distinct ecological zones on either side.

Biodiversity and Conservation

Vegetation: Despite lacking trees, the island supports native **grasses and mosses**, along with **small glacial lakes**.

Fauna: Hosts

4 species of penguins

4 species of albatross

A total of **57 seabird species** recorded.

Status:

Politically part of **Tasmania, Australia** since 1900.

Declared a **Tasmanian State Reserve** in 1978.

Designated a **UNESCO World Heritage Site** in 1997 due to its geological and ecological significance.

Climate Tipping Point and Marine Heatwaves Context

A study on the **extreme marine heatwaves of 2023** suggests these events may signal the crossing of a **climate tipping point**.

Understanding Climate Tipping Points

Defined by the **IPCC (Intergovernmental Panel on Climate Change)** as **critical thresholds** in Earth systems.

Once exceeded, these thresholds can trigger **abrupt and potentially irreversible changes** to climate or ecosystems.

Examples of Potential Tipping Points

Greenland and Antarctic ice sheets melting.
Disruption of Atlantic Meridional Overturning Circulation (AMOC).

Collapse of the Amazon rainforest into savannah.

Thawing of permafrost, releasing methane.

Why It Matters

Marine heatwaves and similar phenomena are **increasingly linked to anthropogenic climate change**.

Crossing tipping points can lead to **long-term, systemic damage** to both **natural systems** and **human societies**, requiring urgent climate action.

Bambusa tulda: Sustainable Bamboo Innovation

Research Highlight

Researchers at **IIT Guwahati** have developed a **biodegradable bamboo-polymer composite** using *Bambusa tulda*, offering a promising alternative to **conventional plastic**.

About Bambusa tulda

Common Names: Bengal Bamboo, Indian Timber Bamboo.

Local Names: *Jati Bahn* (Assam), *Mritinga* (Tripura).

Origin: Native to the **Indian subcontinent, Indochina, Tibet, and Yunnan.**

Characteristics

Growth: Fast-growing, clumping species with dense tufts.

Height: Up to **20 meters.**

Soil Requirements: Thrives in **fertile, well-drained loamy or alluvial soil.**

Propagation: By **seeds, rhizomes, culm cuttings, or tissue culture.**

Uses

Industrial: Widely used in **pulp and paper, construction, scaffolding, and furniture.**

Edible Shoots: Slightly bitter; used in pickles and fermentation.

Fermented shoots contain **phytosterols** beneficial for **cholesterol management.**

Agroforestry: Acts as a **windbreak** in farming landscapes.

New Bush Frog Species Discovered in Meghalaya: *Raorchestes jadoh* and *Raorchestes jakoid*

Overview

Two previously unknown species of bush frogs have been discovered in the Indian state of Meghalaya and named *Raorchestes jadoh* and *Raorchestes jakoid*. These species belong to the genus *Raorchestes*, which is known for its high diversity among Asian bush frogs.

Habitat and Location

***Raorchestes jadoh*:** Found in **Langtor**, Eastern West Khasi Hills district at an altitude of **1,655 metres.**

***Raorchestes jakoid*:** Found in **Lawbah**, East Khasi Hills district at **815 metres** elevation.

Both were spotted in **vegetation near human settlements**, often in bushes and trees.

Biological Characteristics

Both species exhibit **direct development**, meaning they **bypass the tadpole stage** and hatch directly into froglets.

Their classification within the *Raorchestes parvulus* species complex is based on:

Distinctive **vocalizations**

Morphological features

DNA sequencing

Taxonomic Significance

The genus *Raorchestes* is among the most diverse within the frog family **Rhacophoridae**, with **80 recognized species.**

Geographical range spans **southern and northeastern India, Nepal, Myanmar, Thailand, Laos, southern China, Vietnam, Cambodia, and western Malaysia.**

Bhitarkanika National Park: A Biodiversity Hotspot in Odisha

Recent Event

A **6.3-foot-long female saltwater crocodile** was recently captured from a village pond near **Bhitarkanika National Park**, located in **Kendrapara district, Odisha.**

Park Overview

Location: Kendrapara district, Odisha

Area: 672 sq.km.

Landscape: Comprises **mangrove swamps, estuaries, deltas, creeks, and mudflats** formed by the **Brahmani, Baitarani, and Dhamra rivers**

Second-largest mangrove ecosystem in India, after the Sundarbans

Ramsar Site: Recognized for its ecological importance

Ecosystem and Biodiversity

Flora:

Dominated by **mangroves, casuarinas**, and salt-tolerant grasses like the **indigo bush**

Fauna:

Saltwater Crocodiles: India's **largest population** resides here

Gahirmatha Beach (eastern boundary):

World's largest nesting site for Olive Ridley Sea Turtles

Other wildlife includes:

Hyenas, wild boars, sambar, chitals, jungle cats, and wild pigs

Migratory birds and eight species of kingfisher add to the park's vibrant biodiversity

Horsehair Worms Found in Panna Tiger Reserve, Madhya Pradesh

Recent Discovery

Officials from the Forest Department found **Horsehair worms (phylum: Nematomorpha)** in the **Motidol beat area** of the **Mohandra region**, within the **Southern Forest Division of Panna Tiger Reserve, Madhya Pradesh.**

Key Features of Horsehair Worms

Also known as **Gordian worms**

Size: Up to **14 inches** long; **thin** (1 mm to 1.5 mm wide)

Color: Varies from **white to black**, including yellow and brown shades

Often seen **coiled in knots** or singly in **water bodies** such as:

Ponds, rain puddles, swimming pools, animal troughs, and household water supplies

Life Cycle and Ecological Role

Adult worms: Free-living and non-parasitic

Immature stages: Parasitize **insects** such as: Grasshoppers, crickets, beetles, cockroaches, and millipedes

Not harmful to humans, pets, or livestock

Beneficial organisms: Contribute to **natural insect control**

India's Strategy to Tackle Glacial Lake Outburst Floods (GLOFs): A National Response to Himalayan Risk

Context and Urgency

On **July 8, 2025**, a severe **Glacial Lake Outburst Flood (GLOF)** in Nepal swept away a China-built friendship bridge and disabled several hydropower plants. This event highlighted the growing **climate and seismic vulnerability** of the Himalayan region.

For India, home to over **7,500 glacial lakes** across **11 river basins**, GLOFs pose serious threats to:

Critical infrastructure

Mountain communities

River ecosystems

In response, the Indian government has launched a comprehensive **national programme**, led by the **National Disaster Management Authority (NDMA)**, to detect, monitor, and mitigate GLOF risks.

Understanding GLOF Risk in the Indian Himalayas

GLOFs occur when glacial lakes, formed by melting glaciers, suddenly burst—triggering **catastrophic floods downstream**.

Types of Glacial Lakes in India:

Supraglacial Lakes: Form on glacier surfaces, prone to seasonal melting.

Moraine-Dammed Lakes: Form near the glacier's toe, held back by unstable debris; highly vulnerable to avalanches and ice-core collapses.

Scale of the Challenge:

India has over **28,000 glacial lakes**, most above **4,500 meters altitude**.

Ground access and monitoring are limited due to harsh terrain and lack of infrastructure.

Past GLOF Disasters in India

India has already faced deadly GLOF events:

Kedarnath Tragedy (2013): Triggered by the Chorabari lake, killing hundreds.

South Lhonak GLOF (2023): Damaged the 1,250 MW Chungthang dam in Sikkim and raised the Teesta riverbed, reducing its capacity.

Contributing Factors:

Rising temperatures in **2023–2024 (hottest years on record)** accelerated glacier melt.

Limited **weather stations** in the upper Himalayas have left many lakes **unmonitored**.

India's National GLOF Mitigation Programme

Launched under the **Committee on Disaster Risk Reduction (CoDRR)**, the **\$20 million programme** targets **195 high-risk lakes**, classified into four vulnerability levels.

Key Objectives:

Hazard Mapping and Risk Classification

Installation of Automated Weather and Water Stations (AWWS)

Deployment of Early Warning Systems (EWS)

Structural Mitigation: Water drawdown and retention mechanisms

Community Awareness and Preparedness

Field Engagement:

States with glacial lakes were directed to send **scientific expeditions** to 40 priority lakes during **summer 2024**.

Technology and Innovation in Monitoring

India is closing data gaps with cutting-edge scientific methods:

Synthetic Aperture Radar (SAR)

Interferometry: Tracks changes in slope stability and lake size down to centimetre precision.

Electrical Resistivity Tomography (ERT):

Detects hidden ice cores that may cause moraine dam failures.

UAV and Bathymetric Surveys: Estimate lake volume and map topography.

Operational Breakthrough:

Two glacial lakes in **Sikkim** now host fully operational **AWWS units**, delivering:

Water and weather data every **10 minutes**

Daily perimeter images of the lakes

These represent India's **first real-time monitoring systems** in the cryosphere.

Institutional and Community Involvement

High-Altitude Monitoring: Indo-Tibetan Border Police (ITBP) troops are being trained to visually identify early signs of lake instability due to their **presence at remote elevations**.

Local Participation: Community acceptance is crucial. Some expeditions were **welcomed**, while others faced resistance. One team respected local beliefs by leaving behind a member to avoid disturbing a **sacred lake**, highlighting the need for **cultural sensitivity** in disaster planning.

Future Roadmap and Challenges

The national programme is expected to **scale under the 16th Finance Commission (FY2027-31)**, with plans to:

Extend surveillance to **thousands of additional lakes**

Expand the use of **scientific tools**

Build **institutional capacity** at central and state levels

Remaining Gaps:

Lack of Indian startups or NGOs focusing on Himalayan climate risks

Underutilization of satellite and remote sensing tools

No unified early warning system across Himalayan countries

Way Forward:

Regional cooperation with **Nepal, Bhutan, and China** and **pan-Himalayan data-sharing frameworks** are crucial for protecting downstream populations and transboundary river systems.

Conclusion

India's national response to GLOF threats represents a **critical step toward climate-resilient infrastructure** in the Himalayas. By combining advanced monitoring technologies, institutional training, and community involvement, India is moving toward a **proactive disaster risk management model**. However, **greater innovation, cross-border coordination, and investment** will be needed to

safeguard the fragile Himalayan ecosystems and the millions of lives downstream.

China's Brahmaputra Mega Dam: Strategic and Environmental Concerns for India

China Begins Construction of World's Largest Hydropower Dam

China has officially commenced construction of a colossal \$167.8 billion hydropower project on the Yarlung Zangbo River (known downstream as the Brahmaputra), near the "Great Bend" in Tibet, close to India's Arunachal Pradesh border. The foundation-laying ceremony was attended by Chinese Premier Li Qiang. Once completed, it will be the **world's largest dam**.

The project has triggered **regional alarm**, especially in India and Bangladesh, due to potential disruptions to water flow and ecological impacts on downstream regions.

Voices from Arunachal Pradesh: "A Water Bomb"

The dam's proximity to Arunachal Pradesh has sparked strong reactions:

Chief Minister's Warning: Arunachal CM has described the project as an "existential threat" and likened it to a potential **"water bomb,"** citing fears of sudden water releases that could cause catastrophic floods across the Siang region.

Environmental Concerns: Experts warn that the dam is being built in a **seismically active and ecologically fragile** area. Aside from flooding risks, the dam could permanently reduce river flow downstream, impacting local communities and biodiversity.

Geopolitical Implications: The project raises **strategic concerns** for India and Bangladesh, both of which depend on the Brahmaputra's consistent flow for agriculture, livelihoods, and water security.

Assam's More Measured Response

While acknowledging long-term concerns, Assam's leadership offered a **less alarmist view:**

Limited Chinese Contribution: The Assam CM emphasized that China contributes only **30-35%** of the Brahmaputra's flow, mainly from snowmelt and rainfall in Tibet. The river gains most of its volume from tributaries in Arunachal, Bhutan, and the Indian monsoon.

Potential Benefits: In an unconventional take, he suggested that reduced flow from China could **mitigate Assam's recurring flood problem**.

Awaiting Dialogue: He expressed confidence that the Indian government is either in ongoing discussions with China or will soon initiate formal diplomatic engagement.

India's Official Stance: Vigilant but Cautious

India has **not issued a formal response** to the dam's groundbreaking, but has reiterated key concerns:

Ministry of External Affairs (MEA): India continues to monitor developments closely and has emphasized the importance of **transparency, consultation, and data-sharing** with all downstream countries.

Rights of Lower Riparian States: MEA has previously asserted India's rights as a lower riparian nation and urged China to avoid actions that **adversely affect downstream ecosystems and communities**.

China's Response: Beijing maintains that the dam is within its sovereign jurisdiction, while assuring continued cooperation in **hydrological data-sharing and disaster response mechanisms**.

Ongoing Diplomatic Engagement

Despite the dam controversy, **India and China remain diplomatically engaged:**

LAC Agreements: In October 2024, both countries agreed on revised patrolling protocols along the Line of Actual Control (LAC), easing border tensions.

Bilateral Talks: Meetings in March 2025 included **cross-border water management discussions**.

Resumed People-to-People Ties: India has restarted issuing visas to Chinese tourists and resumed the **Kailash Mansarovar Yatra**, reflecting a calibrated approach to diplomacy.

India's Mitigation Strategy and Policy Recommendations

To address potential risks, Indian experts have outlined a **multi-pronged mitigation strategy:**

1. Infrastructure Readiness

Upper Siang Project: A proposed 300-metre-high dam in Arunachal Pradesh could

serve as both a **hydropower asset and flood buffer**, though local resistance and environmental issues have delayed its progress.

Storage Infrastructure: Building reservoirs on Brahmaputra's tributaries is essential for managing **sudden surges or droughts**.

2. Scientific and Strategic Planning

Experts stress the need for:

Hydrological modelling

Seismic risk assessment

Data analytics to anticipate any artificial water flow manipulations

3. Long-Term Solutions

River Interlinking: The National Water Development Authority has proposed linking the **Brahmaputra and Ganga basins** to redistribute excess water across regions.

Inland Waterways: Developing **diversion channels** could provide adaptive solutions for flood-prone regions.

4. Regional Diplomacy

India should coordinate with **Bangladesh, Bhutan, and Myanmar** to:

Create **joint early-warning systems**

Establish **transboundary water-sharing protocols**

Strengthen **disaster preparedness frameworks**

Conclusion

China's mega dam on the Brahmaputra marks a turning point in the region's **hydro-political dynamics**. While the project symbolizes China's engineering ambition, it also poses significant **strategic, ecological, and humanitarian risks** for downstream countries.

India's response must strike a balance between **diplomatic engagement, infrastructure preparedness, and regional cooperation** to safeguard its long-term water and environmental security.

Haridwar Stampede: Incident Overview and Response

Context

A tragic stampede at the Mansa Devi temple in Haridwar resulted in **eight deaths and 30 injuries**. The chaos was sparked by panic following a **false rumor** about an electric wire

snapping amidst a large crowd of devotees, including children.

What Happened?

A massive gathering of pilgrims panicked on a stairway after a rumor circulated that an electric line had snapped.

This led to a sudden crush, causing a stampede and serious casualties.

Disaster Response

1. Immediate Response

Alert and Mobilization:

Local authorities, including police and temple security, quickly recognized the emergency.

Emergency teams such as the **State Disaster Response Force (SDRF)**, fire brigade, and medical units were alerted and deployed.

Efforts to evacuate the crowd began immediately to prevent further injuries or deaths.

First Aid and Triage:

Injured individuals were prioritized based on the severity of their injuries, with critical cases receiving urgent attention.

Temporary medical camps were set up near the scene for prompt treatment.

2. Rescue and Stabilization

Search and Rescue:

SDRF and National Disaster Response Force (NDRF) teams cleared debris and helped free trapped victims.

Authorities worked to disperse the remaining crowd to prevent secondary accidents.

Medical Emergency Handling:

Severe injuries were transferred to hospitals equipped with trauma care facilities.

Helpline numbers were activated to assist families in locating missing persons.

3. Relief and Administration

Compensation and Support:

The District Magistrate announced compensation packages for the deceased and the injured.

Shelter, food, and essential services were arranged for pilgrims stranded due to the stampede.

Magisterial Inquiry:

A committee led by the Sub-Divisional Magistrate (SDM) was tasked with investigating the causes, including possible crowd mismanagement, the spread of rumors, and infrastructure issues.

The inquiry was given a deadline (e.g., 15 days) to submit its findings.

Long-Term Measures

1. Infrastructure Audit

The temple trust and government agencies will assess the safety and capacity of stairways, barricades, and emergency exits.

Installation of **CCTV cameras** and **AI-based crowd monitoring systems** will be proposed if not already in place.

2. Policy Reforms

Existing **Standard Operating Procedures (SOPs)** for managing large religious gatherings will be reviewed and updated.

Public awareness campaigns on disaster preparedness and crowd safety will be launched to educate devotees and officials.

Uttarakhand to Conduct First-Ever 'Tourist Carrying Capacity' Assessment in Nainital

The state government of Uttarakhand is set to assess the 'Tourist Carrying Capacity' of Nainital district to develop long-term strategies that protect the region from pressures caused by unregulated tourism, increased vehicular traffic, and rising population.

Background:

In September 2024, the National Green Tribunal (NGT) directed Uttarakhand to classify Nainital based on its carrying capacity and environmental sensitivity.

What is Carrying Capacity?

It is the maximum population threshold an area can sustain relative to its available resources.

Influencing factors include:

Biotic: Vegetation, water systems, wildlife

Abiotic: Terrain, climate, soil quality

Approaches to Assessing Carrying Capacity:

Planetary Boundaries Approach: Focuses on environmental limits related to climate change, pollution, land degradation, and water scarcity.

Biocapacity Overshoot Approach: Measures human demand on Earth's natural systems, e.g., how quickly resources are consumed relative to their regeneration (like Earth Overshoot Day).

Significance for Sustainable Development:

Carrying capacity assessments, grounded in precautionary principles, help balance the need for development with environmental sustainability, guiding policy to avoid overexploitation of resources.

India and Nepal Finalize Agreement on Mutual Legal Assistance (MLA) in Criminal Matters

Key Developments

India and Nepal have signed a Mutual Legal Assistance (MLA) Agreement to strengthen cooperation in criminal investigations and prosecutions.

Both countries have also agreed to fast-track the revision of their 1953 Extradition Treaty, which is currently considered outdated.

The lack of an updated extradition treaty has caused legal and administrative difficulties in the smooth transfer of criminals between the two nations.

Understanding Extradition

Definition: Extradition refers to the formal process where one country surrenders an individual to another country to face charges or serve sentences for crimes recognized by both jurisdictions.

The **Ministry of External Affairs (MEA)** acts as the central authority overseeing extradition requests in India.

About the India-Nepal Mutual Legal Assistance (MLA) Agreement

Purpose: MLA facilitates cooperation between countries by allowing them to request and share evidence, exchange intelligence, and support criminal investigations.

India currently holds MLA treaties with 42 countries, including the United States (since 2005) and Israel (since 2015).

The **Ministry of Home Affairs** serves as the nodal authority for the MLA Agreement.

Benefits:

Establishes a clear legal framework and standardized procedures for criminal cooperation.

Provides officials with a formal mandate to exchange evidence and information.

Leads to more efficient and timely investigations and prosecutions.

Challenges Without an MLA Agreement

Exploitation of Open Border:

India and Nepal share a porous 1,751 km-long border.

Criminal groups, such as the Indian Mujahideen, have used Nepal as a transit point or hideout, escaping from India to third countries via Nepal.

Nepal as a Criminal Safe Haven:

Nepal had been the only neighboring country (besides Bhutan) without an MLA agreement with India.

This gap made Nepal inadvertently attractive to criminals seeking refuge.

For instance, Nepal has arrested Pakistani nationals involved in counterfeit Indian currency operations.

Uncertainty in Reciprocity:

Cooperation between the countries often depended on informal assurances.

Without a binding treaty, there were no guaranteed commitments, limiting effective collaboration.

Discovery of New Wasp Species in West Bengal Overview

Scientists from the **Zoological Survey of India (ZSI)** have discovered **four new species** of spider-egg parasitic wasps in **West Bengal**.

About the New Species

These wasps belong to the **genus *Idris*** (Family: Scelionidae, Order: Hymenoptera).

The newly identified species are:

Idris bianor

Idris furvus

Idris hyllus

Idris longiscapus

Collected from **agroecosystems and semi-natural habitats** across the state.

Key Characteristics

These are **microscopic wasps** known for laying eggs inside **spider egg sacs**, primarily those of **jumping spiders (Family: Salticidae)**.

Display **gregarious parasitism**: multiple wasps develop from a single spider egg sac, rather than just one.

Ecological Significance

These parasitoid wasps help **control spider populations**.

They contribute to the **stability of arthropod ecosystems** by maintaining a natural predator-prey balance.

Understanding Parasitism

Parasitism is a biological interaction in which one species (**the parasite**) benefits at the expense of another (**the host**), usually without killing it.

Related interactions:

Predation involves killing and consuming the prey.

Commensalism benefits one species without affecting the other.

Example: **Brood parasitism** in birds, such as cuckoos laying eggs in the nests of other birds.

Barents Sea: Strategic and Ecological Overview

Recent Context

Russia recently deployed **Bastion coastal defence missile launchers** along the **Barents Sea** coast as part of a major naval exercise called "**July Storm**".

Geographic Overview

Location: A marginal sea of the Arctic Ocean, along the **northern coasts of Norway and Russia**.

Area: Approximately **1.4 million sq. km**.

Name Origin: Named after **Willem Barents**, a 16th-century Dutch explorer who sought a northeast sea route to Asia.

Historically known as the **Murmean Sea** by Vikings and medieval Russians.

Boundaries and Features

Northwest: Svalbard Archipelago

Northeast: Franz Josef Land

East: Novaya Zemlya Archipelago

West: Norwegian Sea and Greenland Sea

South: Kola Peninsula

Separated from the **Kara Sea** by the **Kara Strait** and Novaya Zemlya.

Includes two notable sub-seas:

White Sea: A southern extension separating the Kola Peninsula from mainland Russia.

Pechora Sea: Located in the southeastern part of the Barents Sea.

Physical Characteristics

Length: ~1,300 km

Width: Up to 1,050 km

Average Depth: ~230 meters

Salinity: Around 34 parts per 1,000

Climate: Subarctic, but warmer than typical Arctic zones due to the **Gulf Stream**.

Biodiversity

Rich in **marine life**, including:

Large **seabird colonies** (puffins, guillemots)

Kelp forests, deep-sea coral reefs

Marine mammals like walruses, polar bears, and bowhead whales

Android Earthquake Alert System (AEA)

Context

Google, in collaboration with the **Seismology Lab at UC Berkeley**, released a global performance report on the **Android Earthquake Alert System**, which has successfully issued **early warnings in 98 countries**.

Overview of AEA

What is **AEA**?

AEA is a **crowdsourced earthquake early warning system** that leverages the **accelerometers in Android smartphones** to detect seismic activity.

Developed by:

Google in partnership with **University of California, Berkeley's Seismology Laboratory**.

How AEA Works

Sensor **Detection**:

Android phones detect **initial P-waves** (faster, less damaging) using built-in motion sensors.

Crowdsourced **Verification**:

The system sends data to Google servers, where it's cross-checked against other nearby Android devices.

Processing: Algorithms estimate the **epicentre, magnitude**, and potential impact zone.

Alert **Generation**:

If threat is verified, **real-time alerts** are pushed to users before **S-waves** (stronger,

damaging waves) arrive — typically **10–60 seconds** in advance.

Key Features

Two Types of Alerts:

BeAware: For light tremors

TakeAction: For strong, potentially dangerous quakes with override notifications

Global

Launched in the U.S. in 2020, now active in **98 countries**

User

Over **790 million alerts** issued; **79% of 150,000 users** rated the alerts as highly useful

Accuracy

Median error in estimating quake magnitude reduced from **0.5 to 0.25**

Device

Available on all **Android phones** with optional alert settings

Significance

Wider

Expands early warning coverage from **250 million to 2.5 billion people**

Cost-Effective:

Relies on **existing smartphones**, eliminating the need for dedicated sensors

Life-Saving:

Provides critical seconds for people to **evacuate, stop trains, or take cover**

Kalu River

Context

Over **300 trekkers were rescued** near the Kalu River in Maharashtra's **Malshej Ghat** after heavy rains caused flash flooding, exposing safety gaps in eco-tourism zones.

About Kalu River

Location:

A **monsoon-fed river** in **Western Maharashtra**, originating in the **Kalsubai-Harishchandragad Wildlife Sanctuary**

Part

The **west-flowing Konkan drainage system**, eventually draining into the **Arabian Sea**

Geographical Details

Source:

Begins near **Tolar Khind Pass**, close to **Pimpalgaon Joga Dam** in Pune district

Course:

Forms **Kalu Falls** near **Savarne-Malshej Ghat**, passes **Khireswar village**

Confluences:

Merges with **Doifodi River** at Saralgaon and **Bhatsa River** near Ambivali

Outflow:

Joins **Ulhas River**, which empties into **Vasai Bay**

Key Characteristics

Geological

Descends from the **Deccan Plateau** to **Konkan region**, creating steep waterfalls like the 1200-ft **Kalu Falls**

Ecological

Runs through **biodiverse forests**, home to **leopards, reptiles**, and **endemic flora**

Hydrological

Accused of **diverting upper Mula River flows**, impacting water availability in **Ahmednagar and Marathwada**

Tourism

While scenic, the area is **prone to flash floods, steep terrain**, and **slippery trails**, making it **high-risk for trekkers**

Water

Management

Despite high rainfall, most water **drains into the sea**, underlining the need for **infrastructure to divert or store excess flow**

New Global Study on Zoonotic Disease Hotspots

Context

A new landmark study presents the **first comprehensive global analysis** of zoonotic disease risks, focusing on **WHO-prioritised diseases** such as **Ebola, Nipah, and others** (excluding COVID-19).

What are Zoonotic Diseases?

Definition: Diseases caused by viruses, bacteria, parasites, or fungi that **spread between animals and humans**.

Examples: Ebola, Nipah, Avian Influenza, etc.

Key Findings of the Study

Global Risk Mapping:

Around **9.3%** of the Earth's land area is at **high (6.3%) or very high (3%) risk** of zoonotic disease outbreaks.

Hotspot Regions:

Latin America & Oceania:

Highest risk (**18.6%** of land)

Asia: 6.9%

Africa: 5.2%

Human Exposure:

3% of the global population lives in high or very high-risk areas.

20% lives in moderate-risk zones.

Main Drivers of Zoonotic Outbreak Risk

1. Climate Factors

Warmer climates and increased rainfall raise risk levels.

Water scarcity leads to **animal congregation**, increasing **human-wildlife contact**.

2. Land Use & Environmental Changes

Dense livestock populations near humans amplify transmission risk.

Deforestation and land conversion boost human-wildlife interactions.

3. Population Density

Unplanned urbanisation and poor public health infrastructure are significant contributors to outbreak vulnerability.

Policy Recommendations

Adaptation & Planning:

Promote **climate adaptation**, **sustainable land-use**, and **improved urban planning**.

Health Systems:

Strengthen **zoonotic surveillance and healthcare infrastructure** in high-risk areas.

Technology Use:

Leverage **AI and machine learning** to map and monitor risk zones.

Integrated Approach:

Foster **cross-sector collaboration** (climate, health, agriculture, and environment) under the **One Health** framework.

Accelerometer

Context

Google's Android Earthquake Alert System has detected over **18,000 earthquakes** using smartphone accelerometers.

What Is an Accelerometer?

A **motion-sensing device** that measures acceleration, both static (gravity) and dynamic (movement or impact).

Working Principle

Based on **Newton's second law**: $Force = Mass \times Acceleration$

Detects changes in motion and orientation through inertial mass displacement.

Applications

Consumer Electronics:

Smartphones and tablets – auto screen rotation

Digital cameras – orientation sensing

Automotive Industry:

Triggers **airbags** in the event of a collision.

Drones and Robotics:

Helps maintain **balance and direction** during movement.

Environment Protection Rules for Contaminated Sites (2025) Context

On **July 25, 2025**, the **Ministry of Environment, Forest and Climate Change (MoEFCC)** notified the **Environment Protection (Management of Contaminated Sites) Rules, 2025** under the **Environment (Protection) Act, 1986**.

This marks India's first comprehensive legal framework to identify, assess, and clean up chemically contaminated sites—especially those polluted by the historical dumping of hazardous waste.

What Are Contaminated Sites?

As per the **Central Pollution Control Board (CPCB)**, contaminated sites are areas where **hazardous waste and chemicals** were dumped before adequate environmental regulations were in place.

Examples include:

Abandoned industrial landfills

Former chemical storage or processing sites

Sites with past chemical leaks or spills

India has so far identified **103 contaminated sites**, but only **7 have undergone any form of remediation**. In many cases, the responsible parties no longer exist or lack resources, leaving communities exposed to long-term health and environmental hazards.

Key Features of the 2025 Rules

1. Identification and Reporting

District administrations must prepare **half-yearly reports** identifying "suspected contaminated sites."

These are forwarded to the **State Pollution Control Board** or designated reference bodies.

2. Preliminary Assessment

Within **90 days**, the board or organisation must conduct an initial investigation to evaluate the likelihood of contamination.

3. Detailed Site Survey

If contamination is likely, a **full site survey** must be completed within the next **90 days**.

The site is tested for any of the **189 hazardous chemicals** listed under the **Hazardous and Other Wastes Rules, 2016**.

Confirmed contaminated sites must be **publicly notified**, and **restricted access** is enforced.

4. Remediation Planning

A **scientific reference organisation** will develop a site-specific **remediation plan**.

The State Board must also identify the **polluter(s)** within **90 days**.

5. Liability and Cost Recovery

The identified polluter is **financially responsible** for site clean-up.

If no polluter is found or able to pay, **Centre and State governments** will jointly bear the cost.

In cases where contamination has led to death or serious harm, **criminal charges** may be invoked under the **Bharatiya Nyaya Sanhita, 2023**.

Scope and Exemptions

The rules do not apply to certain waste categories already governed under other laws:

Radioactive waste (regulated under the Atomic Energy Act)

Mining contamination (covered by mining regulations)

Marine oil pollution

Municipal solid waste dump sites

This ensures clear jurisdiction without overlapping mandates.

Significance

This is the first time India has enacted a legally binding framework for contaminated site remediation. The rules address the long-standing regulatory gap by:

Establishing **clear responsibilities** for local and state authorities

Imposing **strict timelines** for action

Introducing a **polluter-pays principle** for clean-up cost recovery

Requiring **public disclosure** of confirmed sites

Implementation Challenges

While the framework is a step forward, success will depend on:

Availability of **scientific expertise** for chemical assessments

Effective **coordination** between central, state, and local authorities

Funding mechanisms for clean-up of orphan sites

Public awareness and involvement in pollution reporting

Training and capacity-building for district and state officials

Baitarani River

Recent Flooding Incident

The **Baitarani River** recently experienced a surge beyond its danger level, causing floods that inundated several low-lying villages in Bhadrak district, Odisha.

About the Baitarani River

Geographical

The Baitarani is a significant east-flowing river in eastern India, primarily flowing through Odisha and partially through Jharkhand. Alongside rivers like Mahanadi and Brahmani, it forms a fertile delta region.

Importance:

Course:

Originates from the **Gonasika Hills** in Keonjhar district, Odisha, at an elevation of 900 meters.

Initially flows underground through a small stream called **Guptaganga** (a site considered sacred) before emerging.

Flows northwards at the uppermost stretch, then turns eastward.

Serves as a natural boundary between Odisha and Jharkhand at its initial course.

Travels approximately **360 km** before emptying into the Bay of Bengal.

Basin Area and Boundaries:

Covers an area of about **12,790 sq km**.

Bordered by the Brahmani River basin to the south and west, Subarnarekha River basin to the north, and Burhabalang River and Bay of Bengal to the east.

Tributaries

The Baitarani River has **65 tributaries**:

35 join from the left bank
30 join from the right bank

Major tributaries include **Salandi, Gahira, Kusei, Deo, Kanjhari, Musal, Arredi, Siri, Kukurkata, Budhi, Ambajhara, and Remal.**

Economic and Environmental Significance

The Baitarani basin is rich in **minerals** and **agricultural resources**, providing an ideal setting for various industries and contributing to the regional economy.

Legionnaire's Disease

Recent Alert

Residents of Central Harlem, New York City, have been advised to remain cautious following recent cases of **Legionnaires' disease**, prompting health authorities to initiate a swift investigation.

About Legionnaires' Disease

It is a serious form of pneumonia caused by the **Legionella** bacterium.

The bacteria naturally inhabit freshwater sources like lakes and rivers, as well as soil.

Transmission

Infection usually occurs when people inhale water droplets or soil particles containing the bacteria.

Drinking contaminated water generally does not cause infection unless the water is accidentally inhaled into the lungs (aspiration).

The disease is **not contagious** and does not spread between people.

Those at higher risk include older adults, smokers, and individuals with weakened immune systems.

Symptoms

Common signs include fever, chills, headache, fatigue, and muscle aches.

If left untreated, Legionnaires' disease can be fatal.

Treatment

Early treatment with antibiotics is typically effective.

However, some patients may experience lingering health issues even after treatment.

Majuli Island

Recent Development

In Majuli Island, Assam, local villagers have adopted an innovative approach to combat riverbank erosion by planting **Kanchan trees** along the banks of the Brahmaputra River.

About Majuli Island

It is the **largest river island in the world**, located in Assam.

The island is formed between the Brahmaputra River (south) and its tributary Kherkutia Xuti, with the Subansiri River joining from the north.

Majuli's landscape is characterized by dense greenery, water bodies, and extensive paddy fields.

Society and Culture

The island's primary livelihood is **rice cultivation**, including unique varieties such as **Komal Saul** and **Bao Dhan**.

The population mainly consists of three tribal groups: **Mishing, Deori, and Sonowal Kachari**, alongside non-tribal Assamese residents.

Majuli is a cultural hub for Assamese **neo-Vaishnavism**, established in the 16th century by saint-reformers **Srimanta Sankardeva** and **Madhavdeva**.

It is famous for its **Satras** (Vaishnavite monasteries) which preserve art forms like **Sattriya dance, bhaona theatre, mask making, and boat-making**.

The island also maintains rich traditions in **mask crafting** and **pottery**.

Golden Jackal

Recent Findings

A large citizen science study has estimated that **Kerala** is home to approximately **20,000 to 30,000 Golden Jackals**.

About the Golden Jackal

Also known as the **common jackal**, it is a medium-sized, wolf-like canid.

It is **nocturnal** in human-populated areas but can be active during the day in less disturbed regions.

These animals seek shelter in burrows they dig themselves, natural crevices, or abandoned dens of other species.

Golden Jackals live in **monogamous pairs**.

Diet and Habitat

They are **omnivorous** and opportunistic foragers, eating a varied diet.

Typically found in valleys, along rivers, canals, lakes, and coastal areas, though less common in foothills and low mountains.

Distribution

Found across **North and East Africa, Southeastern Europe, and South Asia** extending to Burma.

In India, they are widespread from the Himalayan foothills to the Western Ghats.

Conservation Status

IUCN Red List: Least Concern

CITES: Appendix III

Wildlife Protection Act, 1972 (India): Schedule I

First-ever Grassland Bird Census in Kaziranga National Park

Context

Prime Minister highlighted the **first-ever Grassland Bird Census** in Kaziranga National Park during his **Mann ki Baat**, commending its innovative use of acoustic technology and importance for biodiversity conservation.

About the Census

A pioneering survey targeting **grassland bird species** in Kaziranga National Park, Assam, conducted from **March 18 to May 25, 2025**.

Jointly conducted by the Forest Department, researchers (including INSPIRE fellow Chiranjib Bora), conservationists, and park authorities.

Objectives

Monitor populations of grassland bird species.

Identify rare, endemic, and globally threatened birds.

Map breeding patterns and assess ecological health of grassland habitats.

Methodology & Innovations

Used **Passive Acoustic Monitoring**: recorders placed on tall trees captured bird calls during the breeding season.

Applied **audio identification tools** such as spectrogram analysis and AI-based BirdNET software to identify species by their songs.

Surveyed 29 locations using six recorders on a three-day cycle.

Key Highlights

First Indian census focusing solely on **grassland birds**, a group often overlooked in conventional surveys.

Documented **43 species**, including 1 Critically Endangered, 2 Endangered, and 6 Vulnerable species according to the IUCN Red List.

Recorded over **85 nests** of the endangered **Finn's Weaver**, endemic to Brahmaputra floodplains.

Established grassland birds as ecological indicators of habitat health.

Identified threats such as habitat loss from ecological succession, overgrazing, cultivation, and climate change.

International Tiger Day 2025

Context

India is celebrating **International Tiger Day 2025** on **July 29**, highlighting its distinction of hosting **75% of the world's wild tigers** across **58 tiger reserves**.

About International Tiger Day

What is it?

An annual global awareness day observed on **July 29** to promote tiger conservation and habitat protection.

Established: In **2010** at the Petersburg Tiger Summit in Russia, with participation from 13 tiger-range countries including India.

Key Features

Raises awareness about threats such as habitat loss, poaching, and human-wildlife conflicts.

Tracks progress on the **Tx2 Goal**: to double the global wild tiger population by 2022.

Celebrates conservation successes and forest protection efforts worldwide.

India's Tiger Conservation Journey

Project Tiger:

Launched in **1973**, initially with 9 reserves, now expanded to **58 tiger reserves**.

Managed by the **National Tiger Conservation Authority (NTCA)**.

Tiger reserves cover about **2% of India's land area**.

Major Achievements

Tiger population increased from approximately **1,400 in 2006** to **3,682 in 2024**—doubling well ahead of the Tx2 deadline.

Tigers now occupy about **138,200 sq km** of forest areas inhabited by around **60 million people**.

Ecological Importance

Tigers regulate herbivore populations, maintaining forest ecosystem balance.

Healthy tiger habitats promote biodiversity, enhance climate resilience, and serve as significant carbon sinks.

Forests also act as vital water catchments supporting agriculture and nearby communities.

India's Global Role

Home to **75% of the world's tiger population**, despite having only **18% of global tiger habitat**.

India's conservation model—integrating scientific management, legal frameworks, and community involvement—is a benchmark for other tiger-range nations.

Flash Floods in India: Causes, Climate Impact, and Adaptation Strategies

Flash floods have become a growing and deadly threat across India, causing significant loss of life and damage to infrastructure. Recent tragedies in **Himachal Pradesh (July 2025)**, **Wayanad in Kerala (July 2024)**, **Ladakh (June 2024)**, and **Sikkim (October 2023)** illustrate the increasing frequency and intensity of such disasters. These events are primarily driven by **intense rainfall** and are becoming more common with global warming — rising from **132 incidents in 2020 to 184 in 2022**, according to the Union Jal Shakti Ministry.

However, efforts to reduce the risks are hindered by a lack of detailed, region-specific data, which limits the effectiveness of early warning systems and targeted interventions.

New Research Maps India's Flash Flood Vulnerability

A groundbreaking study by **IIT Gandhinagar**, published in *Nature Hazards*, seeks to fill the data gap by mapping flash flood susceptibility across India's river basins. Titled *"Drivers of Flash Floods in the Indian Sub-Continental River Basins,"* the study identifies **the Himalayas, western coast, and Central India** as major hotspots.

Using hydrological and geomorphological analysis, the study reveals:

In the **Himalayas**, steep slopes and elevation make areas highly prone to floods.

In **Central India** and along the **western coast**, regions experience high "flashiness," meaning they respond quickly to rainfall with rapid runoff.

Importantly, **75% of flash floods** occur when extreme rainfall coincides with already saturated soils — not from rainfall alone. Alarming, areas previously considered low-risk are now experiencing more extreme rain, suggesting that

climate change is expanding flood-prone zones.

Primary Drivers of Flash Floods in India

Key findings on flash flood triggers include:

Only 25% of flash floods are caused by rainfall alone.

The majority result from **a combination of intense rain and saturated soils**, which prevents further water absorption and accelerates runoff.

Prolonged periods of both light and heavy rainfall, rather than isolated intense downpours, are more likely to cause flash floods.

Regional differences matter:

Western coast & Central India respond rapidly due to high flashiness.

Himalayan terrain increases vulnerability due to steep elevation.

Within the **Ganga basin**, southern Himalayan sub-basins are more at risk than central ones.

This underscores how **local geography and climate** shape flash flood risks.

Climate Change: A Key Driver of Intensifying Flash Floods

The rise in flash flood events is closely linked to **global warming**:

Warmer air holds more moisture — **about 7% more for every 1°C increase**, leading to heavier rainfall.

Between **1981 and 2020**, extreme rainfall:

Doubled during the pre-monsoon season

Increased by **56% during monsoon, 40% post-monsoon, and 12.5% in winter**

Over 75% of flash floods (1980–2018) occurred during the monsoon.

Since **1995**, flood frequency has surged in major basins like the **Brahmaputra, Ganga, and Krishna**. Notably:

51% of previously non-prone sub-basins now report higher rainfall

66.5% show **increased streamflow**, indicating more runoff

Some traditional flood-prone zones are witnessing **decreased wet hours**, signaling **shifting flood risks**

These changes reflect a **complex reconfiguration of India's flood landscape due to climate shifts**.

Urgent Need for Region-Specific Adaptation Strategies

To address this evolving crisis, the study calls for **localized adaptation strategies** that consider regional topography, soil properties, and flood response patterns — rather than focusing solely on rainfall intensity.

Key recommendations include:

Customized early warning systems

Improved disaster preparedness based on local flood dynamics

Investment in climate-resilient infrastructure

Integrated land-use planning that aligns with new flood risk zones

Monitoring of emerging flash flood hotspots due to climate variability

Kaziranga's Grassland Bird Census: A Conservation Breakthrough

The census in **Kaziranga**, where **over 70% of the landscape comprises grasslands**, was a joint effort by **forest officials, researchers, and conservationists**. It was inspired by the work of **Chiranjib Bora**, a PhD scholar focused on the **endangered Black-breasted Parrotbill**. His research, funded by the **INSPIRE Fellowship (Department of Science & Technology)**, laid the foundation for this initiative.

Key highlights of the census:

Focused on **10 priority species**, many **globally threatened or endemic to the Brahmaputra floodplains**.

Species recorded include the **Bengal Florican, Swamp Francolin, and Finn's Weaver**.

In total, **43 species** were documented, including:

1 Critically Endangered

2 Endangered

6 Vulnerable species (IUCN Red List)

The survey aimed to gather critical data on **rare, camouflaged species** that are difficult to detect through traditional methods.

Acoustic Monitoring: A Game-Changer in Avian Research

One of the most innovative aspects of the Kaziranga survey was its use of **passive acoustic monitoring** — a method particularly suited to detecting elusive and quiet birds.

Methodology:

Audio recorders were placed on **tall trees** across **29 locations** during the breeding season (**March to May**).

Recordings spanned **three days** at each site, capturing vocalizations when birds are most active.

Spectrograms (visual sound representations) and the **BirdNet AI tool** were used to identify bird species based on their calls.

This technique proved far more effective than traditional **visual counts**, revealing bird presence that would otherwise go unnoticed.

Ecological Significance: Grassland Birds as Environmental Sentinels

The findings highlight the **critical role grassland birds play in assessing ecosystem health**. Their presence confirms that Kaziranga's grasslands remain ecologically vibrant.

A standout discovery was a **breeding colony of the endangered Finn's Weaver**, with **over 85 nests** found atop trees — the first time this behavior has been documented in detail. This breakthrough enhances understanding of the species and strengthens targeted conservation efforts.

Mounting Threats to Grassland Habitats

Despite the positive outcomes, Kaziranga's grassland birds face mounting threats:

70% of Assam's grasslands have vanished over the past four decades.

Major pressures include:

Overgrazing

Conversion to agriculture

Ecological succession, where grasslands naturally turn into forests

Climate change further worsens the situation, especially for sensitive species like the **Bengal Florican**, which is experiencing rapid decline.

The loss of habitat is particularly devastating for **Northeast India's endemic species**, whose extinction in this region means extinction globally.

Looking Ahead: The Need for Targeted Conservation

Kaziranga's bird census demonstrates the value of **scientific innovation and collaborative conservation**. Moving forward, India must adopt:

Region-specific habitat management

Advanced monitoring technologies

Community engagement in conservation

Robust policy frameworks to protect grassland ecosystems

The success of Kaziranga's acoustic bird survey is a reminder that **technology, research, and political will** can together pave the way for a more resilient future for India's grassland birds.

Tsunamis: Causes, Characteristics, Impacts, and Early Warning Systems

Context

A powerful **8.8 magnitude earthquake** recently struck **Russia's Kamchatka Peninsula**, triggering a **tsunami** that impacted coastal regions in **Russia and Japan**, with alerts issued as far away as **Hawaii and New Zealand**. This event highlights the ongoing threat posed by tsunamis and the need for efficient monitoring and response mechanisms.

What Is a Tsunami?

A **tsunami** is a series of powerful sea waves caused by **sudden disturbances in the ocean floor**, such as **underwater earthquakes, volcanic eruptions, or landslides**. These waves travel at high speeds across oceans and can cause widespread destruction when they reach the coast.

How Tsunamis Form

1. Seafloor Disturbance

A sudden geological event—like an earthquake—shifts the **seabed vertically**.

This displacement **lifts or lowers a massive volume of water**, initiating wave energy that radiates outward.

2. Wave Generation

The disturbance creates **long-wavelength waves** that move in all directions.

In deep oceans, they travel at **jet-like speeds (800–900 km/h)** but have low wave height (**30–50 cm**), making them barely detectable.

3. Drawback Effect

As the tsunami nears land, the **trough may reach shore first**, drawing water away and exposing the seabed.

This sudden sea retreat is often **misinterpreted as low tide**, leaving people vulnerable to the incoming wave.

4. Wave Amplification

In **shallower waters**, the wave slows down due to **seafloor friction**.

This causes the wave to **compress**, increasing its height rapidly—often rising from **1 metre to over 10 metres**.

5. Coastal Impact

The towering wave **slams into the coast** with immense force.

It can flood several kilometres inland, **destroying infrastructure, uprooting trees, and sweeping away people and vehicles**.

Retreating waves drag debris and survivors back into the sea, adding to the destruction.

Key Characteristics of Tsunamis

Long Wavelengths: Can span up to **200 km** between wave crests.

High Speed, Low Height in Open Ocean: Travel at **800–900 km/h** with little visible height at sea.

Multiple Waves: Tsunamis usually arrive in a **series**, with the **first wave not necessarily the most powerful**.

Invisibility in Deep Water: Ships at sea may not even notice a tsunami passing beneath them.

Impacts of Tsunamis

1. Human Loss and Health Risks

Tsunamis often result in **mass casualties**. For instance, the **2004 Indian Ocean tsunami** claimed thousands of lives.

Victims often suffer from **drowning, trauma injuries**, and post-disaster illnesses.

2. Infrastructure Damage

Coastal cities, **ports, bridges, power plants**, and communication systems can be severely damaged or destroyed.

Economic recovery is often slow due to the **collapse of key services and supply chains**.

3. Environmental Damage

Saltwater inundation harms **agriculture and freshwater ecosystems**.

Coastal habitats are destroyed, and debris spreads across both land and ocean.

4. Service Disruption

Vital services like **electricity, water, transport, and telecommunications** may be disabled, hindering rescue efforts.

5. Secondary Hazards

Tsunamis can trigger **fires, chemical spills, and landslides**, worsening the impact and complicating recovery efforts.

Tsunami Early Warning Systems

India's Early Warning Framework

Managed by **INCOIS** (Indian National Centre for Ocean Information Services):

Seismic Monitoring: Detects global earthquakes within **10 minutes**, identifying tsunami-generating ones.

DART Buoys (BPRs): Bottom Pressure Recorders track deep-sea pressure changes in real-time.

Tide Gauges: Confirm wave arrival and measure height at the coast.

Alert Dissemination: Warnings sent to **NDMA, media, and public** via **SMS, sirens, satellites, and radio**.

Global Tsunami Monitoring

Coordinated by **IOC-UNESCO** and regional centers like:

Pacific Tsunami Warning Center (PTWC)

Japan Meteorological Agency (JMA)

Key technologies include:

Global Seismic Networks: Provide real-time earthquake data.

DART Systems & Tide Gauges: Confirm tsunami formation.

Satellite & Radar Altimetry: Detect anomalies in sea level and wave behavior.

Conclusion

Though rare, **tsunamis are among the most devastating natural disasters**, capable of causing massive loss of life and infrastructure damage. Timely detection and effective early warning systems are essential to **mitigate risks**. India's robust monitoring network and collaboration with **international warning centers** play a crucial role in protecting vulnerable coastal communities.

CEC Report on Compensatory Afforestation Fund Management

Context

The **Central Empowered Committee (CEC)**—a body constituted by the **Supreme Court of India** for environmental oversight—has submitted a report evaluating the implementation of **Compensatory Afforestation (CA)** across India.

Key Highlight

Between **2019-20 and 2023-24**, India achieved **85%** of its overall Compensatory Afforestation target.

What is Compensatory Afforestation (CA)?

Definition: Afforestation undertaken as **compensation for diversion of forest**

land for non-forest purposes such as **infrastructure, industry, or mining**, as mandated under the **Forest (Conservation) Act, 1980**.

About the Compensatory Afforestation Fund Act, 2016

Legal Origin: Emerged from the Supreme Court's judgment in *T.N. Godavarman v. Union of India* (1995).

CAMPA Formation: The Act established the **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)** at both national and state levels.

Fund Management:

CA funds are deposited in the **Public Accounts of India and States**.

Utilised exclusively for afforestation, wildlife protection, and forest-related activities.

Issues Identified by the CEC

Delay in Annual Plan of Operations (APOs):

Late or irregular submission of APOs slows the release and utilisation of funds.

Redundant Approval Processes:

Even after clearance by the **National CAMPA Authority**, states often require **multiple internal approvals**, causing unnecessary delays.

Understaffed CAMPA Offices:

Inadequate manpower at state CAMPA offices hampers effective planning, execution, and reporting.

Monitoring Gaps:

Absence of consistent oversight mechanisms weakens implementation.

Misuse and Diversion of Funds:

Instances where CA funds were used for purposes **not directly related** to afforestation or conservation.

Key Recommendations of the CEC

1. Strengthen Institutional Mechanisms

The **Governing Body, Steering Committee, and Executive Committee** at the state level should convene regularly to ensure timely decisions and coordinated implementation.

2. Improve Monitoring and Transparency

Mandate the use of **geo-tagging** for CA project sites.

Ensure online disclosure of afforestation activities through platforms like:

e-Green Watch

PARIVESH 2.0 (environmental clearance portal)

3. Other Recommendations

Streamline Fund Flow: Simplify procedures for the disbursement of CA funds to reduce bureaucratic hurdles.

Timely Submission of APOs: Create mechanisms and deadlines for states to submit Annual Plans without delay.

Capacity Building: Strengthen CAMPA offices with adequate staffing and technical expertise.

Conclusion

While significant progress has been made in meeting afforestation targets, the CEC underscores the need for **systemic reforms, stronger institutional support, and transparent digital monitoring**. Efficient and accountable management of CA funds is essential for achieving **sustainable forest restoration and ecological balance** amid growing development pressures.

International Tiger Day 2025

On July 29, India joined 12 other nations to observe International Tiger Day 2025, a global event aimed at raising awareness about tiger conservation.

About International Tiger Day:

Observed annually on July 29, this day serves as a platform to highlight the importance of tiger conservation. It promotes global efforts to protect tigers and their natural habitats and encourages coexistence between humans and tigers.

Theme for 2025:

"Securing the future of Tigers with Indigenous Peoples and Local Communities at the heart."

History:

International Tiger Day, also known as Global Tiger Day, was established during the 2010 Saint Petersburg Tiger Summit in Russia. The summit convened representatives from 13 tiger-range countries, including India, Bangladesh, Nepal, Bhutan, Malaysia, and Russia. The urgency arose due to reports that only about 3,000 tigers remained in the wild worldwide. The countries adopted the "Tx2" goal at the summit, which aimed to double the global tiger population by

2022 through enhanced conservation measures and stronger legal protections. July 29 was selected as International Tiger Day because it marks the midpoint between the first and last days of the Saint Petersburg Summit and symbolizes the ongoing global campaign to save tigers.

Tiger Population in India:

India now hosts the largest wild tiger population in the world. Despite having only 18% of the global tiger habitat and the highest human population density among tiger-range nations, India accounts for 75% of the world's wild tigers. More than 3,600 tigers currently inhabit the country's forests—double the number recorded just over ten years ago. These tigers live across approximately 138,200 square kilometers of forested land, roughly half the size of the United Kingdom, often sharing space with nearly 60 million people. This success is attributed to decades of concerted conservation efforts, particularly through the national program known as Project Tiger.

Mount Cilo

Context:

Glaciers on Mount Cilo in southeastern Turkey have lost nearly half of their ice cover over the past 40 years, with climate change and heatwaves accelerating the rate of melting.

Location:

Mount Cilo is the second-highest peak in Turkey, reaching 4,135 meters at its summit known as Reşko (also called Gelyaşın or Uludoruk).

It is located in the Yüsekova district of Hakkâri Province, near the Iraq border, within the East Taurus Mountains (Doğu Toroslar) of Eastern Anatolia.

Physical Features:

The massif stretches 30 km in length and forms the western part of the Cilo-Sat Mountains National Park, declared in 2020.

The terrain is rugged, featuring sharp ridges, steep limestone cliffs, deep gorges, and glacial valleys.

Nearby is Suppa Durek (Erinç Tepe), Turkey's third-highest peak at 4,116 meters.

Glacial Retreat:

There has been rapid loss of glaciers attributed to global warming. Visible

effects include ice blocks breaking into streams and retreating ice sheets.

Experts report that about 50% of the continuous snow and ice cover has disappeared since the 1980s.

Melting glaciers now cause increased torrent flows and waterfalls, altering local water cycles.

Climate Extremes:

Turkey is experiencing rising temperatures and more frequent heatwaves combined with reduced rainfall.

Silopi, located about 200 km from Mount Cilo, recorded a historic temperature of 50.5°C in July 2025, the highest ever in Turkey.

United Nations projections warn that by 2100, the region may face a 30% reduction in rainfall and a temperature increase of 5–6°C.

Kaziranga National Park

Context:

Kaziranga Tiger Reserve (KTR) in Assam has achieved the third-highest tiger density in India, ranking after Bandipur and Corbett reserves, according to the latest report released by the Chief Minister of Assam on Global Tiger Day 2025.

Tiger Density in India

Definition:

Tiger density refers to the number of tigers per 100 square kilometers. It is an important indicator of a healthy predator population and ecological balance.

Top Three Tiger Reserves by Density (2024):

Bandipur, Karnataka: 19.83 tigers per 100 sq. km

Corbett, Uttarakhand: 19.56 tigers per 100 sq. km

Kaziranga, Assam: 18.65 tigers per 100 sq. km

Kaziranga's Tiger Population: Kaziranga recorded 148 tigers across an area of 1,307.49 sq. km, an increase from 104 tigers in 2022. This count includes 27 tigers from the recently surveyed Biswanath Division.

About Kaziranga National Park

Location: Situated in the Golaghat and Nagaon districts of Assam, the park lies along the floodplains of the Brahmaputra River.

Historical Background: Established in 1905 following recommendations by Mary

Curzon, it was declared a UNESCO World Heritage Site in 1985 and designated as a Tiger Reserve in 2006.

Ecological Characteristics: The park lies on the edge of the Eastern Himalayan biodiversity hotspot. It includes habitats such as tall elephant grass, marshes, and tropical forests.

Flora: Four main vegetation types exist within the park: alluvial grasslands, savanna woodlands, moist deciduous forests, and semi-evergreen forests. Prominent tree species include Elephant Apple, Cotton Tree, and Indian Gooseberry.

Fauna: Kaziranga supports the world's largest population of Indian one-horned rhinoceros, with over 2,200 individuals. Other notable species include tigers, elephants, swamp deer, Hoolock gibbons, and migratory birds such as the greater adjutant and black-necked stork.

Report on "Status of Small Cats in Tiger Landscapes of India"

Released on Global Tiger Day (July 29)

This report, compiled by the Wildlife Institute of India (WII) and the National Tiger Conservation Authority (NTCA), provides a detailed assessment of the occupancy and dynamics of small cat species in India's tiger landscapes.

Key Findings

The **Jungle Cat** is the most widely distributed small cat species in India, followed by the **Rusty-Spotted Cat**, which is the world's smallest wildcat.

India hosts 10 species of small cats: Pallas's cat, Eurasian lynx, jungle cat, fishing cat, leopard cat, rusty-spotted cat, marbled cat, Asiatic golden cat, desert cat, and caracal.

About Small Cats

Small cats belong to the subfamily *Felinae* and are hyper-carnivores found in almost all terrestrial biomes.

Difference from Big Cats:

Big cats (such as tigers and lions) have a flexible hyoid bone that enables them to roar, whereas small cats have a rigid hyoid bone allowing them to purr continuously.

Major Small Cats in India

Species	Habitat	Characteristics	Conservation Status

Asiatic Golden Cat	Indo-Malayan ecoregion (Assam, Sikkim, Meghalaya)	Territorial and solitary, sometimes pair up	IUCN: Near Threatened; Wildlife Act: Schedule I
Caracal	Arid and semi-arid regions (Rajasthan, Gujarat, Madhya Pradesh)	Known as Siya Gosh for black-tufted ears; solitary, territorial, nocturnal	IUCN: Least Concern; Wildlife Act: Schedule I
Fishing Cat	Wetlands (Sundarbans, Himalayan foothills, Northeast India)	Nocturnal	IUCN: Vulnerable; Wildlife Act: Schedule I
Eurasian Lynx	Rocky mountainous plateaus of Central Asia; parts of Ladakh in India	Webbed hind feet for swimming, solitary, territorial, nocturnal	IUCN: Least Concern; Wildlife Act: Schedule I

Massive Earthquake Strikes Kamchatka: Causes, Ring of Fire Link, and Global Implications

A Powerful Quake off Russia's Coast

A massive **8.8 magnitude earthquake** struck off the coast of **Russia's Kamchatka Peninsula**, triggering **tsunami warnings across the Pacific**. The quake's epicenter was located **119 km southeast of Petropavlovsk-Kamchatsky** at a **shallow depth of 19.3 km**. Initially recorded as magnitude 8.0, it was later upgraded, and a **6.9 magnitude aftershock** followed. This is the **strongest global earthquake since Japan's 9.0 quake in 2011**, which led to the Fukushima nuclear disaster.

Understanding Earthquake Magnitude and Measurement

The Kamchatka earthquake is classified as a **"great" earthquake**, an extremely rare event. According to the **US Geological Survey (USGS)**:

Each whole-number increase in magnitude releases **~31.6 times more energy**.

The 8.8 quake released over **30 times more energy** than Myanmar's **7.7 magnitude quake in March 2024**.

Magnitude measures the energy released, while **intensity** refers to how strongly the earthquake is felt in specific areas. Seismic activity is measured using **seismographs**, which detect motion between the Earth's surface and a suspended mass.

Kamchatka: A High-Seismic Zone

Kamchatka, located in Russia's Far East, is **one of the most earthquake-prone regions globally**. Notable past earthquakes include events in:

2020, 2006, 1959, 1952, 1923, and historical records from **1841 and 1737**. Many of these quakes were accompanied by **tsunamis**.

The Tectonic Forces Behind the Quake

Kamchatka's seismic activity stems from **tectonic plate subduction**, where the **Pacific Plate slides beneath the Okhotsk microplate**.

This geological process:

Causes **stress along plate boundaries**, which is released as earthquakes.

Is also responsible for mountain formation, such as the **Himalayas**, where the Indian Plate is subducting under the Eurasian Plate.

The region sits atop the **Kuril-Kamchatka Trench**, reaching depths of nearly **10 km**. The **Pacific Plate subducts at ~86 mm/year**, leading to frequent **megathrust quakes and tsunamis** in the North Pacific.

Kamchatka and the Pacific Ring of Fire

Kamchatka lies within the **Pacific Ring of Fire**, a 40,000 km horseshoe-shaped zone of intense **earthquake and volcanic activity** encircling the Pacific Plate.

The Ring of Fire marks the **boundaries of multiple tectonic plates**, including the:

Eurasian, North American, Indian, Australian, and others.

This seismic zone affects **over 15 countries**, such as **Russia, Japan, the US, Indonesia, Chile, and the Philippines**, all prone to frequent **earthquakes, tsunamis, and volcanic eruptions**.

Why the Ring of Fire Is So Active

Seismic and volcanic activity in the Ring of Fire results from **constant tectonic movement**:

Plates **collide, slide past, or subduct** beneath each other.

Stress accumulates when plate edges stick and is released in **sudden quakes**—like the one in Kamchatka.

Volcanoes also form when a subducting plate melts, producing magma that rises to the surface.

Global Earthquake Zones and Comparative Risk

There are three major earthquake zones worldwide:

The Ring of Fire (Circum-Pacific Belt)

Generates **~80% of the world's major quakes**.

The Alpid Belt

Runs from **Indonesia to Turkey via the Himalayas**, producing **15–17%** of global earthquakes.

Although less active, it affects **densely populated regions**, often causing **higher casualties**.

Example: **Nepal's 2015 quake (7.6 magnitude)** killed **over 15,000**, unlike Kamchatka's 8.8 quake, which caused **no reported casualties** due to low population density.

Mid-Atlantic Ridge

Located **underwater**, it causes **moderate quakes** with **limited human impact**.

The **maximum earthquake magnitude** is likely capped around **9.5**, as no fault line on Earth is long enough to support a stronger rupture.

Status of Small Cats in Tiger Landscapes of India

Context

On the occasion of *Global Tiger Day* (29th July 2025), the **Ministry of Environment, Forest and Climate Change** released a landmark report titled "*Status of Small Cats in Tiger Landscapes of India*". The report draws from the data collected during the **All India Tiger Estimation (AITE) exercises of 2018 and 2022**, focusing on tracking **nine small wild cat species** inhabiting India's tiger landscapes.

Overview of the Report

What is **it**?
This is the **first scientific assessment of its kind**, evaluating the distribution, habitat use, and ecological status of nine small wild cat species

across India's tiger-range areas. It uses extensive data from the AITE surveys to deliver a comprehensive picture of these lesser-known felids.

Date of Release: 29 July 2025 (Global Tiger Day)

Published by: Ministry of Environment, Forest and Climate Change

Objectives of the Report

- To **map the occupancy and distribution** of nine small cat species within India's tiger habitats.
- To examine **habitat preferences** and assess the **impact of human disturbances** on these species.
- To evaluate the **dependence of small cats on protected areas**, such as tiger reserves.
- To establish **baseline data** for integrating small cats into broader **wildlife monitoring and landscape planning**.
- To support **evidence-based policies and research** aimed at conserving small carnivores beyond iconic megafauna like tigers.

Species Covered and Key Findings

Species	Estimated Occupancy (km ²)	Primary Habitat	Key Observations
Jungle Cat	96,275	Dry to moist deciduous forests; widespread	Most abundant; highly adaptable to human presence
Rusty-Spotted Cat	70,075	Mixed deciduous forests	Second most widespread; prefers interior forests
Leopard Cat	32,800	Moist forests (NE, Western Ghats, Sunderbans)	Concentrated in Himalayan foothills, NE & wetlands
Desert Cat	12,500	Semi-arid/dry forests (W & C India)	Habitat specialist; limited range

Fishing Cat	7,575	Wetlands, riverine areas, mangroves	Habitat-dependent; threatened by wetland degradation
Clouded Leopard	3,250	Dense forests (Northeast India)	Rare and canopy-dwelling
Marbled Cat	2,325	Dense forests (Northeast India)	Very elusive; low detection rates
Asiatic Golden Cat	1,850	Evergreen forests (Northeast India)	Extremely rare and habitat-specific
Caracal	Not detected	Historically NW and Central India	Absence concerning; may indicate population collapse

Ecological Insights

Generalist Advantage: Jungle cats and rusty-spotted cats show adaptability across diverse habitats, including near human-altered landscapes.

Habitat-Specific Vulnerability: Fishing cats, leopard cats, and clouded leopards are highly dependent on wetlands and dense forests.

Altitude and Canopy Preference: Species such as the marbled cat and Asiatic golden cat are confined to high-altitude, intact forest canopies in Northeast India.

Impact of Human Disturbance: Species occupancy decreases with rising human activity, except for adaptive generalists like the jungle cat.

Need for Landscape Continuity: The presence of small cats in both core and buffer areas indicates the importance of planning at the **landscape level**.

Conservation Significance

Nationwide Baseline Mapping: The first comprehensive national assessment of small cat species, establishing critical data for focused conservation.

Value of Protected Areas: Higher occupancy recorded within protected zones,

reinforcing the biodiversity conservation benefits of **Project Tiger**.

Ecological Indicators: The presence or absence of small cats is a strong indicator of ecosystem health and habitat integrity.

Inclusive Conservation: Highlights the need to move beyond a tiger-centric approach to include **lesser-known yet ecologically important carnivores**.

Regional Focus Needed: Calls for area-specific conservation strategies in **Northeast India, Terai wetlands, and dry forests of Central India**.

Policy Implications

Incorporate Small Felids in Wildlife Planning: Ensure that reserve, buffer zone, and corridor strategies also account for small cats.

Expand Monitoring Framework: Institutionalize the regular monitoring of small carnivores as part of AITE protocols.

Strengthen Wetland & Mangrove Protections: Focus conservation measures on critical habitats for species like the fishing cat.

Targeted Habitat Policies: Develop customized strategies for habitat-restricted species such as the desert cat and marbled cat.

Raise Public Awareness: Integrate small cat conservation into education programs, eco-clubs, and broader wildlife awareness campaigns.

Conclusion

This trailblazing report shifts the spotlight onto India's underrepresented small wild cats, demonstrating that **tiger landscapes serve as biodiversity umbrellas** benefiting a range of species. It establishes a vital scientific foundation for **inclusive and informed conservation planning**, calling for nuanced ecological research and habitat protection strategies that extend beyond flagship species to embrace the full spectrum of India's carnivore diversity.

India's Resolution on the 'Wise Use of Wetlands' Adopted at Ramsar CoP15, Zimbabwe Overview

At the **15th Conference of Parties (CoP15) to the Ramsar Convention**, held in **Zimbabwe**, India's resolution titled **'Promoting Sustainable Lifestyles for Wetlands'** was officially adopted.

The resolution received **support from 172 countries**, reflecting widespread global commitment to sustainable wetland conservation.

Link to Mission LiFE

India's resolution aligns closely with the principles of **Mission LiFE** (*Lifestyle for Environment*), a global initiative launched by India.

Mission LiFE was introduced by the Prime Minister of India at the **UN Climate Change Conference (COP26)** in Glasgow (2021).

It advocates for **individual and community actions** that are **environmentally responsible**, aiming to promote lifestyles that are **in harmony with nature** and reduce environmental harm.

Understanding 'Wise Use' of Wetlands

Definition and Core Principle

The concept of "**wise use**" is central to the **Ramsar Convention** and forms the **foundation of global wetland conservation**.

The Ramsar Convention defines **wise use** as: *Maintaining the ecological character of wetlands through ecosystem-based approaches within the context of sustainable development.*

This principle ensures that wetlands are both **conserved and used sustainably**, benefiting both **people and ecosystems**.

Responsibilities of Contracting Parties

Under the Ramsar Convention, member countries are obligated to promote wise use through:

National-level planning and policy frameworks

Legislative and regulatory actions

Wetland management practices

Public awareness and education programs

India's National Approach to Wetland Conservation

India has undertaken several initiatives to uphold the **wise use principle**:

National Plan for Conservation of Aquatic Ecosystems (NPCA):

A central government scheme aimed at conserving inland wetlands and lakes across the country.

Integrated Management Plans (IMPs):

Site-specific strategies developed to guide the **sustainable**

management of individual wetlands.

"Wetland Wise Use - An Implementation Framework" (2024):

A national policy document released by India to operationalize wise use in practical terms.

Mission Sahbhagita and Save Wetlands Campaign:

These citizen-centric initiatives have mobilized **over 2 million volunteers**, resulting in the **mapping of more than 170,000 wetlands** across India.

About the Ramsar Convention

Established: Adopted in **1971** in the Iranian city of **Ramsar**, and came into effect in **1975**.

Nature: It is an **intergovernmental treaty** providing a framework for the **conservation and sustainable use of wetlands** and their resources.

Wetlands of International Importance (Ramsar Sites)

Globally, there are over **2,500 designated Ramsar Sites**.

For a wetland to qualify, it must meet at least **one of nine specific criteria** set by the Convention (e.g., rare species, biodiversity support, ecological significance).

India's Position

India currently has **91 Ramsar Sites**, the **highest number in Asia**, highlighting its leadership in wetland conservation.

Conclusion

India's resolution at Ramsar CoP15 marks a significant step in global wetland conservation efforts by integrating **sustainability, lifestyle change, and community engagement**. Rooted in the philosophy of **Mission LiFE**, it reinforces the need to harmonize development with ecological preservation. By promoting the **wise use** of wetlands and leading with innovative frameworks and grassroots participation, India sets a strong example for environmental stewardship on the international stage.

Mount Cilo and Its Rapid Glacial Decline

Glacial Loss

Recent research indicates that **Mount Cilo's glaciers** have **lost nearly 50% of their ice cover over the past 40 years**, highlighting the alarming impact of climate change.

Location and Geography

Situated in: The southeastern region of Turkey, near Lake Van.

Mountain Range: Marks the easternmost end of the Taurus mountain range in Anatolia.

Elevation: Peaks at 4,135 meters in Hakkari Province, close to the Iraqi border.

Ranking: Home to Turkey's second-largest glacier system, following Mount Ararat (5,137 m).

Geological Formation

Located in the Alpine-Himalayan Fold System.

Formed by the collision of the Arabian, Anatolian, and Eurasian tectonic plates.

Topography and Physical Features

Rugged terrain includes:

Steep limestone cliffs
Ridges
Deep gorges
Glacial valleys

Notable peaks:

Uludoruk Peak
Suppa Durek Peak
Kosedireği Mountain
Kisara Mountain
Maunseli Sivrisi

Climate Change Impact

Turkey has experienced extreme weather events, including **heatwaves** and **droughts**, with a recent **record temperature of 50.5°C**.

These climate anomalies are accelerating glacial melt on Mount Cilo and other peaks.

Barbados Threadsnake Rediscovered Overview

The Barbados threadsnake, considered the world's smallest known snake, has been rediscovered after decades of absence.

Taxonomy and Traits

Belongs to the Leptotyphlopidae family.

Blind and fossorial (burrowing) in nature.

Feeds primarily on **termites and ants**.

Reproduces by laying a **single, slender egg** (oviparous).

Physical Characteristics

Maximum length: 10.4 cm (4.1 inches)

Average weight: 0.6 g (0.02 oz)

Lives a **solitary** lifestyle and is **nocturnal**, typically hiding under rocks during the day.

Habitat and Range

Endemic to the eastern forests of Barbados in the Caribbean.

Prefers **tropical dry forests** and areas close to **ant and termite nests**.

Pheromones secreted by the snake help prevent termite attacks.

Conservation Status

Listed as **Critically Endangered** on the IUCN Red List.

The **main threat** is **habitat loss** due to deforestation and human encroachment.

Dorjilung Hydropower Project – India-Bhutan Renewable Collaboration

Project Overview

The Dorjilung Hydropower Project is a **1,125 MW run-of-river** renewable energy project in eastern Bhutan.

Location & River System

Spans the **Lhuentse and Mongar Districts**.

Located on the **Kurichhu River**, a tributary of the **Drangmechhu**, which eventually flows into **India**.

Technical Specifications

Dam Type: Concrete gravity dam (approx. 139.5 meters in height)

Discharge Capacity: ~287 m³/s

Headrace Tunnel: 15 km long

Powerhouse: Underground facility housing **six Francis turbines**

Annual Output: Approximately **4.5 terawatt-hours (TWh)**

Investment and Collaboration

Total Project Cost: Estimated at **\$1.7 billion**

Financed by: **World Bank**

Public-Private Partnership (PPP):

Druk Green Power Corporation (DGPC): 60% stake

Tata Power Company Limited (India): 40% stake

MoU Signed: November 2024

Expected Commissioning: **Early 2032**

Significance

This partnership reflects **India's expanding private-sector role** in cross-border **renewable energy diplomacy** and supports Bhutan's sustainable energy goals.

Musi River and Anti-Encroachment Drive in Hyderabad

Recent Development

The **Hyderabad Disaster Response and Asset Protection Agency (HYDRAPAA)** has initiated action against **illegal encroachments** along the **Musi River bed**, aiming to restore and protect the waterway.

About the Musi River

Alternate Names: Muchukunda or Musunuru River

Location: Flows through **Telangana**, especially **Hyderabad**, where it historically divided the **Old City** from the **New City**.

Course

Origin: **Anantagiri Hills**, **Vikarabad**, **Telangana**.

Formed by merging of:

Esi stream (8 km)

Musa stream (13 km)

Flows eastward through **Rangareddy** and **Nalgonda** districts.

Confluence: Joins the **Krishna River** near **Wazirabad** in **Nalgonda** district.

Total Length: Approx. **240 km**

Infrastructure

Dams:

Himayat Sagar

Osman Sagar

Irrigation Structures:

24 diversion weirs, locally known as **kathwas**

Environmental Concerns

River water is **heavily polluted** due to **untreated waste from Hyderabad**, impacting **drinking water** and **irrigation** for downstream villages.

Debrigarh Wildlife Sanctuary: Plans for Tiger Introduction

Overview

The **Odisha** government has announced plans to introduce **tigers** into the **Debrigarh Wildlife Sanctuary** located in the **Bargarh district**, according to a senior forest official.

Location & Size

Situated in **Bargarh district**, **Odisha**

Close to the **Hirakud Dam** on the **Mahanadi River** — the longest dam in India and the largest earthen dam worldwide

Spans approximately **347 square kilometers**

Declared a wildlife sanctuary in **1985**

Historical Significance

Linked to the freedom fighter **Veer Surendra Sai**, whose rebellion base at **Barapathara** lies within the sanctuary

Flora & Fauna

Dominated by **mixed and dry deciduous forests**

Key tree species include **Sal**, **Asana**, **Bija**, **Aanla**, **Dhaura**, among others

Wildlife includes:

Indian leopards

Sloth bears

Chousingha (four-horned antelope)

Sambar deer

Gaurs (Indian bison)

Wild boars

Indian wild dogs (dholes)

A vital wintering ground for migratory birds such as:

Crested serpent eagle

Flower Peckers

Red vented bulbul

Tree pie

Drongo

White eye oriental

Klyuchevskoy Volcano

Context

The **Klyuchevskoy volcano**, the tallest active volcano in the Northern Hemisphere, erupted following a massive **8.8 magnitude earthquake** off Russia's eastern coast.

About Klyuchevskoy Volcano

Type: Stratovolcano, characterized by its steep conical shape and intense volcanic activity

Location: Kamchatka Peninsula, Russia, approximately 100 km from the Bering Sea

Geological Zone: Part of the **Ring of Fire**, an area prone to frequent earthquakes and volcanic eruptions

Height: 4,750 meters (15,584 feet), making it the tallest active volcano in Eurasia

Eruption History: First documented eruption in 1697; has remained nearly continuously active since

UNESCO Status: Integral to the **Volcanoes of Kamchatka World Heritage Site**

About Kamchatka Peninsula

Geography: Large peninsula in far eastern Russia, bordered by the **Sea of Okhotsk** to the west and the **Bering Sea/Pacific Ocean** to the east

Size: Approximately 1,200 km (north-south) by 480 km (east-west); total area around 370,000 sq. km

Volcanic Activity: Hosts 127 volcanoes, 29 of which are active, along with geysers, hot springs, and geothermal fields

Mountain Ranges: Dominated by the **Sredinny (Central)** and **Vostochny (Eastern)** ranges

Ecology & Climate:

Vegetation includes tundra plants such as mosses, lichens, and Kamchatka alder

Forested lowlands with birch, larch, poplar, and willow trees

Experiences a harsh sub-Arctic climate with cold, snowy winters and cool, wet summers

Chile's Coastal Erosion

Context

According to researchers from **Universidad Católica**, at least **10 Chilean beaches** are likely to disappear within the next decade due to **severe coastal erosion** fueled by climate change and human activity.

What's Happening?

Coastal Loss Crisis:

Around **86%** of studied beaches on Chile's central and southern coasts are **receding**, with **10 beaches at high risk**.

Tourist destinations like **Valparaíso** have already seen **complete shoreline loss**.

Causes of Erosion

Natural (Climate-Induced) Factors

Rising sea levels

Frequent and intense ocean swells

Heatwaves impacting sand stability

Human Activities

Unregulated urban development near dunes and wetlands

River basin degradation, which disrupts natural **sand replenishment cycles**

Impacts

Socioeconomic

Fisherfolk, local businesses, and tourism operators face declining income and potential displacement.

Ecological

Saltwater intrusion, cliff collapses, and erosion threaten:

Coastal forests

Marine and terrestrial biodiversity

About Chile

- **Continent:** South America
- **Coastline:** Pacific Ocean
- **Borders:** Argentina, Peru, Bolivia
- **Capital:** Santiago
- **Government:** Multiparty Republic
- **President:** Gabriel Boric

Natural Features

- **Mountains:** Dominated by the **Andes Mountains**, including **Ojos del Salado** (22,614 ft) — the world's highest active volcano.
- **Beaches at Risk:** Located in **Renaca, Viña del Mar, Valparaíso, and Puerto Saavedra**.
- **Deserts:** **Atacama Desert** in the north — one of the driest places on Earth.
- **Volcanoes:** Active peaks like **Llaima, Osorno, and Copahue**.
- **Hydrology:** Short, seasonal rivers fed by **Andean snowmelt**

Lakes and glaciers in the Lake District and **Southern Ice Cap** (second largest in the Southern Hemisphere)

SCIENCE AND TECHNOLOGY

India Accelerates Launch of 52 Military Satellites to Strengthen Border Surveillance

In response to insights gained during **Operation Sindoor**, the Indian government has initiated the rapid deployment of **52 dedicated surveillance satellites** aimed at bolstering continuous monitoring along its borders and coastline. This move signals a significant advancement in integrating **space-based intelligence** into India's defence architecture.

Operation Sindoor: Catalyst for Space-Driven Defence

Operation Sindoor underscored the critical role of satellite intelligence, enabling swift military action by providing real-time data on **drone and missile movements**. It also revealed how adversaries, notably China, may have supported Pakistan using satellite-based systems. These revelations have reinforced the urgency of enhancing India's **domestic surveillance capabilities**.

SBS-III: India's Strategic Space Defence Programme

To spearhead this initiative, the **SBS-III (Space-Based Surveillance - III) programme** was launched, backed by a **\$3.2 billion investment** approved in October 2024. Key elements of the programme include:

- 52 total satellites** to be launched over the next decade.

- ISRO** will handle the design and launch of the initial **21 satellites**.

- The remaining **31 satellites** will be built and launched by **private Indian space firms**.

- The **Defence Space Agency (DSA)** will oversee the operational command of the satellite network.

Cutting-Edge Surveillance and AI Integration

The satellites will be equipped with **advanced radar imaging technology**, enabling round-the-clock, all-weather monitoring. Additionally, the incorporation of **Artificial Intelligence (AI)** will:

- Automate threat identification.

- Improve data analysis speed and precision.

- Enable predictive capabilities using machine learning.

These features aim to significantly enhance surveillance effectiveness, particularly in difficult terrains and high-risk border zones.

Strategic Focus Areas

The surveillance satellite constellation will concentrate on three main regions:

- India-China border**, with emphasis on Ladakh and Arunachal Pradesh.

- India-Pakistan border**, focusing on infiltration routes and missile activities.

- Indian Ocean Region**, monitoring naval operations and maritime threats.

This strategic deployment will reduce India's reliance on external satellite data, reinforcing **self-sufficiency in space-based defence systems**.

Timeline and Outlook

The first batch of satellites is slated for launch by **2026**, laying the groundwork for a **secure and scalable satellite surveillance network** that will support India's defence strategy well into the future.

Safeguarding Culture: The Role of Geographical Indication (GI) Tags in Preventing Cultural Misappropriation in India Prada's Kolhapuri Controversy: A Wake-Up Call

In June 2025, Italian luxury label **Prada** showcased a footwear line at its Spring/Summer 2026 menswear show in Milan that bore striking similarities to **Kolhapuri chappals**, a traditional Indian product protected by a **Geographical Indication (GI)** tag. The move sparked backlash in India, reviving concerns over **cultural appropriation** and questioning the efficacy of GI protection on the global stage.

This incident is emblematic of a larger trend where Indian cultural symbols and traditional knowledge are adopted by international brands **without recognition or benefit-sharing**, reigniting conversations about the limits of intellectual property protections in preserving cultural heritage.

What Are Geographical Indications (GI)?

A **Geographical Indication (GI)** is a type of **intellectual property right** that identifies a product as originating from a specific place, where its **quality, reputation, or other characteristics** are essentially linked to its geographic origin.

India currently boasts **658 registered GI products**, spanning:

- Textiles** (e.g., Kancheepuram silk)

- Agricultural goods** (e.g., Basmati rice)

- Handicrafts** (e.g., Madhubani paintings)

- Food items** (e.g., Darjeeling tea)

Unlike trademarks, which are owned by individuals or companies, GIs are **collectively held** by communities of producers or artisans. They **cannot be sold or transferred**, preserving the collective identity and legacy of traditional crafts and practices.

Legal Framework: National Strength, International Weakness

India enacted the **Geographical Indications of Goods (Registration and Protection) Act, 1999**, which came into force in 2003. Key provisions include:

- Registration of GI goods
- Legal recourse against unauthorized use
- Enforcement rights for registered users
- Infringement penalties

Internationally, GI protection is addressed under:

- TRIPS Agreement (1995)** – under the WTO
- Paris Convention (1883)** – for industrial property

However, **GI rights are territorial**. India's protection for Kolhapuri chappals does not extend to countries like Italy unless specific bilateral or multilateral agreements are in place. This creates a **legal vacuum**, allowing global brands to commercially exploit culturally significant products **without facing legal consequences abroad**.

India's History of Fighting Cultural and Biological Appropriation

India has previously fought—and won—battles against international misuse of its traditional knowledge:

Basmati Rice Patent (1997): A patent granted to U.S. firm Ricetec was overturned after India challenged the claim.

Turmeric Patent (1995): India successfully revoked a patent granted in the U.S. for turmeric's medicinal use, long practiced in Ayurveda.

Neem Patent (2000): A neem-based patent was annulled in Europe after Indian traditional knowledge was used as evidence.

These cases highlight India's vulnerability and the necessity for **proactive cultural and legal defence mechanisms**.

Strengthening Protection Beyond Borders

Although GI tags offer robust **domestic protection**, they lack **international**

enforceability. To address this, India is pursuing multiple strategies:

Bilateral and multilateral GI agreements for mutual recognition.

Foreign GI registration in key markets such as the EU, U.S., and Japan.

Including GI clauses in Free Trade Agreements (FTAs) to ensure recognition and enforcement.

Expanding the Scope: From GI to Digital Safeguards

Experts recommend extending initiatives like the **Traditional Knowledge Digital Library (TKDL)**—which documents Indian medicinal knowledge—to include:

- Handicrafts**
- Performing arts**
- Textile traditions**
- Grassroots cultural expressions**

By creating a **searchable global database**, India can facilitate due diligence for foreign designers and prevent **unintentional misappropriation**. This database could serve as a **preemptive cultural safeguard**, encouraging respectful and informed collaboration rather than exploitation.

Conclusion: A Call for Cultural Vigilance

The Prada incident underscores the **urgent need to globalize cultural protections** and rethink the current limitations of GI laws. While India has made significant strides in registering and protecting its diverse heritage, **international legal frameworks** must evolve to match the pace of global commerce.

To preserve its **cultural identity and artisanal legacy**, India must not only reinforce GI protections at home but also **assertively engage in global forums**, leveraging trade, diplomacy, and digital infrastructure to uphold the rights of its communities and creators.

INS Tabar: Swift Naval Response in Gulf of Oman

Recent Operation:
The Indian Navy's stealth frigate **INS Tabar** responded promptly to an emergency in the **Gulf of Oman**, rescuing crew members after a fire broke out on an oil vessel.

About INS Tabar (F44):

Type: Talwar-class guided missile frigate

Commissioned: 2004 (built in Russia)

Base: Western Naval Command, Mumbai

Notable Roles:

First Indian naval ship to take deterrent action against piracy

Conducts anti-piracy, rescue, environmental, and humanitarian missions

Key Features:

Advanced missile systems, radar, electronic warfare suites

Carries helicopters for air-sea coordination

State-of-the-art firefighting and damage control systems

Crew strength: 280 personnel, specially trained for emergency operations

Altermagnets

Scientists have discovered a unique electrical and thermal transport phenomenon in a high-quality single-crystalline altermagnet called Chromium Antimonide (CrSb).

About Altermagnets:

Altermagnets are a newly identified class of magnetic materials combining traits of ferromagnets and antiferromagnets.

They do not exhibit net external magnetism, but their internal electron behavior is highly useful, especially for advanced technologies like spintronics (which manipulates electron spin rather than charge).

Properties of Altermagnets:

They display a dual nature: no net magnetization like antiferromagnets, but also exhibit spin splitting similar to ferromagnets.

This arises from the complex atomic interactions within their crystal structure.

They show unique spin polarization, meaning electron spins align preferentially in certain directions both in real space (physical arrangement) and momentum space (distribution of electron spins).

Altermagnets could play a key role in **spin caloritronics**, studying the interaction between spin and heat flow—something not possible with ferromagnets or antiferromagnets.

This research area holds promise for new information processing and storage technologies.

Altermagnetism in Chromium Antimonide (CrSb):

CrSb is a metallic altermagnet with magnetic order stable at over twice room temperature.

It has the largest known altermagnetic spin-splitting—more than 30 times room temperature.

CrSb uniquely exhibits direction-dependent conduction polarity, a rare property among materials and the first for an altermagnet.

Its exceptional properties make CrSb a leading candidate for practical applications in electronics.

Made from earth-abundant, non-toxic elements, CrSb is environmentally friendly and promising for future electronic devices.

Essential Tremors

A patient recently underwent a successful Magnetic Resonance-guided Focused Ultrasound (MRgFUS) treatment for essential tremors.

About Essential Tremors:

A neurological disorder causing rhythmic shaking of hands, head, trunk, voice, or legs.

Most common in people over 65 but can affect any age.

Affects approximately 1% of the global population, making it one of the most prevalent neurological disorders.

Causes:

Exact cause unknown; possibly due to communication issues between the cerebellum and other brain parts.

Often hereditary, with a 50% chance of gene transmission from parent to child.

Prevalence increases with age; about 5% of people over 60 are affected.

Treatment:

No cure exists, but treatments include medications, assistive devices, botulinum toxin, deep brain stimulation, and focused ultrasound.

About MRgFUS:

Non-surgical procedure using MRI-guided focused ultrasound waves to target brain tissue causing tremors.

Approved for Essential Tremor and Tremor-Dominant Parkinson's Disease.

Targets the thalamus, a key relay center in the brain.

Focused ultrasound thermally destroys this area, significantly reducing or nearly eliminating tremors, often in a single session.

WaveX Startup Challenge 2025 – BhashaSetu

Launched by the Ministry of Information & Broadcasting (MoI&B) under its WaveX startup accelerator program.

The challenge is titled **BhashaSetu – Real-Time Language Tech for Bharat**.

It is a national hackathon aimed at developing an AI-powered multilingual translation solution for at least 12 major Indian languages.

About WaveX:

A dedicated startup accelerator platform launched under the MoI&B's WAVES initiative.

Focuses on nurturing innovation in media, entertainment, and language technology sectors.

Supports ideas through hackathons, incubation, mentorship, and integration with national platforms.

Terbium

Recent Development:

IISc scientists developed a glowing paper sensor using Terbium to detect liver cancer biomarker β -glucuronidase.

About Terbium:

Rare-earth metal in the lanthanide series.

Soft, silvery metal.

Extracted from minerals like monazite, bastnaesite, and euxenite.

Applications:

Used in solid-state devices, low-energy light bulbs, mercury lamps, medical X-ray safety, and lasers.

INS Udaygiri

Recently delivered Yard 12652 (Udaygiri) to the Indian Navy by Mazagon Dock Shipbuilders Limited (MDSL).

Second ship among seven Project 17A (P-17A) frigates constructed at MDSL (Mumbai) and Garden Reach Shipbuilders and Engineers (Kolkata).

Follows the earlier Shivalik-class (Project 17) frigates.

Modern successor to the previous INS Udaygiri (steam ship decommissioned in 2007 after 31 years).

Designed for multi-mission operations in 'Blue Water' environments against conventional and non-conventional maritime threats.

Key Features:

Hull 4.54% larger than P17 class.

Advanced weapons and sensor suites with enhanced stealth features.

Propulsion: Combined Diesel or Gas (CODOG) system with diesel engines and gas turbines driving controllable pitch propellers.

Integrated Platform Management System (IPMS).

Armaments:

Supersonic surface-to-surface missiles.

Medium-range surface-to-air missiles.

76 mm main gun.

30 mm and 12.7 mm close-in rapid-fire weapon systems.

Indigenous OEMs supply major weapons and sensors.

Significance: Project promotes self-reliance, economic development, employment generation, and MSME growth.

Microcrystalline Cellulose (MCC)

Recent

Incident:

A lethal accident at the pharma unit of Sigachi Industries in Hyderabad, which manufactures MCC, caused 36 fatalities.

About MCC:

Free-flowing powdery substance extracted from refined wood pulp.

Chemically purified, partially depolymerized cellulose with formula $(C_6H_{10}O_5)_n$.

Inert, not digested or absorbed in the body.

Natural, fiber-rich, nontoxic, and chewable.

Derived mainly from wood, where cellulose chains form a crystalline layered structure linked by strong hydrogen bonds.

Exhibits plastic deformation under compression, enhancing interparticle bonding, making it an excellent binder.

Applications:

Used as texturizer, extender, emulsifier, and binder in pharmaceuticals.

Acts as a bulking agent in food production.

Crucial in manufacturing vitamin supplements and tablets.

Adds weight to drugs, ensuring active ingredients function effectively and meet weight specifications.

GOSAT-GW Satellite

Recently launched by Japan from the Tanegashima Space Centre.

Full form: Global Observing SATellite for Greenhouse gases and Water cycle.

Developed and launched by the Japanese Aerospace Exploration Agency (JAXA).

Carries two instruments:

Total Anthropogenic and Natural emissions mapping Spectrometer-3 (TANSO-3)

Advanced Microwave Scanning Radiometer 3 (AMSR3)

Launched using an H-2A rocket.

Orbits in a sun-synchronous orbit at an altitude of 666 km with a repeat cycle of three days.

Objectives:

Monitor global mean atmospheric concentrations of greenhouse gases (GHGs).

Verify national anthropogenic GHG emissions inventories.

Detect GHG emissions from large sources like megacities and power plants.

SAKSHAM-3000 - India's High-Capacity Switch-Router

Launched by: Ministry of Communications and Rural Development

Developed by: Centre for Development of Telematics (C-DOT)

What is it?

25.6 Tbps switch-router designed for **next-gen digital infrastructure**

Tailored for **data centres, telecom operators, and AI-driven enterprises**

Key Features:

Supports: 32 ports of **400G**; Ethernet speeds from **1G to 400G**

Applications: Powers **5G/6G networks, cloud infrastructure, AI workloads**

Network compatibility: Leaf to super-spine roles in **CLOS architecture**

Technology Highlights:

Uses **C-DOT Router Operating System (CROS)**

Compatible with **Layer-2, IP, and MPLS** networks

Equipped for **time-sensitive applications** using **PTP** and **Sync-E**

Energy-efficient, with hot-swappable **power and fan units**

Advanced **QoS management** with **WRR** and **WRED**

Strategic Importance:

Supports India's push for **self-reliance (Atmanirbhar Bharat)** in high-end telecom and data tech

Future-ready platform for **legacy and cloud-native** network environments

Endocrine-Disrupting Chemicals (EDCs)

Plastics not only pollute oceans and landfills but also enter the human body via microplastic particles and endocrine-disrupting chemicals (EDCs).

Endocrine System:

Made up of glands that produce hormones.

Hormones are chemical messengers that carry information and instructions between cells.

Influences nearly every cell, organ, and bodily function.

About Endocrine-Disrupting Chemicals (EDCs):

EDCs are natural or synthetic chemicals that disrupt the normal

functioning of the endocrine system.

Exposure occurs through air, food, water, and skin contact.

EDCs interfere with hormones by:

Mimicking hormones, tricking the body.

Blocking natural hormones from working.

Changing hormone levels by affecting their production, breakdown, or storage.

Altering body sensitivity to hormones.

There are about 85,000 man-made chemicals globally; over 1,000 are identified as EDCs.

Common EDC examples include Bisphenol A (BPA) and phthalates found in plastics.

DengiAll

India has achieved 50% enrolment in the first phase III clinical trial for its indigenous tetravalent dengue vaccine, **DengiAll**.

About DengiAll:

Developed by Panacea Biotec Limited under a licensing agreement with the US National Institutes of Health (NIH).

Contains weakened forms of all four dengue virus subtypes.

The virus composition is the same as the NIH-developed vaccine, differing only in inactive ingredients.

Phase I and II trials in India showed a balanced, strong immune response to all four dengue types.

The vaccine was found to be safe and well tolerated.

Multiple Indian Council of Medical Research (ICMR) institutes are involved in evaluating efficacy, immunogenicity, and safety.

ICMR's National Institute of Translational Virology (NITVAR) and AIDS Research Institute coordinate the trial.

Key Facts about Dengue:

It is a mosquito-borne viral infection.

Common in tropical and subtropical regions, especially urban and semi-urban areas.

Transmission:

Spread by bites from infected Aedes mosquitoes carrying one of four dengue virus types.

Not contagious person-to-person except from mother to child during pregnancy.

Symptoms:

High fever, headache, body aches, nausea, rash.

Most recover in 1-2 weeks.

Severe cases can cause dengue hemorrhagic fever.

Treatment:

No specific cure; treatment focuses on relieving pain and symptoms.

Apache AH-64E Attack Helicopter

The Indian Army will soon receive its first batch of Apache AH-64E attack helicopters from the United States.

About Apache AH-64E:

The world's most advanced multi-role combat helicopter.

Used for reconnaissance, precision strikes, and close air support missions.

Origin: United States.

Manufacturer: Boeing.

Also called Apache Guardian.

The AH-64E is the latest model used by the US Army.

Global Users:

Countries including India, Egypt, Greece, Indonesia, Israel, Japan, South Korea, Kuwait, Netherlands, Qatar, Saudi Arabia, Singapore, UAE, and UK use it.

Apache in India:

Indian Air Force currently operates 22 AH-64E helicopters.

In 2020, Boeing signed an agreement to supply six more to the Indian Army.

Sarcoma

Overview

Sarcoma refers to a group of rare cancers that develop in **connective tissues**, including

bones and soft tissues (fat, muscles, blood vessels, nerves, deep skin tissues).

It often begins as a **painless lump or swelling**, which may grow gradually. These symptoms are easily mistaken for **benign conditions** like cysts or injuries, leading to **delayed diagnosis**.

Prevalence

Although sarcomas make up **only about 1%** of adult cancers and **15%** of childhood cancers, their impact is significant due to **low awareness and late detection**.

Types of Sarcoma

Sarcomas are broadly classified into:

Soft Tissue Sarcomas

Liposarcoma – arises from fat tissue

Leiomyosarcoma – originates in smooth muscle

Angiosarcoma – develops from blood vessels

Bone Sarcomas

Osteosarcoma – common in children and young adults

Ewing Sarcoma

Chondrosarcoma

There are over **70 known subtypes**, making diagnosis and treatment complex.

Risk Factors

Genetic disorders: e.g., *Li-Fraumeni syndrome, neurofibromatosis*

Previous radiation therapy, especially near sarcoma-affected areas

Chemical exposure: e.g., *vinyl chloride, dioxins*

Chronic swelling (lymphedema)

Age:

Bone sarcomas occur more in **children and young adults**

Soft tissue sarcomas are more common in **older adults**

Awareness

July is observed as **Sarcoma Awareness Month**, aiming to improve public understanding and early detection.

Ham Radio

Overview

Ham radio, also known as **amateur radio**, is a licensed form of wireless communication that uses **radio frequencies** to enable two-way communication.

It is primarily used for:

Educational purposes

Technical experimentation

Emergency communications during natural or man-made disasters

Technology & Operation

Communication through ham radio requires:

A **dedicated frequency band**

A **transceiver** (to transmit and receive signals)

An **antenna**

Conversations can range from **local to global**, and even include **space-based communications**, such as with the **International Space Station (ISS)**.

Licensing in India

Any Indian citizen above **12 years of age** is eligible to apply for a ham radio licence.

The licence is issued by the **Ministry of Electronics and Information Technology**.

Operators are trained and tested before receiving certification.

Why Ham Radio Matters

Despite modern digital communication systems, **ham radio remains highly dependable**, particularly when regular infrastructure fails.

It serves as an **alternative communication network** in emergencies.

Notable Emergency Uses in India

Bhuj earthquake (2001)

Indian Ocean tsunami (2004)

Uttarakhand floods (2013)

In all these events, ham radio played a critical role in **relaying emergency messages** when conventional channels were disrupted.

Asteroid Terrestrial-impact Last Alert System (ATLAS)

Recent Update

A comet from beyond our solar system, designated **3I/ATLAS**, was recently detected by the ATLAS telescope system in **Chile**.

About ATLAS

Full Name: *Asteroid Terrestrial-impact Last Alert System*

Developed by the **University of Hawaii** and **funded by NASA**

Purpose: To serve as an **early warning system** for potentially hazardous asteroids.

System Configuration

Comprises **four telescopes** strategically placed:

Two in Hawaii

One in Chile

One in South Africa

These telescopes **automatically scan the sky** several times each night to detect fast-moving celestial objects.

Primary Objectives

Detect near-Earth asteroids, especially those large enough to cause significant damage

Provide **warning times** based on asteroid size:

~20 meters in diameter: detected a few days before impact

~100 meters in diameter: detected weeks in advance

Other Applications

While asteroid detection is its core mission, ATLAS also contributes to:

Discoveries of **dwarf planets**

Observation of **supernovae**

Tracking cosmic events like **stellar material being consumed by black holes**

Design Focus

ATLAS is optimized to detect objects **closer than the Moon's distance** (~384,000 km), making it ideal for identifying imminent impact threats.

Supernova

Scientists have recently obtained photographic proof of a rare supernova event involving a unique type of star called a white dwarf, featuring a phenomenon known as double detonation. This observation was made using the Very Large Telescope, located at the European Southern Observatory in Chile.

About Supernova: A supernova is a tremendously powerful explosion marking the end of a star's life cycle. Usually, this event occurs when a star, more than eight times the mass of the sun, runs out of nuclear fuel and undergoes core collapse.

BHARAT Initiative

Overview

The **Indian Institute of Science (IISc), Bengaluru** has launched a significant research project named **BHARAT**, which stands for **Biomarkers of Healthy Aging, Resilience, Adversity, and Transitions**.

The initiative is part of the broader **Longevity India Program**, which focuses on understanding aging in the Indian context.

Objectives

To identify **physiological, molecular, lifestyle, and environmental** factors that influence aging.

To develop a comprehensive **database on aging in the Indian population**, capturing a wide range of indicators.

Key Components

Multiparametric Analysis: Examines several biological and lifestyle parameters.

Advanced Clinical Assessments: Includes medical and physiological evaluations.

Environmental and Lifestyle Factors: Considers dietary habits, pollution exposure, and socio-cultural conditions.

Comprehensive Biomarker Discovery: Involves identifying molecular signatures associated with aging.

Bharat Baseline

A critical outcome of the initiative is to establish a **"Bharat Baseline"**—a scientific reference point for what constitutes "normal" in Indian health profiles.

This will help **challenge Western-centric medical standards**, which often misclassify Indian populations (e.g., vitamin D or B12 levels).

Types of Biomarkers Involved

Genomic markers: DNA mutations and gene variations linked to disease risks.

Proteomic and Metabolic indicators: Reveal underlying biochemical pathways.

Lifestyle and Environmental markers: Track aging patterns across urban and rural populations.

What Are Biomarkers?

Definition: Biomarkers (short for biological markers) are measurable indicators of a biological process, condition, or disease.

According to **WHO**, a biomarker is *"any measurement reflecting interaction between a biological system and a potential hazard, which may be chemical, physical, or biological."*

Uses:

Disease diagnosis

Monitoring drug response

Personalised medicine

Drug development

Examples: Enzymes, hormones, genes (DNA/RNA), proteins, lipids, platelets, etc.

India's First Equine Disease-Free Compartment (EDFC)

Context

India's first EDFC has been officially recognised by the **World Organisation for Animal Health (WOAH)**.

It is located at the **Remount Veterinary Corps (RVC) Centre & College, Meerut Cantonment, Uttar Pradesh**.

Purpose

To maintain a scientifically managed, biosecure zone free from key equine diseases, enabling Indian horses to participate in **international trade and competitions**.

Established Under

Ministry of Fisheries, Animal Husbandry and Dairying

Key Features

Disease-Free Status

Certified free from:

Equine Influenza

Glanders

Surra

Equine Piroplasmiosis

Equine Infectious Anemia

India has also remained **free of African Horse Sickness** since 2014.

Biosecurity Measures

Implements strict **Standard Operating Procedures (SOPs)** for:

Hygiene and sanitation

Pest and disease control

Health surveillance and waste management

Compartmentalisation Standards

Adheres to **WOAH's Terrestrial Animal Health Code**.

Maintains a **defined sub-population** of healthy animals isolated from disease exposure.

24/7 Monitoring

Continuous **veterinary screening and health surveillance** for early disease detection.

Functions and Significance

Facilitates International Trade

Enables the export of Indian sport horses under internationally accepted protocols.

Supports Equestrian Sports

Allows Indian equestrian athletes and horses to compete globally.

Strengthens Animal Health Systems

Enhances India's reputation in **biosecurity and science-based livestock management**.

Model for Expansion

India is now adopting this approach for **Highly Pathogenic Avian Influenza (HPAI)-Free Compartments**, to promote safe poultry exports.

Nipah Virus

Kerala Health Minister confirmed **425 individuals on the Nipah virus contact list** in the state.

About Nipah Virus (NiV):

An **emerging zoonotic virus**, transmissible from animals (wild/domestic) to humans. Also spreads via contaminated food or person-to-person transmission.

Natural hosts: **Fruit bats** of the Pteropodidae family.

Infection spectrum: Asymptomatic/mild to acute respiratory illness and fatal encephalitis.

Symptoms:

Early: Fever, headache, muscle pain (myalgia), nausea, vomiting, sore throat, cough, respiratory discomfort.

Severe: Dizziness, drowsiness, altered consciousness, neurological signs indicating **acute encephalitis**.

Progression: Encephalitis and seizures can lead to coma within 24–48 hours.

Prognosis: Poor once encephalitis develops; median death within 6 days of symptom onset.

Fatality & Treatment:

Case fatality rate: **40–75% or higher**, varies by strain, healthcare access, and illness severity.

No specific treatments or vaccines currently approved for humans or animals.

Outbreak History:

First outbreak: 1998–1999 among pig farmers in Sungai Nipah, Malaysia.

Subsequent outbreaks in Bangladesh, India, Philippines, Singapore.

Listed by WHO as a priority disease due to epidemic/pandemic potential under the **R&D Blueprint**.

Very Massive Stars

A new study suggests **very massive or very luminous stars** emit significantly more material during their lifespan than previously estimated.

The amount of material expelled by these stars could be much larger than earlier believed.

About Very Massive Stars:

Stars with **more than 100 times the mass of the Sun**.

They burn their nuclear fuel at a much faster rate than the Sun, resulting in a very **short lifespan of only a few million years**.

After exhausting their fuel, these stars **collapse to form black holes**.

They produce **powerful stellar winds** strong enough to blow away their own outer layers into space.

Importance of Very Massive Stars:

Despite their short life, they significantly influence their surrounding regions.

Their stellar winds distribute **newly formed elements**, including key life-essential elements like **carbon and oxygen**, into space.

Though distant from Earth, they have an indirect influence on our planet.

Very massive stars are **precursors to black holes**, sometimes forming **black hole binaries** — two black holes orbiting each other.

These binaries generate **gravitational waves**, which can be detected on Earth.

Embracing Genetic Innovation for India's Agricultural Future Context

India is under growing international pressure to liberalize its agricultural biotechnology regime, especially regarding genetically modified (GM) crops. Yet, domestic progress in agricultural biotech remains stalled due to regulatory and political constraints. Currently, **only Bt cotton** is approved for commercial cultivation, while key innovations like **GM mustard** and **Bt brinjal** remain stuck in bureaucratic limbo.

The State of Indian Agriculture

1. Declining Productivity and Global Lag

Cotton productivity has dropped from **566 kg/ha in 2013-14** to **436 kg/ha in 2023-24**, falling far behind **China and Brazil**, which achieve yields above **1,800-1,900 kg/ha**.

Once a net exporter, **India now imports cotton**, with imports touching **\$0.4 billion in 2024-25**.

2. Limited Biotech Penetration

Bt cotton remains the **only GM crop approved** for cultivation.

GM mustard, brinjal, soy, and corn remain **pending regulatory clearance** despite years of trials.

3. Technological Disparities

Globally, **GM crop coverage exceeds 200 million hectares** across **76 countries**, while **India lags behind** due to prolonged regulatory delays and political resistance.

Government Interventions and Policy Evolution

Bt Cotton Approval (2002): Led to a **193% rise in cotton production** over the following decade.

Cotton Seed Price Control Order (SPCO) 2015: Capped trait fees, discouraging biotech investment.

GM Mustard Clearance (2022): GEAC approved environmental release, but commercial rollout remains stalled.

Jai Anusandhan Scheme: Launched with a **₹1 lakh crore RDI fund** to boost innovation in sectors including agriculture.

Technology Licensing Rules (2016): Introduced compulsory tech sharing and fee controls, deterring private sector engagement.

Major Challenges

Regulatory Delays: Bt brinjal has faced a moratorium since 2009; GM mustard is caught in legal and political deadlock.

Illegal Cultivation: Herbicide-tolerant Bt cotton is widely cultivated across **five states**, covering **up to 25%** of total cotton area, despite being unapproved.

Pest Resistance: Pink bollworm and whitefly infestations are worsening, affecting yields and farmer incomes.

Policy Inconsistency: Trait fee caps, rigid license terms, and lack of clear timelines deter innovation.

Farmer Risks: Farmers using unapproved seeds face crop failures without legal protections or compensation.

Key Concerns Over GM Crops

Biodiversity Loss: GM crops may threaten native genetic diversity, especially if gene flow occurs to traditional varieties.

Health Concerns: Public mistrust persists due to inconclusive long-term safety data on GM food consumption.

Seed Sovereignty: IP-protected GM seeds often require annual purchase, limiting farmer autonomy (e.g., Monsanto–Mahyco disputes).

Regulatory Transparency: Lack of openness in GEAC decisions and field trial processes erodes public trust.

Market Monopolies: High seed costs could marginalize smallholders, widening the technology access gap.

Why Genetic Innovation Still Matters

Bt Cotton's Track Record: Increased productivity by **87%** and significantly improved rural incomes, especially in Gujarat.

Global Evidence: Countries adopting GM crops have seen **higher yields, reduced pesticide use, and lower input costs.**

GM Mustard and Brinjal: These crops could substantially reduce pesticide dependency and increase yield stability.

Policy Backing for Innovation: Programs like **Jai Anusandhan** can drive breakthroughs, but need alignment with market realities.

"Biotech for Bharat" Vision: Former PM Vajpayee once envisioned that **"what IT is for India, biotech should be for Bharat"**—highlighting its role in rural transformation.

Conclusion

India's agricultural growth cannot rely solely on traditional methods or trade protectionism. **Science-led innovation**—anchored in transparent regulation and farmer-centric policy—is essential to improve yields, ensure food security, and maintain global competitiveness. Commercializing rigorously tested GM crops like **Bt brinjal** and **GM mustard** is no longer just a

technological choice, but a strategic imperative for **India's rural prosperity and future resilience.**

National Biobank: Advancing India's Genomic and Health Research

Overview

The **National Biobank**, recently inaugurated at the **CSIR-Institute of Genomics and Integrative Biology (IGIB)**, is a major initiative under the **Phenome India Project**. It aims to create a comprehensive, long-term database of health, genomic, and lifestyle data from **10,000 individuals** across India.

This biobank is poised to become a cornerstone of biomedical research in India by capturing the country's vast **genetic, geographic, ethnic, and socio-economic diversity.**

Key Features of the National Biobank

Pan-India Representation: Collects data from diverse populations across **17 states and 24 cities**, ensuring representation of India's demographic heterogeneity.

Longitudinal Study Design: Tracks the **health trajectories** of individuals over several years, enabling detailed analysis of disease progression and risk factors.

Rich, Multi-Layered Dataset:

Genomic data

Clinical information

Lifestyle and dietary habits

Anthropometric measurements

Biochemical and molecular profiles

Imaging and scanning data

Applications:

Early diagnosis of complex diseases

Personalized treatment strategies

Better understanding of gene-environment interactions

Improved therapeutic targeting for conditions like **diabetes, cardiovascular disease, cancer, and rare genetic disorders**

About the Phenome India Project

Official Name:

Phenome India-CSIR Health Cohort Knowledgebase (PI-CheCK)

Launched by:

Council of Scientific and Industrial Research (CSIR) on **December 7, 2023**

Primary Objective:

To develop **India-specific risk prediction models** for **cardio-metabolic disorders** such as:

Type 2 diabetes
Cardiac diseases
Liver disorders

Participants:

Approximately **10,000 individuals**, primarily consisting of:

CSIR employees
Pensioners
Their spouses

Significance

India's **first nationwide longitudinal health monitoring study** focused on cardio-metabolic health.

Enables **context-specific public health interventions** by factoring in India's unique population genetics and lifestyle variables.

Expected to **enhance disease prevention strategies**, public health planning, and **precision medicine** tailored to Indian populations.

Atomic Energy Regulatory Board (AERB): India's Nuclear Watchdog

Recent Development

The **Atomic Energy Regulatory Board (AERB)** has recently granted operational licenses for two **indigenously developed 700 MWe Pressurised Heavy Water Reactors (PHWRs)** at the **Kakrapar Atomic Power Station (KAPS)** in Gujarat. This marks a significant step forward in India's nuclear energy self-reliance.

What is a PHWR?

A nuclear reactor that uses **natural uranium** as fuel.

Utilizes **heavy water (D₂O)** both as a coolant and as a neutron moderator to sustain the nuclear chain reaction.

Designed for **online refueling**, allowing continuous power generation without shutdowns.

Development History

Initially developed with Canadian assistance for Rajasthan Atomic Power Station-1 (RAPS-1) in 1973.

After Canada's AECL withdrew support, Indian scientists at BARC (Bhabha Atomic Research Centre) and NPCIL took over and fully indigenized the technology.

Indian PHWR capacities progressed from **220 MWe → 540 MWe → 700 MWe**, with complete domestic research, development, and manufacturing.

How Does a PHWR Work?

Heavy water slows down neutrons, enabling sustained fission with natural uranium.

Fuel rods of natural uranium are placed inside pressure tubes within a **calandria vessel**.

Hot, pressurized heavy water transports heat to steam generators.

Steam drives turbines, producing electricity.

Control rods and **Emergency Core Cooling Systems (ECCS)** regulate the reaction and ensure safety.

Key Features of the 700 MWe PHWRs

Fully indigenous design including construction, fuel fabrication, and control systems.

Online refueling capability increases efficiency by reducing downtime.

Equipped with **twin fast-acting shutdown systems**, **double containment structures**, and **passive heat removal systems** for enhanced safety.

Incorporates advanced **digital Instrumentation and Control Systems** for real-time monitoring and automation.

On-site heavy water production optimizes neutron economy and reduces external dependency.

Significance of the Recent License

Advances India's goal of expanding its PHWR fleet to 10 reactors, aiming to add 7,000 MWe of indigenous nuclear capacity.

Demonstrates India's mastery over the entire nuclear technology lifecycle—from design and construction to operation and decommissioning.

About AERB

Establishment and Legal Authority

Constituted on: November 15, 1983

Constituted by: President of India under the **Atomic Energy Act, 1962**

Legal backing: Powers derived from:

Atomic Energy Act, 1962

Environment (Protection) Act, 1986

Factories Act, 1948 (for DAE units, under Section 23 of the Atomic Energy Act)

Mission

To ensure that the use of **ionizing radiation** and **nuclear energy** in India does **not pose undue risk** to human health or the environment.

Functions and Regulatory Role

Licensing Authority: Grants mandatory certifications to all entities involved in nuclear energy and radiation applications.

Oversight Areas:

- Nuclear power plants
- Radiation therapy and diagnostic centres
- Industrial and research facilities using radioactive materials

Standards Enforcement: Ensures strict adherence to **national and international safety protocols**.

Organizational Structure

Headquarters: Mumbai

Regional Regulatory Centres (RRCs):

- Kolkata** (Eastern India)
- Chennai** (Southern India)
- New Delhi** (Northern India)

These centres conduct **routine inspections and surveillance** of radiation facilities in their respective zones.

Safety Research Institute (SRI):

- Located at **Kalpakkam, Tamil Nadu**
- Focuses on **research in nuclear and radiation safety**, including risk assessment and safety modeling.

Importance of AERB Licensing

Mandatory for Operation: No nuclear facility or radiation-based operation can legally function in India without an AERB license.

Public Safety and Environmental Protection: The licensing ensures compliance with safety norms that minimize exposure risks and prevent accidents.

Global Standards: AERB's regulatory practices are aligned with **IAEA (International Atomic Energy Agency)** guidelines.

Australian Bat Lyssavirus (ABLV): A Rare but Fatal Zoonotic Threat

Recent Context

An Australian man has recently died after contracting the **Australian Bat Lyssavirus (ABLV)**, highlighting the persistent but low-frequency threat posed by this deadly virus.

About ABLV

Classification: ABLV belongs to the **Rhabdoviridae family**, the same group of viruses that includes the **rabies virus**.

Discovery: First detected in **1996** in a **fruit bat** in **northern New South Wales, Australia**.

Reservoirs: Found in multiple bat species across Australia, including:

- Flying foxes**
- Fruit bats**
- Insectivorous microbats**

Transmission

Primary mode: Through **bites or scratches** from infected bats, or direct contact with **bat saliva** on broken skin or mucous membranes (eyes, nose, mouth).

Non-transmissible via: Bat **urine, faeces, blood**, or casual contact near bat roosts.

Symptoms in Humans

Resembles **rabies** and includes:

- Initial flu-like symptoms: **fever, headache, fatigue**
- Rapid neurological decline: **paralysis, delirium, seizures, and coma**

Fatality: Nearly always fatal once symptoms appear; **no effective treatment** post-onset.

Public Health Implication

Emphasizes the importance of **bat handling precautions**, immediate **wound cleaning**, and **post-exposure vaccination** if contact with a bat occurs.

AIR LORA

Context:

The Indian Air Force (IAF) is reportedly evaluating the acquisition of AIR LORA, an advanced air-launched ballistic missile, to enhance its long-range strike capabilities.

About AIR LORA:

Developed by Israel Aerospace Industries (IAI), AIR LORA is a sophisticated air-launched ballistic missile designed for precision strikes against critical and heavily defended targets such as command centers, airbases, infrastructure, and naval vessels in coastal regions.

Key Features:

It is a fire-and-forget system, requiring no guidance from the launch aircraft once deployed.

The missile can update its target coordinates mid-flight to adapt to dynamic combat conditions.

It offers high survivability through advanced inertial navigation system (INS) and GNSS (Global Navigation Satellite System) with strong anti-jamming protection.

Designed to operate in extreme weather and heavily contested battlefields around the clock.

The missile's high success rate is attributed to its supersonic speed, anti-jamming GNSS, terminal trajectory shaping, and a steep 90° attack angle.

Battery Passport Framework

Context:

The Indian government, led by NITI Aayog in coordination with various ministries, is developing a Battery Passport framework to improve the safety, traceability, and export readiness of electric vehicle (EV) batteries.

About the Battery Passport

Definition:

A Battery Passport is a digital identity encoded as a QR code that contains comprehensive lifecycle data of an EV battery. This includes its origin, chemical composition, performance metrics, carbon footprint, and information about its end-of-life handling.

Why is a Battery Passport Necessary?

Safety Concerns: Recent electric vehicle fires have highlighted safety issues related to battery cells.

Cell Compatibility: Mixing battery cells from different production batches or years creates performance and safety risks.

Battery Swapping: Standardized, verifiable information is crucial for effective battery swapping systems.

Export Compliance: Aligning with emerging regulations, particularly the European Union's battery passport requirements, facilitates global market access.

Objectives of the Battery Passport

Enhance EV battery safety by detecting faulty or mismatched cells.

Promote uniform quality standards across the EV industry.

Support export readiness by complying with international traceability norms.

Enable comprehensive lifecycle monitoring to assist users and recyclers.

Encourage circular economy practices through improved battery reuse and recycling.

Key Features

Digital QR Code: Encodes detailed battery data including origin, chemistry, performance, and environmental impact.

Unique Battery Identity: Similar to an Aadhaar number for individuals, each battery receives a unique identity ensuring traceability.

Real-Time Lifecycle Tracking: Data is tracked throughout manufacturing, operational use, and disposal phases.

Standardized Data Format: Contains information such as manufacturer details, batch numbers, and service records.

Data Access Control: Regulates data sharing among stakeholders including the public, regulators, and recyclers.

Compliance with EU Norms: Designed to meet the European Union's regulations for batteries above 2 kWh capacity.

Significance for India

Enhances credibility and consumer confidence in Indian-made EVs.

Supports the Make-in-India initiative by facilitating exports and adhering to global manufacturing standards.

Improves regulatory monitoring and enforcement of EV battery safety norms.

Vera C. Rubin Observatory

Context:

The Vera C. Rubin Observatory, located in Chile, has unveiled its first test images, highlighting its groundbreaking capability to revolutionize astronomy by detecting millions of celestial phenomena, asteroids, and signals related to dark matter every night.

About Vera C. Rubin Observatory

What is it? A cutting-edge astronomical facility situated atop Cerro Pachón in the Chilean Andes (at 8,684 feet), designed to create the most comprehensive and detailed map of the universe. It aims to explore dark matter, dark energy, and near-Earth objects (NEOs).

Location:

Chilean Andes, Cerro Pachón mountain.

Collaborating Agencies: U.S. Department of Energy (DOE) and National Science Foundation (NSF).

Objectives

- Survey the entire southern sky every three days for a continuous period of ten years.
- Maintain a dynamic cosmic record to observe changes in the universe over time.
- Monitor near-Earth objects and potential asteroid threats.
- Conduct precise studies of dark matter and dark energy.
- Provide open access to its vast astronomical data for researchers worldwide.

Key Features

Wide Field of View:

- Captures an area equivalent to 40 full moons in a single image.
- Covers a larger sky area per image than both the Hubble and James Webb space telescopes.

World's Largest Digital Camera:

- Boasts 3,200 megapixels and weighs about 2,800 kg (roughly the size of a small car).
- Capable of detecting objects 100 million times fainter than visible light.
- Equipped with six filters to capture light ranging from ultraviolet to infrared for spectral analysis.

Rapid Targeting:

- Fastest telescope slewing speed, repositioning within 5 seconds between targets.
- Can take around 1,000 images per night, completing a full sky scan in about 72 hours.

Automated Detection Software:

- Compares new images with old ones to generate approximately 10 million alerts each night.
- Detected more than 2,100 new asteroids within 10 hours during testing.

Massive Data Output:

- Produces roughly 20 terabytes of data daily.
- Expected to identify and catalogue over 5 million asteroids and 100,000 near-Earth objects in a decade.

Significance

Dark Matter Research: Enables detailed 3D mapping of the universe to study gravitational effects and cosmic structures.

Planetary Defence: Improves early detection of asteroid threats to Earth through rapid tracking of NEOs.

Astrophysical Discoveries: May validate or challenge current theories about galaxy formation and the expanding universe.

Dark Web

Context:

A 35-year-old engineer from Kerala was arrested for functioning as a Level-4 darknet vendor, allegedly trafficking LSD and ketamine via dark web marketplaces using cryptocurrencies.

What is the Dark Web?

Definition:

The dark web is a hidden segment of the internet not indexed by conventional search engines, accessible only through specialized browsers like Tor. It offers strong anonymity and encryption.

How Does It Work?

Access:

Requires downloading the Tor browser (The Onion Router).

Routing:

Internet traffic is routed through multiple randomly selected nodes, encrypting data at every layer to mask user identity.

Websites:

Uses "onion" domain names, invisible to standard search engines.

Decentralization:

Lacks a central governing body, making regulation and surveillance difficult.

Key Features

Anonymity & Encryption: Conceals IP addresses and user activity, keeping both users and hosts untraceable.

Marketplace Ecosystem: Hosts a mix of legal and illegal marketplaces, forums, data leaks, and whistleblower platforms.

Resistance to Censorship: Provides access to uncensored information, particularly useful for journalists, activists, and whistleblowers in authoritarian regions.

Cybercrime Risks: Facilitates illicit trade including drugs, weapons, hacking services, and stolen data; law

enforcement faces challenges tracking activities due to encryption layers.

What is a Level-4 Vendor on the Dark Web?

A rating system within darknet markets that ranks vendors based on:

- Potency and variety of drugs sold
- Quality of customer service
- Reliability and successful deliveries

Level-4 signifies a high-tier, trusted seller with a large customer base and strong reputation.

The arrested individual, known as "Edison," was reportedly India's only Level-4 vendor, indicating a significant operation scale.

Japonica Rice

Context:

Scientists at the National Institute of Plant Genome Research (NIPGR), New Delhi, have enhanced phosphate uptake in japonica rice using CRISPR-Cas9 gene-editing technology. This innovation has resulted in a 20–40% yield increase under controlled phosphate fertilizer usage.

About Japonica Rice

What is Japonica Rice? Japonica rice is a short-grain, high-starch rice variety predominantly cultivated in East Asia. It is favored for genetic research due to its stable traits and ease of genetic modification in controlled environments.

Developed By: NIPGR, New Delhi, through CRISPR-Cas9 gene-editing techniques. The research findings were published in the *Plant Biotechnology Journal*. The cultivar used was *Nipponbare*, a standard model japonica variety.

Development Process

Target Gene: OsPHO1;2, a phosphate transporter responsible for moving phosphorus from roots to shoots.

Repressor Gene: OsWRKY6 acts as a negative regulator suppressing this transporter.

Initial Approach: Completely knocking out OsWRKY6 impaired other plant functions.

Refined Strategy: Precisely removed the 30 base-pair binding site of OsWRKY6 using CRISPR, avoiding full gene knockout.

Result:

This increased phosphate transport to shoots, enhancing seed development without compromising other functions.

Key Features of Gene-Edited Japonica Rice

Yield improvement:

20% higher yield with full recommended fertilizer.

40% higher yield with just 10% of the recommended phosphate dose.

Enhanced phosphate absorption due to activated transporter.

Increased number of panicles and seeds, maintaining normal seed quality and size.

No foreign DNA present in the final rice generation (removed by Mendelian segregation).

No off-target genetic modifications detected, confirmed through genome-prediction software.

Mimics minimally invasive promoter gene editing.

Significance for India

Reduces dependency on imported diammonium phosphate (DAP), with India importing about 4.5 million tonnes annually.

Addresses phosphorus deficiency in Indian soils, which affects crop productivity.

Promotes environmentally friendly agriculture by optimizing phosphate usage and reducing pollution.

Opens prospects to apply similar techniques to indica rice, the predominant variety in India.

Enhances food security by increasing yield in nutrient-deficient conditions.

Amaravati Quantum Valley Declaration (AQVD)

Context:

The **Andhra Pradesh government** has approved the **Amaravati Quantum Valley Declaration (AQVD)** to position the state as a quantum technology hub.

About AQVD

Nature: A **strategic collaboration** between the Andhra Pradesh Government and industry partners such as **IBM, TCS, and L&T**

Objective: Establish a **quantum tech ecosystem** focused on:

- Quantum computing
- Quantum communication
- Quantum sensing

Goals:

Foster **public-private partnerships**

Promote **skilling and research** in emerging tech
Develop **global collaborations** in quantum fields
Align with India's national **quantum mission goals**
Drive **technology-led economic development**

Impact: Positions **Amaravati** as a future-ready, innovation-driven research centre in quantum technologies

Bitchat – Bluetooth-Based Messaging App Context

Jack Dorsey, co-founder of Twitter, introduced **Bitchat**, a novel messaging app designed to function **without a centralized server or phone network**.

About Bitchat

A **peer-to-peer communication app** that operates via **Bluetooth Low Energy (BLE) Mesh Networking**.

Designed to ensure **privacy, decentralization, and resilience** in communication.

What is Bluetooth Mesh Networking?

A **multi-hop network topology** where devices (nodes) communicate directly and **relay messages across a mesh of Bluetooth-enabled devices**.

Ensures **many-to-many connectivity** — messages travel through multiple nodes until they reach the intended recipient.

Self-healing network: Communication continues even if some devices drop out.

Key Features & Advantages

No Central Server: Messages exist only on users' devices and are automatically deleted after a short period.

End-to-End Encryption: Ensures complete privacy.

No Registration Required: Users can remain anonymous—no need to share phone numbers or emails.

Low Power Consumption: Efficient for mobile use.

Limitations

High Latency: Messages may take time to reach.

Complex Management: More challenging to set up and maintain.

Lower Data Speeds: Not suitable for high-bandwidth communication.

Coartem Baby – First Malaria Drug for Infants Context:

Switzerland has approved **Coartem Baby**, the first-ever malaria treatment specifically formulated for newborns and infants. Eight African countries are expected to follow with expedited approvals.

What is Coartem Baby?

A pediatric formulation of **artemether-lumefantrine**, tailored for infants weighing **2–5 kg** (newborns to under 6 months old).

Developed by **Novartis** in partnership with **Medicines for Malaria Venture (MMV)** and global health collaborators.

Key Features:

Easily dissolves, even in breast milk.

Cherry-flavored to improve compliance among infants.

Clinically tested dosing suitable for infants' immature liver function.

Approved under Swiss Medic's Marketing Authorisation for Global Health Products.

Will be distributed largely on a **not-for-profit** basis in malaria-endemic countries.

Significance:

Fills a crucial treatment gap: previously, no malaria drugs were approved for babies under 4.5 kg.

Enhances safety by removing risks of off-label dosing with adult/older children's formulations.

Expected approvals soon in **Kenya, Tanzania, Uganda, Nigeria, Malawi, Mozambique, Burkina Faso, and Ivory Coast**.

Targets malaria risk in approximately **30 million newborns** annually in African endemic regions.

Miniature Plasma Loops

Researchers at the Indian Institute of Astrophysics (IIA), along with their collaborators, have utilized high-resolution imaging and spectroscopy to observe miniature plasma loops—previously elusive solar structures—actively occurring on the Sun.

Description and Significance

These miniature plasma loops measure approximately 3,000 to 4,000 kilometers in length but have widths of less than 100 kilometers. Due to their small size and transient nature, they remained undetected until recent advancements

in observational technology. These structures provide crucial insights into one of the Sun's fundamental mysteries: the storage and release of magnetic energy within its atmosphere. By studying these small-scale loops, scientists gain a new perspective on the mechanisms governing magnetic energy dynamics in the solar atmosphere.

Context within Solar Physics

The Sun's outer atmosphere, or corona, is known for its coronal loops—large, arc-shaped structures of hot plasma glowing at temperatures exceeding one million degrees Celsius. While these prominent coronal loops have been extensively studied, attention is increasingly turning to their miniature counterparts. These smaller loops are embedded in the lower layers of the solar atmosphere, making them difficult to observe and previously unresolved by earlier telescopes.

Simonyi Survey Telescope and Vera C. Rubin Observatory

The Vera C. Rubin Observatory, situated at an elevation of 8,684 feet on Cerro Pachón in the Chilean Andes, has recently unveiled its first images captured by its groundbreaking 3,200-megapixel digital camera—the largest ever constructed.

Overview

The observatory operates through a collaboration between the U.S. Department of Energy (DOE) and the National Science Foundation (NSF). At its core is the Simonyi Survey Telescope, distinguished by three primary features:

Wide Field of View: Compared to typical astronomical telescopes, which observe small portions of the sky, the Simonyi Survey Telescope offers an expansive field of view. For context, the Hubble Space Telescope captures roughly 1% of the visible surface of the full Moon, and the James Webb Space Telescope approximately 75%. This telescope enables astronomers to observe space more broadly, analogous to looking through a wide window rather than a narrow straw.

Largest Digital Camera: The telescope is equipped with the world's largest digital camera, roughly the size of a compact car and weighing about 2,800 kilograms. It boasts an extraordinary resolution of

3,200 megapixels, allowing for highly detailed observations.

Rapid Movement: The Simonyi Survey Telescope is the fastest-slewing telescope globally, capable of moving and stabilizing on a new target within five seconds. This speed results from its compact three-mirror optical design and a mount that glides on a thin film of oil, enabling swift and precise repositioning.

Scientific Significance

The observatory is poised to significantly advance scientific understanding of dark matter and dark energy, which together constitute approximately 95% of the universe's total mass-energy composition—dark energy accounting for about 68% and dark matter for about 27%. It is notable that dark matter was first identified by the astronomer Fritz Zwicky.

Magnetometer and Raman-Driven Spin Noise Spectroscopy

Researchers at the Raman Research Institute (RRI), an autonomous entity under India's Department of Science and Technology (DST), have developed an innovative technique termed Raman-Driven Spin Noise Spectroscopy (RDSNS) to enhance magnetometry through an all-optical quantum magnetometer.

Overview of Magnetometers

A magnetometer is a passive device designed to measure variations in the Earth's magnetic field. Among the most effective approaches for magnetic field detection are those that monitor the rotation of polarized light as it passes through alkali atoms subjected to weak magnetic fields.

Devices employing this principle include Optically Pumped Atomic Magnetometers (OPAMs) and Spin Exchange Relaxation Free (SERF) magnetometers. While these instruments offer high sensitivity, they typically require elaborate magnetic shielding and suffer from limited dynamic ranges.

Magnetometers find applications across diverse domains, including fundamental physics research, medical imaging, and navigation technologies.

Raman-Driven Spin Noise Spectroscopy (RDSNS)

The newly developed RDSNS technique leverages laser light to detect quantum

fluctuations—referred to as spin noise—in the spins of Rubidium atoms. Spin noise represents random variations in the atomic spins, which behave as tiny quantum magnets.

When subjected to an external magnetic field, the characteristics of this spin noise change in a measurable manner. By illuminating the atoms with laser light and analyzing these fluctuations, researchers can non-invasively and precisely determine the magnetic field strength. Importantly, RDSNS significantly extends the dynamic range of magnetometers without sacrificing sensitivity.

This advancement has the potential to revolutionize magnetic field measurements by enabling rapid, portable, and accurate detection even amidst noisy, real-world conditions. Furthermore, it opens new possibilities for field-deployable magnetic sensing with broadband capabilities and rapid response times, applicable across scientific research, industrial applications, and exploratory missions.

Extended Range Anti-Submarine Rocket (ERASR)

The Indian Navy recently conducted successful user trials of the Extended Range Anti-Submarine Rocket (ERASR) from the INS Kavaratti.

Overview and Development

The ERASR is an indigenous anti-submarine rocket designed specifically for the Indian Navy's Indigenous Rocket Launcher (IRL) system. Developed entirely within India, the project was led by the Defence Research and Development Organisation's (DRDO) Armament Research & Development Establishment (ARDE) in Pune, in collaboration with the High Energy Materials Research Laboratory and the Naval Science & Technological Laboratory.

Features and Performance

The rocket is equipped with an indigenously developed Electronic Time Fuze. During the trials, all critical performance parameters—including range, fuze operation, and warhead functionality—were successfully demonstrated. Production of the ERASR is managed by Bharat Dynamics Limited (Hyderabad) and Solar Defence & Aerospace Limited (Nagpur).

Indigenous Advanced Towed Artillery Gun System (ATAGS)

Context:

The Indian Army is set to induct its first regiment of the indigenous **Advanced Towed Artillery Gun System (ATAGS)** following successful trials, marking a milestone in artillery modernization.

What is ATAGS?

A **155mm/52 calibre** long-range towed artillery gun system designed for precision firepower and battlefield agility.

Developed by **DRDO** with industry partners **Tata Advanced Systems Ltd** and **Bharat Forge Ltd** under the **Make in India** initiative.

Key Features:

Firing range: Up to 48 km.

Deployment time: Operational within 90 seconds.

Multiple firing modes: burst, intense, and sustained fire.

Fully electric drive system replacing hydraulics for enhanced reliability.

Automatic ammunition loading and onboard crane for ease of handling.

Wider firing arc enabling superior precision and destructive capability.

Over 80% indigenous content in components.

Significance:

Major step towards **self-reliant defence manufacturing** in India.

Boosts India's artillery capability with long-range and precision firepower.

Reduces dependency on foreign imports for critical defence equipment.

Supports modern "shoot and scoot" tactics with the upcoming Mounted Gun System (MGS) variant.

Accelerator Mass Spectrometry (AMS) Dating Context:

The Tamil Nadu State Department of Archaeology (TNSDA) has sent 23 charcoal samples from seven excavation sites to the Beta Analytic Laboratory in the United States for Accelerator Mass Spectrometry (AMS) dating.

What is AMS Dating?

Accelerator Mass Spectrometry (AMS) dating is an advanced radiocarbon dating technique that measures the ratio of Carbon-14 isotopes in archaeological and geological samples. Unlike traditional radiometric methods that detect radioactive decay, AMS counts individual Carbon-14 atoms directly, providing much greater sensitivity and precision.

Objectives:

- To precisely determine the age of ancient materials.
- To enable dating with very small sample sizes (as little as 20 milligrams).
- To allow minimally destructive or non-destructive analysis of rare or precious artifacts.

How AMS Works:

Sample Preparation: The sample undergoes chemical pretreatment and is converted into graphite.

Ionization: The graphite is bombarded with a cesium beam to produce negatively charged carbon ions.

Acceleration: These ions are accelerated in a tandem electrostatic accelerator.

Stripping & Detection: Ions pass through a stripper that makes them positively charged; magnetic fields then separate isotopes (C-12, C-13, C-14) by mass. The number of C-14 atoms is counted to determine the sample's age.

Key Features:

- High precision with low background noise.
- Requires about 1,000 times less sample material compared to conventional radiometric dating.
- Faster results—within hours compared to days for traditional methods.
- Less destructive, making it suitable for delicate archaeological specimens.
- Extremely sensitive, capable of detecting trace levels of C-14 even in materials like blood or seeds.

Applications:

- Archaeology: Dating charcoal, wood, bones, and potsherds.
- Geology and Oceanography: Sediment dating, mapping oceanic carbon cycles.
- Biomedical Research: Tracing drugs, studying microdosing.

Climate Science: Mapping carbon isotopes in marine environments to study climate change.

SEPECAT Jaguar: The IAF's Deep Strike Aircraft Recent Incident

A **SEPECAT Jaguar** aircraft of the Indian Air Force (IAF) crashed near **Churu in Rajasthan**, resulting in the **deaths of two pilots**.

About the SEPECAT Jaguar

The **SEPECAT Jaguar**, known as '**Shamsher**' in India, was developed through a UK-

France joint venture between the **British Aircraft Corporation** and **Breguet Aviation** (now part of Dassault).

First introduced in **1968**, it is a **twin-engine, low-level ground-attack aircraft**, specifically designed for **deep penetration strike missions** against strategic ground targets.

Technical Specifications

Payload Capacity: Up to **4,500 kg**

Top Speed: **1,699 km/h**

Range:

850 km on internal fuel

1,400 km with external tanks

Maximum Service Ceiling: **46,000 feet**

Design and Features

Airframe: Monoplane structure with an aluminium body

Refueling: Equipped with **in-flight refuelling probe** for extended missions

Aerodynamics: Includes **spoilers, air brakes, slats, and double-slotted flaps**

Cockpit:

All-digital with **glass canopy**

Includes **head-up display (HUD), multifunction display, GPS, and night vision**

Avionics:

Helmet-mounted display, radar altimeter, IFF system, digital data bus, and weapon aiming computer

Jaguar in the Indian Air Force

The IAF began inducting Jaguars in **1979** (first batch of 40 directly procured).

Hindustan Aeronautics Limited (HAL) later license-produced **100 more units** by 2008.

In total, India has inducted **around 160 Jaguars**, with three main variants:

Jaguar IS – Single-seat strike fighter

Jaguar IB – Twin-seat trainer

Jaguar IM – Maritime/naval variant

The IAF is the **only air force in the world still operating Jaguars**, with approximately **120 jets** across **six squadrons**.

INS Nistar: A Milestone in Indigenous Naval Engineering

Context

The Indian Navy has officially received **INS Nistar**, a Diving Support Vessel (DSV) built by **Hindustan Shipyard Limited (HSL)** in **Visakhapatnam**.

This delivery represents a significant advancement in India's push for indigenous capability in advanced naval platforms.

Overview of INS Nistar

Name Significance: 'Nistar' is a Sanskrit term meaning **rescue, liberation, or salvation**, embodying the ship's primary mission—**underwater emergency support and rescue**.

Design & Certification:

Fully **indigenously designed and constructed** in India.

Classified under the standards of the **Indian Register of Shipping (IRS)**.

Developed to meet the specialised needs of deep-sea rescue missions.

Operational Role: The vessel is intended for **deep-sea diving, submarine rescue, and salvage operations**, placing India among the limited group of nations with such advanced maritime rescue capabilities.

Key Specifications & Capabilities

Size & Displacement:

Length: 118 metres

Tonnage: Approximately 10,000 tonnes

Diving Equipment:

Equipped for **saturation diving** up to **300 metres**.

Features a **Side Diving Stage** to support dives up to **75 metres**.

Rescue Operations:

Functions as the '**Mother Ship**' for the **Deep Submergence Rescue Vessel (DSRV)**, used for evacuating crew from distressed submarines.

Technological Systems:

Integrated with **Remotely Operated Vehicles (ROVs)** for **diver monitoring and salvage missions** up to **1,000 metres** underwater.

Strategic and National Importance

Indigenous Development: With **approximately 75% indigenous content**, INS Nistar is a testament to India's evolving shipbuilding capabilities.

Supports National Initiatives:

Aligned with the **Aatmanirbhar Bharat** (Self-Reliant India) vision. Reinforces the goals of the **Make in India** programme by promoting domestic defence production.

Conclusion

INS Nistar significantly enhances the Indian Navy's operational depth in **underwater rescue and deep-sea diving**, marking a leap in self-reliant naval technology. It positions India alongside a select group of global powers capable of operating such advanced underwater support vessels.

Optical Atomic Clock: The Future of Time Measurement

Context

An international collaboration of 65 scientists recently completed the largest-ever comparison of optical atomic clocks across three continents. This landmark experiment paves the way for redefining the international unit of time—the second—using optical atomic clocks.

What is an Optical Atomic Clock?

An optical atomic clock is a next-generation timekeeping device that measures time by tracking light waves emitted by atoms, operating at optical frequencies. Unlike traditional caesium clocks that rely on microwave frequencies, these clocks harness much higher frequency light waves, allowing for exceptional precision.

Key Materials Used

The atoms and ions selected for optical clocks include:

Strontium-87 (Sr)

Ytterbium-171 (Yb) and its ions (Yb^+ E2, Yb^+ E3)

Strontium-88 ions (Sr^+)

Indium-115 ions (In^+)

These species are chosen for their stable and well-defined electronic transitions, which are crucial for highly accurate frequency measurements.

Objectives of Optical Atomic Clocks

Replace caesium-based atomic clocks as the new global standard for the second.

Enhance precision timing applications such as GPS, climate monitoring, space navigation, and radio astronomy.

Improve worldwide synchronization of time with increased stability and dependability.

How Optical Atomic Clocks Work

Atoms are trapped in an optical lattice or ion trap and stimulated by a laser tuned to a specific optical frequency.

The atoms absorb and emit energy at extremely stable rates, oscillating hundreds of trillions of times per second.

These oscillations are counted to measure one second with accuracy extending to 18 decimal places.

Backup timing systems, including GPS clocks, ensure uninterrupted operation during maintenance.

Advantages Over Caesium Clocks

Much Higher Frequency: Optical transitions occur at frequencies around 10^{15} Hz, roughly 10,000 times faster than the microwave frequencies ($\sim 10^9$ Hz) in caesium clocks.

Exceptional Stability: Some optical clocks lose only one second over 15 billion years.

Superior Precision: Measurement consistency between international labs falls within the 10^{-16} to 10^{-18} range.

Greater Reliability: Vital for emerging quantum technologies, deep space exploration, and Earth observation missions.

Global Significance and Experiment

The 45-day global comparison involved research institutions from **Germany, France, Japan, Italy, Finland, and the UK.**

Using advanced optical fiber networks and GPS synchronization, the experiment assessed synchronization and identified minor system errors, ensuring transparency for setting future standards.

By **2030**, optical atomic clocks are expected to officially redefine the SI second, revolutionizing the world's timekeeping systems.

Conclusion

Optical atomic clocks represent a revolutionary leap in precision time measurement. Their adoption will support critical scientific and technological advancements, offering unprecedented stability and accuracy for global time standards.

Medium Altitude Long Endurance (MALE) Drones: Strengthening India's Surveillance Capabilities

Context

India has accelerated the ₹20,000 crore procurement of 87 MALE drones from domestic manufacturers to bolster border surveillance and enhance national security.

What Are MALE Drones?

MALE (Medium Altitude Long Endurance) drones are unmanned aerial vehicles (UAVs) designed to operate at medium altitudes—up to approximately 35,000 feet—and sustain flights exceeding 30 hours. They are primarily used for Intelligence, Surveillance, and Reconnaissance (ISR) missions, with limited combat capabilities.

Development and Origin

Developed under India's **Make in India** initiative.

Previously, India relied on imports of such drones from Israeli manufacturers.

Key Features of MALE Drones

Flight Endurance: Capable of continuous operation for over 30 hours.

Operating Altitude: Flies at altitudes of 35,000 feet or higher.

Payload: Equipped with electro-optical/infrared (EO/IR) cameras, radar systems, and combat modules.

Real-Time ISR: Provides persistent, real-time monitoring across diverse terrains.

Indigenous Content: Over 60% of components are manufactured domestically, reducing import dependence.

Remote Operation: Controlled from ground stations via secure communication links.

Strategic Applications

Border Surveillance: Monitors India's land and maritime frontiers with Pakistan, China, and in the Indian Ocean region.

Tri-Service Integration: Enhances situational awareness across the Army, Navy, and Air Force.

Maritime Security: Tracks potential hostile naval movements and safeguards coastal areas.

Counter-Insurgency Operations: Provides tactical surveillance support in Naxal-affected and insurgency-prone regions.

Disaster Management: Assists in mapping affected areas and aids relief operations during natural disasters.

Significance

Enhanced Defence Preparedness: Provides continuous aerial surveillance, acting as India's 'eyes in the sky' 24x7.

Import Reduction: Decreases reliance on foreign imports, particularly from Israel, by promoting domestic technology.

Boost to Indigenous Defence Industry: Supports the growth of India's drone manufacturing ecosystem and contributes to self-reliance in defence technology.

IN-SPACe Grants 5-Year Authorization to Starlink for Satellite Services in India

Context:

IN-SPACe (Indian National Space Promotion and Authorization Centre) has approved a 5-year authorization for SpaceX's Starlink satellite constellation to provide internet services in India. This move aligns with India's efforts to liberalize the satellite communication sector and encourage private participation in space-based services.

About Satellite Communication Services:

These services provide wireless internet via communication satellites, independent of ground infrastructure.

Primary users include broadcasters, internet service providers, governments, military, and corporations.

Types of satellite communication include telecom, broadcasting, and data services.

Satellite communications ensure global connectivity, especially in remote areas, support disaster relief, and aid navigation.

Other Key Steps to Boost Private Sector in Space:

Antrix Corporation: Commercial arm of ISRO handling space-related commercial activities.

Space Sector Reforms (2020): Defined clear roles for ISRO, IN-SPACe, and NSIL to encourage private sector involvement.

Indian Space Policy 2023: Creates a level playing field for non-government entities (NGEs) across the space sector value chain.

Startup Support:

Agnikul Cosmos supplies critical ISRO components for private launch vehicles.

Skyroot Aerospace completed India's first private sub-orbital launch (Vikram-S) in November 2022, facilitated by IN-SPACe.

About IN-SPACe:

An autonomous agency under the Department of Space.

Established under the 2020 Space Sector Reforms to boost private sector participation.

Aims to strengthen India's space economy via public-private collaboration.

Manages a dedicated Venture Capital Fund to support space startups, promoting innovation and ecosystem growth over the next five years.

Namibia to Become First African Country to Adopt UPI-Based Digital Payments System

Context:

During the recent visit of India's Prime Minister, Namibia agreed to sign a licensing agreement to implement the Unified Payments Interface (UPI) system, enabling real-time digital payments. This makes Namibia the first African nation to roll out UPI.

Background:

The Reserve Bank of India (RBI) in its 2023-24 Annual Report outlined plans, in collaboration with NPCI International Payments Ltd. (NIPL), to expand UPI's reach to 20 countries by 2028-29.

UPI-based international merchant payments are already accepted in countries like Bhutan, France, Mauritius, Nepal, Singapore, Sri Lanka, and the UAE.

About UPI:

Launched by the National Payments Corporation of India (NPCI) in 2016, UPI integrates multiple bank accounts into a single mobile app, offering seamless fund transfers, merchant payments, and various banking functions.

Significance of UPI Internationalization:

Global Market Expansion: Facilitates faster and simpler cross-border payments, boosting trade between India and partner countries.

Interoperability & Standardization:

Promotes harmonized payment systems across borders, enabling smooth integration with global financial technologies.

Digital Diplomacy: Enhances India's international influence through technological cooperation.

Other Initiatives for UPI Globalization:

NIPL: A wholly owned NPCI subsidiary set up in 2020 for promoting RuPay and UPI services outside India.

UPI One World: A prepaid payment instrument linked to UPI, aimed at foreign nationals and NRIs from G20 countries.

India's G20 Contributions:

Creation of a Global Digital Public Infrastructure (DPI) repository.

Social Impact Fund to support DPI development in the Global South.

Note: UPI forms a crucial part of the payments layer within the DPI framework.

Polycyclic Aromatic Hydrocarbon (PAH)

Researchers from Australia, Sweden, and the UK recently studied the **indenyl cation (C₉H₇⁺)**, shedding light on how **Polycyclic Aromatic Hydrocarbon (PAH)** molecules manage to survive in the **Taurus Molecular Cloud 1 (TMC1)**.

PAHs are flat, ring-shaped molecules composed of carbon and hydrogen atoms.

Astronomers estimate that PAHs constitute about **20% of all carbon** found in interstellar space.

It is hypothesized that meteors delivered PAHs to the early Earth, possibly forming the first chemical building blocks essential for life, highlighting their significance and ability to endure space conditions.

PAHs have low solubility in water but dissolve readily in organic solvents due to their lipophilic nature.

On Earth, PAHs form primarily through **incomplete combustion** or **pyrolysis** of organic substances such as fossil fuels and biomass.

When PAHs collide with particles or absorb high-energy radiation, they can gain internal energy exceeding the strength of their weakest chemical bonds, potentially leading to breakdown.

Taurus Molecular Cloud 1 (TMC1):

Located about **430 light-years** away in the Taurus constellation, TMC1 is a molecular cloud rich in gas, dust, and plasma.

It is characterized by cold, dense conditions ideal for the formation of complex molecules.

The cloud mainly consists of **molecular hydrogen (H₂)**, alongside other

molecules like **carbon monoxide (CO)**, **ammonia (NH₃)**, and various organic compounds.

Surprisingly, in TMC1, small, stable PAHs (with paired electrons) are found in abundance despite continuous exposure to starlight, which should typically destroy them.

The research team discovered that these PAHs have developed a rapid cooling mechanism, enabling them to accumulate and persist in TMC1 over time.

Earth Intelligence

Gartner recently projected that **Earth Intelligence** will generate a \$20 billion revenue opportunity for technology and service providers by 2030.

Earth Intelligence involves applying artificial intelligence to Earth observation data, providing industry-specific and function-specific solutions.

It integrates satellite imagery, remote sensing data, and socio-economic and policy information to deliver actionable insights about the planet.

This approach transforms raw Earth observation data into meaningful insights through advanced analytics, AI models, and collaboration with local and Indigenous knowledge.

Applications include identifying fallen trees blocking railways, monitoring refinery temperatures for production analysis, counting vehicles for traffic and consumer trend studies, and tracking sea cargo activity.

Earth Intelligence marks a transition from merely providing data to making that data **accessible, understandable, and useful** for decision-makers at all levels—from governments and businesses to NGOs and local communities.

The technology is shifting rapidly from government use to private sector adoption, promising widespread impact across industries.

AI-Powered Machine Vision-Based Inspection Systems (MVIS)

Context: Indian Railways and Dedicated Freight Corridor Corporation of India Ltd. (DFCCIL) signed an MoU to implement MVIS for real-time defect detection in rolling stock.

What is MVIS?

An AI and machine learning-based visual inspection system using high-resolution cameras and computer vision technology.

Designed to automate inspections of freight trains, enhancing maintenance and reducing accident risks.

Development: Created collaboratively by DFCCIL, IISc Bengaluru, and start-up L2M.

Objectives:

Detect issues such as hanging parts, broken springs, missing bolts, damaged EM pads, and overheated axles.

Provide real-time alerts to prevent accidents and service disruptions.

Replace manual inspections with automated, accurate, and fatigue-free systems.

Enable preventive maintenance to avoid cascading failures.

Operational Details:

Utilizes high-speed area and line scan cameras mounted trackside to capture moving trains at speeds up to 100 km/h.

AI/ML models like YOLOv8 and CNN analyze images to identify defects; OCR technology is used for wagon number recognition.

Data Processing Units (DPUs) handle real-time video, synchronized with Network Time Protocol (NTP) servers to ensure timestamp accuracy.

A cloud-based graphical user interface (GUI) dashboard displays defect reports, train metrics, and maintenance logs.

Key Features:

Multi-camera setups covering upper, lower, and undercarriage views.

Monochrome cameras for faster processing and clearer defect detection.

LED lighting ensures quality imaging under varying visibility conditions.

Real-time alerts for immediate maintenance actions.

Scalable system architecture for handling large data volumes and nationwide deployment.

HTBt Cotton

Context:

An expert panel under India's biotech regulator has given a positive biosafety assessment for HTBt cotton, advancing it toward commercial approval by the Genetic Engineering Appraisal Committee (GEAC).

About HTBt Cotton:

Definition: HTBt (Herbicide-Tolerant *Bacillus thuringiensis*) cotton is a genetically modified cotton variety that combines two key traits:

Insect resistance (through the Bt gene)

Herbicide tolerance (notably to glyphosate), simplifying weed control in cotton farming.

Developer: Mahyco-Monsanto Biotech (now Bayer), featuring the Bollgard II Roundup Ready Flex (BG-II RRF) trait.

Development Method:

Genetic engineering introduces Cry genes from the Bt bacterium to resist pests.

Incorporates the CP4-EPSPS gene allowing tolerance to glyphosate herbicide, killing weeds without harming the crop.

Key Features:

Dual-trait technology: Combines pest resistance and herbicide tolerance in a single crop.

Efficient weed management: Allows for glyphosate spraying over the crop, reducing manual weeding and labor.

Higher yield stability: Minimizes losses from insects and weeds, boosting productivity.

Supports mechanization: Ideal for large-scale mechanized farming, especially in labor-scarce regions.

Cost savings: Lowers weeding costs, increasing farmer profitability.

Significance:

Addresses rising labor shortages and costs in cotton farming.

Helps overcome yield stagnation caused by diseases like Tobacco

Streak Virus (TSV) in Bt cotton areas.

Aims to reduce illegal seed use and ensure quality through regulated commercial cultivation.

S-400 'Sudarshan Chakra' Air Defence System

Context:

The Ministry of Defence has chosen an Indian company to establish a Maintenance, Repair, and Overhaul (MRO) facility for the S-400 'Sudarshan Chakra' air defence system.

About the S-400 'Sudarshan Chakra':

What is it?

The S-400 Triumf (NATO codename: SA-21 Growler) is a Russian long-range, multi-layered surface-to-air missile system.

In India, it is called 'Sudarshan Chakra' symbolizing swift and precise defense.

Developer:

Developed by Russia's Almaz-Antey Air and Space Defence Corporation.

Entered Russian service in 2007; India signed a procurement deal in 2018.

Procurement Details:

₹35,000 crore deal signed in October 2018 (~\$5.4 billion).

Five squadrons ordered; three delivered so far, with remaining two expected by 2026 and 2027.

Purpose:

Neutralizes aerial threats including fighter jets, ballistic and cruise missiles, and UAVs.

Provides airspace denial and deterrence along India's western and northern borders.

Protects key cities, military bases, and critical infrastructure.

Key Features:

Range & Tracking: Detects threats up to 600 km and engages targets up to 400 km.

Multi-target capability: Simultaneously tracks and engages up to 80 aerial targets, including stealth aircraft, drones, and hypersonic weapons.

Rapid response: Completes tracking-to-launch in seconds using active and semi-active radar guidance.

Integrated components: Includes command vehicles, long-range surveillance and engagement radars, and launcher trucks; each squadron has 16+ vehicles.

Deployment: Deployed in Pathankot, Siliguri Corridor, and Western Front; played a key role in Operation Sindoor by intercepting over 15 aerial threats.

Agricultural Monitoring & Event Detection (AMED) API

Context:

Google has launched the Agricultural Monitoring & Event Detection (AMED) API to promote data-driven agriculture in India. This initiative also includes collaboration with IIT-Kharagpur under the Amplify Initiative, aiming to enhance AI capabilities by incorporating India's linguistic and cultural diversity.

About AMED API:

What is the AMED API? The AMED API is an open-source, AI-powered tool created by Google DeepMind and Google's Partnerships Innovation team. It provides detailed, field-level insights into crop types and land use, supporting better decision-making in Indian agriculture.

Developed By: Google DeepMind in partnership with local collaborators such as TerraStack and researchers from IIT-Kharagpur, as part of broader Google AI efforts in India.

Objectives:

Deliver real-time, granular data on agricultural activities at the individual field level.

Equip agri-tech developers, financial institutions, and policymakers with precise, crop-specific, and location-based intelligence.

Facilitate sustainable farming practices, enhance climate adaptation, and support data-driven rural credit systems.

How AMED API Works:

Satellite Imaging & AI: Utilizes remote sensing data and deep learning models to monitor crop growth patterns and field activities.

Field-Level Insights: Provides comprehensive information on crop types, field sizes, cropping seasons, and a three-year history of land use.

Regular Updates: Data is refreshed biweekly to offer near real-time monitoring of agricultural changes.

Integration-Ready: Built with a plug-and-play architecture to enable easy adoption by agri-tech startups, financial organizations, and government bodies.

Key Features:

Accurate Crop-Type Identification: Detects various crop varieties across different seasons with high precision.

Historical Crop Data: Access to three years of detailed cropping and land-use history for each field.

Dynamic Biweekly Updates: Keeps data current to reflect evolving agricultural conditions.

Localized Utility: Specifically tailored to Indian agriculture for applications such as rural lending, yield forecasting, and climate risk assessments.

Builds on ALU API: Enhances Google's earlier Agricultural Landscape Understanding (ALU) API by adding deeper crop-level details and event detection capabilities.

WHO's Technical Roadmap on AI Integration in Traditional Medicine

The World Health Organization (WHO) has unveiled its first technical roadmap titled "*Mapping the Application of AI in Traditional Medicine*", marking a significant step toward aligning artificial intelligence (AI) with traditional healthcare systems.

This roadmap follows India's proposal under the **Global Initiative on AI for Health (GI-AI4H)** and acknowledges India's leadership and innovations such as the **Traditional Knowledge Digital Library (TKDL)** and **Ayurgenomics**.

Objectives and Scope of the WHO Roadmap

The roadmap aims to guide the responsible, ethical, and effective deployment of AI technologies in traditional medicine systems globally.

It provides strategic recommendations for incorporating AI into healthcare models

based on Ayurveda, Siddha, Unani, and other indigenous systems.

India, through the Ministry of AYUSH, has played a pivotal role in shaping this vision by emphasizing digital integration, evidence-based personalized medicine, and standardized AI applications in traditional practices.

The roadmap is the first of its kind within WHO's GI-AI4H framework and includes collaboration from several partner nations.

Global Landscape of Traditional Medicine

Traditional medicine continues to play a vital role in global healthcare, with over 80% of the world's population relying on some form of it, according to WHO data.

India has a significant presence in this domain, with more than 500,000 registered AYUSH practitioners supported through initiatives such as the **National AYUSH Mission**, **TKDL**, and the **WHO Global Centre for Traditional Medicine (GCTM)** located in Jamnagar.

The traditional medicine market is projected to exceed **\$200 billion** globally by 2030, reflecting its growing acceptance and demand.

Rationale for Integrating AI in Traditional Medicine

Personalized Health Solutions: AI can help align Ayurvedic classifications like *prakriti* with modern genomic data, supporting the emerging field of Ayurgenomics.

Creation of Clinical Evidence: AI can analyze and interpret vast repositories of classical texts and real-world data to scientifically validate traditional therapies.

Low-Cost Digital Access: AI-powered chatbots, mobile diagnostics, and virtual consultation tools improve healthcare access, particularly in underserved rural areas.

Global Standardization: AI facilitates a unified clinical language, helping traditional medicine systems gain wider acceptance within mainstream healthcare frameworks.

Efficient Data Processing: AI can structure and interpret complex datasets involving thousands of herbs, symptoms, and

diagnostic practices from classical literature.

Challenges and Ethical Considerations

Ethical Risks: The use of unverified or biased datasets in AI models may lead to inaccurate medical advice, raising concerns about informed consent and patient safety.

Lack of Clinical Data: Many traditional therapies do not yet have standardized clinical trials or quantifiable outcomes, limiting AI model training.

Regulatory Gaps: There is currently no clear legal or regulatory framework governing AI applications within traditional medicine systems.

Fragmented Traditions: Diverse methodologies across global traditional practices create interoperability and harmonization challenges.

Trust and Acceptance: Over-reliance on AI outputs without human explanation could erode the patient-practitioner trust central to traditional healing systems.

Key Features of WHO's AI Roadmap in Traditional Medicine

Categorization of AI Use Cases: The roadmap organizes AI applications into diagnostics, clinical decision support, digitization of ancient texts, and public health strategies.

Principles of Governance: Emphasizes the need for AI systems to be transparent, explainable, safe, fair, and accountable.

Technical and Policy Enablers: Recommends development of interoperable datasets, a trained AI-healthcare workforce, and suitable regulatory mechanisms.

Innovation and Co-Design Models: Encourages collaborative development between AI engineers and traditional medicine practitioners to ensure contextually relevant tools.

Recognition of Indian Contributions: Highlights India's initiatives such as TKDL, Ayurgenomics, and the development of AYUSH-based AI tools like medical chatbots.

Overview of the GI-AI4H (Global Initiative on AI for Health)

The GI-AI4H is a WHO-led platform aimed at promoting the safe, ethical, and effective use of AI in global healthcare systems, now including traditional medicine due to India's advocacy.

Multi-Stakeholder Engagement: Brings together governments, academia, private sector, and civil society to shape global standards on AI in health.

Norm-Setting Function: Develops international benchmarks, ethical codes, and regulatory frameworks for AI integration across medical systems.

Focus on Evidence and Transparency: Promotes real-world testing and validation of AI models, along with explainability protocols to prevent bias.

Formal Inclusion of Traditional Systems: The inclusion of an AI-in-Traditional-Medicine vertical acknowledges the importance of systems like Ayurveda and Unani.

Facilitating Global Cooperation: Supports cross-border collaboration on data sharing, open-source AI tools, and digital public goods for healthcare.

Conclusion: India's Role in Shaping AI-Enabled Traditional Healthcare

The WHO roadmap signals international recognition of India's leadership in fusing ancient medical knowledge with cutting-edge AI technologies.

It sets the foundation for a balanced global transition where AI innovation is embedded within ethical, cultural, and regulatory safeguards.

Moving forward, the key challenge will be to scale such innovations while preserving trust, practitioner expertise, and the core principles of traditional healing systems.

Transitioning to Quantum Cyber Readiness: MeitY's Strategic Whitepaper

Context and Objective

The **Ministry of Electronics and Information Technology (MeitY)**, in collaboration with **CERT-In** and **SISA**, released a whitepaper titled *"Transitioning to Quantum Cyber Readiness"*.

The document serves as a **comprehensive roadmap** for India's transition to

quantum-resistant cybersecurity frameworks.

Key Elements of the Whitepaper

Threat Landscape and Risk Assessment:

Emphasizes the disruptive potential of **quantum computing**, which could compromise existing cryptographic systems such as **RSA** and **Elliptic Curve Cryptography (ECC)**.

Migration Framework:

Offers **step-by-step guidance** for public and private institutions to shift from classical encryption models to **quantum-resilient algorithms**.

Sectoral Prioritization:

Provides tailored recommendations for high-risk, **regulated sectors** such as **Banking, Financial Services, Insurance (BFSI), healthcare**, and **defence**, where data breaches could be particularly damaging.

Cyber Resilience and Infrastructure Protection:

Advocates for a **proactive cybersecurity posture**, aiming to secure **critical infrastructure, digital services**, and **citizen data** against future quantum threats.

Collaborative Call to Action:

Stresses the importance of **public-private partnerships** and coordinated efforts to strengthen India's preparedness and **ensure a secure and quantum-ready digital ecosystem**.

Astra Missile: Indigenous Advancement in Air-to-Air Combat

Recent Developments

The **Defence Research and Development Organisation (DRDO)**, in collaboration with the **Indian Air Force (IAF)**, recently completed **successful flight tests** of the Astra missile.

Key Features of Astra Missile

Type: Indigenous **Beyond Visual Range Air-to-Air Missile (BVRAAM)**.

Technology:

Equipped with a domestically developed **Radio Frequency (RF) seeker**, integrated with the **Su-30 MKI** fighter aircraft.

Features **advanced guidance, control, and navigation systems**, offering a **range beyond 100 km**.

Industry Collaboration:

The project involved contributions from **over 50 public and private sector entities**, including **Hindustan Aeronautics Limited (HAL)** and multiple **DRDO laboratories**.

Performance and Testing

Flight Trials:

Two test firings were carried out against **high-speed aerial targets** under varying conditions of range and launch parameters.

In both instances, the missiles **accurately destroyed their targets**, demonstrating high precision.

Validation and System Reliability:

The successful performance of all subsystems, particularly the **indigenous RF seeker**, was validated using data from **Range Tracking Instruments** at the Integrated Test Range, Chandipur.

The trials reaffirmed the **technical reliability and operational accuracy** of the Astra missile system.

Fentanyl Crisis

Context:

Former U.S. President Donald Trump cited the fentanyl overdose epidemic as a justification for imposing **35% tariffs on Canada**.

About Fentanyl:

Classification: A powerful **synthetic opioid** used medically as a **pain reliever and anaesthetic**.

Potency:

100 times stronger than morphine.
50 times more potent than heroin.

Illicit Use:

Common street names include **Apache, China Girl, Dance Fever, Jackpot**, etc.

Health Impact:

Causes **respiratory failure, coma**, and **death** in overdose cases.

Crisis Scale: In **2024 alone**, fentanyl was responsible for over **112,000 overdose deaths** in the U.S.

Akash Missile System

Geopolitical Development

India's defense export ambitions suffered a setback following Brazil's reported withdrawal from talks to acquire the Akash missile system.

System Overview

The Akash is a short-range surface-to-air missile (SAM) system developed indigenously by India's Defence Research and Development Organisation (DRDO) and manufactured by Bharat Dynamics Ltd (BDL).

Technical Features

Propelled by a solid-fuel ramjet, it achieves speeds of Mach 2.5 to 3.5.

Operational range: 4.5–25 km; effective altitude: up to 18 km.

Equipped with a 60 kg conventional or nuclear-capable warhead.

Uses command guidance and an advanced autopilot system.

The Rajendra phased array radar (3D PESA) is a critical component, capable of electronically scanning and tracking multiple targets.

Can operate in both autonomous and group modes, with ECCM capabilities.

Designed for mobile deployment, with a fully automated response mechanism.

Cloud Seeding

Context

In the aftermath of severe floods in Texas, public concerns have emerged regarding the environmental implications of cloud seeding.

Scientific Overview

Cloud seeding involves the intentional introduction of substances such as silver iodide or dry ice into clouds to stimulate precipitation. First trialed in 1946 by Vincent J. Schaefer, the method has since been deployed using aircraft, rockets, and ground-based systems.

Depending on cloud temperatures, either ice or condensation nuclei are formed, initiating raindrop formation. Though widely studied, debates persist about its environmental safety and effectiveness.

Plague

Public Health Alert

A resident of northern Arizona has died of pneumonic plague, marking the first such fatality in the area in 18 years.

Disease Profile

Plague is a zoonotic bacterial infection caused by *Yersinia pestis*. It is primarily transmitted through flea bites from infected animals. Though rare today, plague persists in rural regions of the U.S., Africa, and Asia.

Types of Plague

Bubonic: Affects lymph nodes.

Septicemic: Spreads to the bloodstream.

Pneumonic: Infects the lungs and is the most lethal form if untreated.

Prompt administration of antibiotics is essential, as untreated cases—especially pneumonic—can be fatal.

Software Technology Parks of India (STPI)

Repositioning for the Future

STPI is reorienting its mission to support India's next phase of digital transformation.

Organizational Overview

Established in 1991 as an autonomous body under the Ministry of Electronics and Information Technology (MeitY), STPI promotes software exports and facilitates regulatory compliance for IT/ITES companies through schemes like STP and EHTP.

Key Functions and Initiatives

Provides ready-to-use IT infrastructure and office space.

Enables duty-free import of capital goods for software export.

Assists in export regulation compliance and tax advisory.

Promotes start-ups through Centres of Entrepreneurship (CoEs) and the Next Generation Incubation Scheme (NGIS).

3I/ATLAS: An Ancient Interstellar Visitor

Discovery and Classification

On July 1, astronomers using the **ATLAS telescope in Chile** confirmed tracking a new object named **3I/ATLAS**, first observed on **June 14**.

It is classified as an **interstellar comet**, potentially the **oldest comet** ever detected—believed to be over **3 billion years older** than the solar system itself.

Key Characteristics

The comet exhibits a **highly elliptical, hyperbolic orbit**, confirming its origin from **beyond the solar system**.

It travels at a remarkable speed of **57–68 km/s** relative to the Sun.

Its **trajectory traces back to the Sagittarius constellation**, hinting at its possible origin in the **Milky Way's thick disk**.

As a **hyperbolic object**, it will **pass through the solar system once** and then depart permanently.

Proximity Details

Closest approach to Earth: ~270 million km

Closest approach to the Sun: ~210 million km, projected for **October 29–30, 2025**, slightly inside **Mars's orbit**.

Physical Properties

3I/ATLAS is actively shedding material, forming a **coma** of ice and dust around its nucleus.

As it nears the Sun, it is expected to grow a **cometary tail** due to solar heating.

Photometric analysis reveals a **reddish tone**, with a **spectral slope of ~1.3% per 100 nm**, indicating a surface composition possibly rich in **complex organics or water ice**.

The **nucleus is estimated** to be between **10–30 km wide**, larger than past interstellar visitors:

1I/'Oumuamua (2017)

2I/Borisov (2019)

Ongoing global observations aim to determine its **composition and rotation period**.

Understanding Comets

Comets are icy solar system bodies composed of **frozen gases** (like water vapor, methane, ammonia, CO₂) mixed with **rocky and metallic dust**.

They have **highly elliptical orbits**, differing from the nearly circular paths of planets.

Short-period comets originate in the **Kuiper Belt**, while **long-period comets** come from the distant **Oort Cloud** (5,000–100,000 AU from the Sun).

As they approach the Sun, they **sublimate**, releasing gases and forming a **coma** and often a **tail**.

Halley's Comet, a well-known example, appears approximately **every 76 years**, last seen in **1986**.

Super-Earth (TOI-1846)

Recent Discovery

Astronomers using **NASA's TESS (Transiting Exoplanet Survey Satellite)** have

discovered a **super-Earth named TOI-1846**.

It orbits a **red dwarf star** about **154 light-years away**, potentially rich in water.

What Are Super-Earths?

Super-Earths are a class of **exoplanets** (planets beyond the solar system).

They are:

Larger than Earth (up to 2x size)

More massive (up to 10x Earth's mass)

Lighter than Neptune

The term **refers to size/mass only**, not to Earth-like conditions.

Sub-Neptunes or **mini-Neptunes** refer to larger super-Earths.

Their **composition is uncertain** and they differ from any known solar system planets.

Arboviral Diseases – WHO Guidelines

New WHO Guidelines

The **World Health Organization (WHO)** has issued its first **integrated guidelines** for managing **arboviral diseases**.

What Are Arboviral Diseases?

Viral diseases transmitted by **arthropods**, especially **Aedes mosquitoes**.

Includes:

Dengue

Chikungunya

Zika

Yellow fever

Current Challenges

Arboviral infections are rising due to:

Climate change

Rapid urbanisation

Increased global travel

Globally, **over 5.6 billion people are at risk**.

Many of these illnesses have **similar symptoms**, complicating early diagnosis.

WHO highlights the need for a **standardised clinical approach** due to the increasing **frequency and severity** of outbreak

Fuel Control Switches – Air India Flight AI171 Incident

Incident Summary

A **Boeing 787-8 aircraft (Air India Flight AI171)** crashed after **both engines shut down** shortly after take-off.

The cause was traced to the **fuel control switches** being accidentally moved to the **"CUTOFF"** position.

What Are Fuel Control Switches?

Located just **below the thrust levers** in the cockpit.

They control **fuel supply** to each engine.

Equipped with a **pull-to-unlock safety feature** to prevent accidental movement.

Functionality

RUN: Normal fuel supply enabled.

CUTOFF: Fuel supply is cut, causing immediate engine shutdown.

Operation Sequence

Engine Start: Pilot activates start selector, then moves switch to **RUN**.

In-Flight Operation: Switch stays in **RUN**.

Emergency: Manually switching to **CUTOFF** shuts down the engine.

Safety Feature: System attempts automatic **engine relight** if the switch is toggled back to **RUN**.

Design & Safety Aspects

Spring-loaded, lockable design to avoid unintended movement.

Visual indicators: Red warning lights on affected switches during emergencies.

System redundancy:

Independent wiring for each switch

Backup power circuits

Automatic valve closure in power-loss scenarios

Patriot Air Defence Missile System

Recent Development

The **U.S. President** has announced the deployment of **Patriot air defence systems to Ukraine** in response to increasing Russian military actions.

Overview

Full Form: Patriot stands for **Phased Array Tracking Radar for Intercept on Target**.

It is an **all-weather, all-altitude surface-to-air missile defence system**.

Originally designed to counter aircraft, its **modern versions** can also target:

Ballistic missiles

Cruise missiles

Loitering munitions

Developed by **Raytheon Technologies Corp**, it is the **most advanced air defence system of the U.S. Army**.

Global Usage

Operated by many U.S. allies including **Germany, Israel, Japan, South Korea, Saudi Arabia, and Poland**.

Combat history includes:

Gulf War (1991) – used in Saudi Arabia, Kuwait, and Israel

Iraq invasion (2003) – used for missile defence

Key Features

A **Patriot battery** includes:

Phased array radar

Engagement control station

Computers and power units

Up to **eight launchers** (each carrying four missiles)

Operated by around **90 soldiers**, but only **three are needed during combat**.

Uses **Track-Via-Missile (TVM)** guidance and midcourse corrections from the control station.

Interceptor Variants

PAC-2: Uses a blast-fragmentation warhead.

PAC-3: Employs **hit-to-kill technology** for higher accuracy.

Interceptors can:

Reach altitudes of **over 24 km**

Strike targets up to **160 km away**

Radar range: Over **150 km**

Cysteine: A Vital but Underappreciated Amino Acid

Recent Discovery

Scientists have discovered that removing just one amino acid—**cysteine**—from the diet of mice caused an extraordinary **30% body weight loss within a week**, highlighting its critical biological role.

About Cysteine

Type: Non-essential, sulfur-containing amino acid

Function:

Found in protein active sites (regulatory, catalytic, or binding)

Important for **collagen formation**, influencing skin **elasticity and texture**

A building block for **glutathione**, a key antioxidant

Helps produce **taurine**, which supports digestion and heart health

Assists in **detoxification** processes within the body

Structural Importance: Found in **beta-keratin**, a structural protein in hair, skin, and nails

Sources & Deficiency

Found in **meat, eggs, and dairy**

Low levels may lead to fatigue, weak immunity, stunted growth in children, and muscle weakness

What Are Amino Acids?

Basic units of **proteins**

There are **20 amino acids**, forming polypeptide chains encoded by genes

Types

Essential Amino Acids (9): Must be obtained from food (e.g., valine, lysine, leucine)

Non-Essential Amino Acids (11): Synthesized by the body (e.g., cysteine, serine, glycine)

Pheromone

Scientists have recently demonstrated that it is possible to influence the behavior of locusts by altering the pheromones they emit, effectively preventing them from forming swarms or engaging in the collective behaviors that typically result in destructive feeding frenzies.

What Are Pheromones?

Pheromones are chemical compounds secreted externally by one individual and detected by another member of the same species.

These substances are present in all bodily secretions, particularly in axillary sweat, and are detected by the sense of smell.

Unlike hormones, which function inside the body, pheromones are categorized as **ecto-hormones**, meaning they act outside the body.

Categories of Pheromones

Releaser Pheromones: These cause immediate behavioral changes in the recipient organism.

Signaler Pheromones: These convey specific identity-related information, such as enabling a mother to distinguish her baby from others.

Modulator Pheromones: These influence mood or emotional state.

Primer Pheromones: These have longer-term effects, such as regulating hormonal activity, including processes related to pregnancy or menstrual cycles.

Animals, equipped with heightened sensory perception and a vomeronasal organ, release

pheromones that prompt a wide range of behaviors—such as alerting others to danger, marking food trails, establishing territorial boundaries, or strengthening bonds with offspring.

Pheromones are not limited to animals; various fungi, algae, and slime molds also produce pheromones to attract mating partners. In such cases, reproductive cells of opposite types move or grow toward one another in response to the chemical cues.

Quantum Noise

Context:

Scientists at India's Raman Research Institute have found that quantum noise — previously considered harmful — can actually create and revive entanglement in certain quantum systems.

What is Quantum Noise?

Random disturbances affecting quantum systems due to unavoidable environmental interactions.

Causes decoherence, making entangled quantum states unstable and challenging quantum computing.

Origin & Characteristics:

Arises from Heisenberg's Uncertainty Principle and interaction with thermal/electromagnetic surroundings.

Occurs because perfect isolation of quantum systems is impossible, leading to errors or collapse of states.

Present even in highly controlled labs.

Features:

Causes loss of coherence between entangled particles.

Often modeled as amplitude damping, phase damping, or depolarizing noise channels.

Effects differ depending on the type of entanglement (intraparticle vs interparticle).

Can unpredictably reduce, change, or even generate entanglement.

Significance of Discovery:

Changes perspective on noise from a purely destructive to a potentially constructive influence.

Intraparticle entanglement shows better resistance to decoherence, important for practical quantum devices.

Opens new pathways in quantum communication, cryptography, and error correction.

Applicable across different quantum platforms like photons, neutrons, and trapped ions.

High-Speed Maglev Train

Context:

China has launched a new high-speed Maglev train capable of traveling 1,200 km between Beijing and Shanghai in just 2.5 hours, faster than airplanes on the same route.

What is a Maglev Train?

A magnetic levitation train that moves without wheels, lifted by magnetic forces to eliminate friction and allow very high speeds.

History & Development:

Concept developed by Robert Goddard and Emile Bachelet in early 1900s.

First commercial Maglev service started in 1984 in the UK; now also used in China, Japan, and South Korea.

Working Principle:

Magnetic suspension lifts the train off tracks. Propulsion is achieved by magnetic coils in the guideway, changing polarity to push/pull the train forward.

Two main suspension systems:

EMS (Electromagnetic Suspension) using magnetic attraction.

EDS (Electrodynamic Suspension) using magnetic repulsion with superconductors.

Key Features:

Speeds up to 600 km/h, accelerating in 7 seconds.

Aerodynamic design inspired by kingfisher birds for minimal air resistance.

Frictionless, silent, smooth ride with low derailment risk.

More energy-efficient than conventional trains.

Importance:

Provides a faster, eco-friendly alternative to air travel on medium-distance routes.

Advances integration of superconductors and vacuum tubes for future hyperloop systems.

Enhances China's leadership in advanced transportation tech.

Challenges:

Requires new, expensive guideways incompatible with existing rail networks.

Relies on rare-earth metals (e.g., neodymium, dysprosium) which are costly.

Currently limited to short- and medium-distance routes, not yet widespread.

AH-64E Apache Helicopters

Context:

India is poised to receive the first batch of AH-64E Apache attack helicopters from the United States after a 15-month delay. These helicopters will be stationed at Jodhpur to enhance border security operations.

About AH-64E Apache Helicopters:

What is it?

The AH-64E Apache is a versatile combat helicopter developed by Boeing, designed for high-intensity warfare in networked, multi-domain battlefields. It ranks among the world's most advanced and lethal attack helicopters.

Development:

Manufacturer: Boeing, USA

First inducted into the US Army in 1984 (initial model: AH-64A)

Key Features:

Advanced Targeting: Equipped with Longbow radar, thermal imaging, and night vision systems capable of detecting 256 targets and prioritizing 16 threats rapidly.

Powerful Armament: Armed with a 30mm chain gun, 70mm rockets, and AGM-114 Hellfire missiles for precise anti-armor strikes.

All-Weather Capability: Operates effectively in day/night, poor visibility, high-altitude, and harsh weather conditions.

Enhanced Survivability: Features crash-resistant frame, Defensive Aids Suite, redundant systems, and infrared suppression to survive battlefield threats.

Extended Range: Wing-mounted fuel tanks allow longer flight endurance for sustained operations.

Strategic Importance for India:

Strengthens border security, especially along the western frontier with Pakistan.

Modernizes Army Aviation, complementing the existing Indian Air Force Apache fleet. Improves interoperability with US and QUAD allies for joint missions. Supports precision strike missions with minimal collateral damage in anti-armor and counter-terrorism roles. Symbolizes growing India-US defense partnership under key agreements.

Ram Air Turbine (RAT)

Context:

The preliminary report by the Aircraft Accident Investigation Bureau on the Air India plane crash in Ahmedabad references the use of the Ram Air Turbine.

About Ram Air Turbine:

Description: A small turbine housed in a compartment within the aircraft's fuselage or wing.

Function: Provides emergency power if the main aircraft power systems fail.

Operation: Harnesses energy from the airflow created by the aircraft's speed, powering either an electrical generator or hydraulic pump.

Deployment: Can be activated manually or automatically upon total loss of power.

Shinkansen Technology

Current Update: The next-generation E10 Shinkansen bullet trains will be introduced concurrently in India (on the Mumbai-Ahmedabad bullet train corridor covering 508 km) and in Japan.

About Shinkansen Technology:

Overview: The Shinkansen is Japan's high-speed bullet train system, known globally for its safety, reliability, and efficiency in transporting large volumes of passengers frequently and at high speeds.

Key Features:

Crash Avoidance Systems:

Dedicated high-speed rail tracks without any level crossings.

Automatic Train Control (ATC) system that manages train speed to prevent collisions.

Design and Efficiency:

Aerodynamically optimized front shape for reduced air resistance.

Noise reduction technologies.

Energy-efficient traction systems and smooth ride comfort.

Magnetic Levitation (Maglev) Technology Recent Development

China has successfully conducted tests of **Maglev (Magnetic Levitation) technology**, which promises to develop trains faster than commercial aircraft.

What is Maglev Technology?

Magnetic levitation, commonly called **Maglev**, is a cutting-edge transport technology that employs **electromagnetic forces** to suspend vehicles above the tracks. By eliminating physical contact, this method drastically reduces friction and enhances speed and efficiency.

Originally conceptualized in the early 20th century by **Robert Goddard** (an American inventor) and **Emile Bachelet** (a French-American engineer), Maglev technology saw its first **commercial use in 1984**.

How Maglev Works

Maglev trains function using two fundamental electromagnetic principles: **magnetic attraction** and **repulsion**. These systems include three main components:

Levitation: Magnetic forces lift the train slightly above the tracks, avoiding physical contact and thus reducing mechanical wear.

Guidance: Side-mounted electromagnets ensure the train remains centered on the track.

Propulsion: Powerful **linear motors** generate alternating magnetic fields to push and pull the train along the track—replacing the need for engines or fuel combustion.

The **guideways** (track structures) contain strong electromagnets, while the trains themselves house **superconducting** or standard **electromagnets**. By carefully controlling these magnetic fields, Maglev systems achieve **both levitation and propulsion** efficiently.

Advantages of Maglev Technology

High Speeds: Maglev trains can exceed **600 km/h (373 mph)**, surpassing traditional

rail systems and even rivalling **short-distance flights**.

Low Friction: The absence of physical contact results in **minimal wear and tear** and enhances **energy efficiency**.

Eco-Friendly: These trains emit **zero direct emissions** and can be powered via **renewable energy sources**, contributing to sustainable transportation.

Superior Passenger Comfort: Since there are no wheels on rails, passengers enjoy a **quieter, smoother ride** with minimal vibrations.

Quantum Noise

Recent Discovery

Scientists at the **Raman Research Institute (RRI)** have recently uncovered a counterintuitive insight: what was once considered harmful—**quantum noise**—can, under certain conditions, actually provide advantages to quantum systems.

What is Quantum Noise?

Quantum noise refers to **unpredictable and intrinsic disturbances** that arise within quantum systems, often causing **errors in quantum computations**. Unlike classical noise, which typically introduces random disruptions to signals, **quantum noise is more complex** due to the principles of quantum mechanics.

Why Does Quantum Noise Occur?

Quantum noise stems from the **discrete nature of energy** in quantum systems. Light, for instance, is composed of photons, while radio waves consist of quantized electromagnetic excitations. The **act of measuring or amplifying** such quantum signals encounters **fundamental limitations**.

This is explained by the **Heisenberg Uncertainty Principle**, which states that **certain properties—like amplitude and phase—cannot be measured simultaneously with perfect accuracy**. These inevitable fluctuations are defined as quantum noise.

Importantly, quantum noise would **still exist** even with flawless detectors, no external disturbances, and absolute zero temperature, making it a **fundamental constraint** rather than a technical flaw.

Sources of Quantum Noise

Quantum noise arises due to:

Thermal fluctuations

Electromagnetic interference

Imperfect quantum gate operations

Unintended interactions with the environment

Impact on Qubits

Different noise types disrupt qubits differently:

Phase noise alters the relative phase between qubit states.

Amplitude noise changes the probability of measuring a qubit in a certain state.

These disruptions cause **decoherence**—the process by which qubits lose their **quantum superposition or entanglement**, thereby making computations unreliable. Even minor noise levels can severely affect the **accuracy and scalability** of quantum algorithms.

Why It Matters

Understanding the characteristics and origins of quantum noise is **critical for building reliable quantum computers**. Techniques for **noise mitigation and error correction** are central to pushing the boundaries of quantum computing capabilities.

E10 Shinkansen Bullet Train

Context

India and Japan have jointly announced the deployment of the **E10 Shinkansen** on the **Mumbai-Ahmedabad High-Speed Rail (MAHSR)** corridor. A major milestone—completion of the first phase of tunneling for the **21-km undersea section** between **BKC and Thane**—has also been achieved.

What is the E10 Shinkansen?

The **E10 Shinkansen** is Japan's upcoming high-speed bullet train model, set to replace the older **E2 and E5 series**. It is being developed by **JR East (East Japan Railway Company)** in collaboration with **UK-based design firm Tangerine**.

Design & Aesthetics

Inspired by the delicate shape of **cherry blossom petals**.

Color scheme includes **"Tsugaru Green"** and **"Evening Elm"**, symbolizing harmony between technology and nature.

Reflects the landscape of Japan's **Tohoku region**.

Notable Features

L-shaped derailment guides to enhance safety during earthquakes.

Lateral dampers and advanced braking systems to minimize vibrations and reduce stopping distance.

Blowerless induction motors for low-maintenance and energy-efficient performance.

Future-ready for **autonomous operation** and flexible interiors for **cargo transport**.

Spacious seating with a **two-per-row layout** for increased passenger comfort.

India-Japan Partnership: Mumbai-Ahmedabad High-Speed Rail

India becomes the **first country outside Japan** to adopt the E10 Shinkansen.

A 21-km stretch between **BKC and Thane** includes **India's first undersea rail tunnel**, now partially completed.

Japan is providing financial support, technical expertise, and the rolling stock.

India, through the **National High-Speed Rail Corporation Limited (NHSRCL)**, is handling construction and project execution.

Project slated for **completion by 2030**, with rapid progress on infrastructure, viaducts, and station development.

GM Maize Field Trials

Context

The **Punjab Agricultural University (PAU)** is under scrutiny for its role in field trials of **genetically modified (GM) maize**, with environmental groups demanding a halt to the NoC (No Objection Certificate).

What is Being Tested?

GM maize with built-in **herbicide tolerance (HT)** and **insect resistance (BT)**.

Developed by **Bayer**, currently under **biosafety research trials (BRL-I & BRL-II)**.

Key Stakeholders

PAU – Conducting the trials.

Bayer – Technology provider.

Department of Biotechnology (DBT) – Regulatory oversight.

Trial Objectives

Evaluate **agronomic performance** and **environmental safety** in a confined, research-focused setting.

Provide evidence for informed policymaking; not aimed at immediate commercial release.

Key Features

Trials are **non-commercial**, strictly regulated, and state-approved.

Integrates **BT and HT traits** for enhanced resistance to pests and weeds.

Builds on precedent research like BT cotton studies by PAU.

Emphasizes **scientific validation** over speculation.

Significance

Encourages **evidence-based assessment** of agricultural biotech.

Seeks a balanced view on **environmental concerns vs. crop productivity**.

Supports **transparent, university-led innovation**.

PATRIOT Missile Air Defence System (PMADS) Context

The **United States** plans to deliver the **PATRIOT Air Defence System** to **Ukraine** as part of its defense support.

Key Details

Full Form: Phased Array Tracking Radar for Intercept on Target

Developer: Raytheon Technologies

System Composition:

Radar system

Command and control unit

Power supply unit

Missile launchers and support vehicles

Technology:

Track-Via-Missile (TVM) guidance system

Receives midcourse corrections from a **mobile engagement control center**

Capabilities: Can intercept a range of threats including:

Aircraft

Tactical ballistic missiles

Cruise missiles

LCA Mark-1A Fighter Aircraft

Context

India has received the **second GE-F404 engine** from the **United States** for the **LCA Mark-1A programme**.

About LCA Mark-1A

Latest variant of the **LCA Tejas**, an Indian-made 4.5-generation fighter jet.

Capabilities:

Multi-role: **Air-to-ground, air-to-air, and maritime operations**

All-weather functionality

Advanced Features:

AESA Radar (Active Electronically Scanned Array)

Electronic Warfare (EW) suite
including radar warning and
jamming systems

Digital Map Generator (DMG)

Smart Multi-Function Displays (SMFDs)

Radiation Monitoring System (RMS)

Context

The **DRDO** has delivered **six indigenously developed Radiation Monitoring Systems** to the **Indian Navy**.

System Variants

Gamma Radiation Aerial Surveillance System

Environmental Surveillance Vehicle

Vehicle Radiological Contamination Monitoring System

Functionality

Measures:

Radiation fields near radioactive sources

Surface contamination

Airborne radioactive particles

Instrumentation

Geiger Counters/Geiger-Mueller Meters:

Standard radiation survey tools

Cannot detect alpha or beta radiation

Advanced Portable Monitors:

Detect **alpha, beta, and gamma radiation**

Feature **digital displays** and **alarm systems**

Applications

Nuclear plants

Hospitals

Environmental safety

Homeland security and defense

Detection of the Largest Black Hole Merger

Context

A global team of scientists detected the **heaviest known black hole merger** through **gravitational waves**, using the **LVK network** (LIGO, Virgo, KAGRA).

Event Details

Name: GW231123

Occurred: Billions of years ago

Detection Method: Gravitational Waves (GWs) – ripples in space-time caused by massive cosmic events.

Predicted by **Albert Einstein** in 1916 through **General Relativity**.

Merger Facts

Involved black holes weighing **~100 and ~140 solar masses**.

Resulted in a final black hole of about **225 solar masses**.

Black Hole Classification

Stellar-mass: ~20+ solar masses

Intermediate-mass: 100 to hundreds of thousands of solar masses

Supermassive: Hundreds of thousands to billions of solar masses

Gravitational Wave Observatories

LIGO (USA):

Two detectors in **Hanford (Washington)** and **Livingston (Louisiana)**

Funded by the **U.S. National Science Foundation (NSF)**

LIGO-India is under development in **Hingoli, Maharashtra**

Virgo (Italy): Located in **Pisa**, operated by the **European Gravitational Observatory**

KAGRA (Japan): Situated inside the **Kamioka mine**

UK Conducts First Successful Trial of Mitochondrial Donation: Healthy Babies Born
Context

In a **groundbreaking clinical trial**, the UK has reported the **birth of eight healthy babies** following a **pioneering reproductive technique** known as **Mitochondrial Donation** or **Mitochondrial Replacement Therapy (MRT)**. These children were born to mothers at high risk of passing on **mitochondrial diseases**, which are severe and often life-threatening.

What Are Mitochondrial Diseases?

Role of Mitochondria

Mitochondria are **tiny structures within almost every cell** that act as **cellular powerhouses**, producing over **90% of the cell's energy**.

Each mitochondrion has its **own DNA**, known as **mitochondrial DNA (mtDNA)**, which is **separate from the nuclear DNA** that determines traits like height or eye color.

Nature of Mitochondrial Disease

When mitochondria malfunction, **cells receive insufficient energy**, leading to **cell death**.

As more cells die, it can result in the **failure of entire organ systems**, which may be **fatal**.

These diseases are **inherited only through the mother**, since mitochondrial DNA is passed exclusively via the egg.

What is Mitochondrial Replacement Therapy (MRT)?

Definition

MRT is a form of **assisted reproductive technology** designed to **prevent the transmission of defective mitochondrial DNA** from mother to child.

It involves replacing the mother's **faulty mitochondria** with **healthy mitochondria from a donor egg**.

Genetic Composition in MRT

The resulting embryo contains:

Nuclear DNA from the biological parents (mother and father)

Mitochondrial DNA from a third woman, the mitochondrial donor

Because three individuals contribute genetic material, children born through MRT are often called "**three-parent babies**".

Techniques Used

MRT can be performed using advanced IVF methods such as:

Maternal Spindle Transfer (MST) – replacing the mother's nuclear material into a donor egg before fertilization.

Pronuclear Transfer (PNT) – transferring fertilized nuclei into a donor egg that has had its own nuclei removed.

Significance of the UK Trial

This is the **first successful clinical application** of MRT that led to live births.

It offers hope for families with a history of **mitochondrial disorders**, enabling them to have **biologically related but genetically healthy children**.

The trial marks a **milestone in reproductive medicine**, paving the way for **regulated use of MRT** under strict ethical guidelines.

Technique	Stage of Procedure	Processes	Genetic Material Source	Key Advantage

Pronuclear Transfer (PNT)	After fertilization	Parents' genetic material is moved from their fertilized egg into a donor fertilized egg with healthy mitochondria.	Nuclear DNA from parents; mitochondria from donor	Less than 5% carryover of defective mitochondria
Maternal Spindle Transfer (MST)	Before fertilization	Mother's genetic material is transferred into a donor egg with healthy mitochondria, which is then fertilized with father's sperm.	Nuclear DNA from parents; mitochondria from donor	Lower risk of defective mitochondrial DNA carryover; preferred method

YD One: India's Lightest Active Wheelchair Launch:

The **Indian Institute of Technology (IIT) Madras** has unveiled **YD One**, the **lightest active wheelchair** developed in India.

Key Features & Innovation:

Development Partners: Developed by **TTK Center for Rehabilitation Research and Device Development (R2D2)** at IIT Madras, in collaboration with **Thryv Mobility**.

Frame: Precision-built mono-tube rigid frame; a first for India.

Material: Made using **aerospace-grade materials**, ensuring ultra-lightweight durability.

Weight: Just **9 kilograms**, making it highly portable and efficient.

Customization: Fully tailored to the user's body, posture, and mobility needs.

Load Capacity: Can support up to **120 kg**.

Mobility & Portability: Designed to fit easily in cars, auto-rickshaws, and public transport.

Objective:

YD One aims to offer **affordable high-performance mobility**, reducing reliance on costly imported wheelchairs and promoting **user independence and dignity**.

Javelin Anti-Tank Guided Missiles (ATGMs)

India's Defense Move: India has submitted a formal **Letter of Request** to the **United States** to begin **co-production of Javelin ATGMs** within India.

About the Javelin Missile:

Type: Man-portable, anti-tank guided missile.

Developers: Jointly produced by **Raytheon** and **Lockheed Martin**.

Service History: First deployed by the **U.S. military in 1996**.

Purpose: Designed to neutralize **heavily armored vehicles**, including main battle tanks, as well as **fortifications, bunkers, and helicopters**.

Specifications:

Range: Effective up to **2.5 km**, with advanced versions reaching **up to 4 km**.

Weight: **5.11 kg**

Technology:

Employs **"fire-and-forget"** infrared guidance, allowing operators to seek cover immediately after launch.

Offers both **direct-attack** and **top-attack** modes, the latter exploiting tanks' weaker top armor.

Coronal Mass Ejections (CMEs): Solar Phenomena Over Ladakh

Recent Phenomenon: In May 2024, powerful **Coronal Mass Ejections (CMEs)** led to rare sightings of **aurora borealis (northern lights)** over **Ladakh**.

About CMEs:

Definition: Massive bursts of **magnetized plasma** from the Sun's corona.

Formation: Caused by **magnetic reconnection**, a process where twisted magnetic fields realign and explosively release energy.

Location: Emerge from **sunspot regions**; may or may not coincide with **solar flares**.

Speed & Scale:

Velocity: Range from **<250 km/s to 3000 km/s**

Travel Time to Earth: The fastest can reach Earth in **15–18 hours**

Size: Can expand to occupy nearly **25% of the Earth-Sun distance** by the time they reach Earth.

Solar Cycle Relevance:

Most common during **solar maximum**, the peak activity phase of the Sun's **11-year cycle**.

Impact on Earth:

Can trigger **geomagnetic storms**, disrupting **satellites, communication systems, and power grids**.

Antimatter: Asymmetric Decay Discovery Scientific Breakthrough:

European scientists recently reported the first observation of **asymmetric decay rates** between matter and antimatter versions of a **baryon**.

About Antimatter:

Nature: Like matter but with **opposite electric charges**.

Key Particles:

Electron → **Positron (e^+)**

Proton → **Antiproton (p^-)**

Neutron → **Antineutron (n)**

The positron is positively charged, the antiproton negatively charged, and the antineutron has an opposite **magnetic moment** to the neutron.

Matter-Antimatter Interaction:

When matter and antimatter meet, they **annihilate**, releasing **gamma rays** and other particles.

This makes it impossible for them to coexist for long.

Origins & Research:

Antimatter was created alongside matter during the **Big Bang**, but is now extremely rare.

Scientists produce antimatter in **high-energy collisions** at **particle accelerators** like the **Large Hadron Collider** operated by **CERN** near Geneva.

Splashdown Landings

Context:

Indian astronaut Shubhanshu Shukla and the Axiom-4 crew successfully returned from the International Space Station (ISS) after 20 hours, landing in the Pacific Ocean aboard SpaceX's Crew Dragon spacecraft.

About Splashdown Landings:

Definition: Splashdown is a method of space capsule recovery where the vehicle lands on a water surface, typically the ocean, using parachutes and buoyancy aids.

Examples: SpaceX's Crew Dragon and ISRO's upcoming Gaganyaan module are designed for splashdown recovery.

Process:

Re-entry: The capsule re-enters Earth's atmosphere at speeds exceeding 27,000 km/h, facing intense friction and deceleration.

Parachute Deployment:

Two drogue parachutes deploy at around 18,000 feet to stabilize and slow the craft.

Four main parachutes open at approximately 6,500 feet to further reduce descent speed.

Descent Dynamics:

Capsules descend at an angle, covering 5,000 to 7,000 km before water touchdown.

Final landing speed is reduced to 25–30 km/h, safe for water impact.

Post-Landing: Capsules are engineered to float using conical shapes and rounded hulls resembling ship bottoms.

Advantages of Splashdowns:

Simplicity & Safety: Water acts as a natural cushion, minimizing shock without complex landing systems.

Shock Absorption: The ocean's density reduces impact forces more effectively than land.

Less Precision Required: Oceans provide large, forgiving landing areas, reducing risk from slight off-course deviations.

Cost Efficiency: Avoids expensive infrastructure like runways, airbags, or retro-rocket systems.

Crew & Payload Safety: Water landing lowers injury risk and protects onboard equipment.

Compatibility: Modern capsules like Dragon, Orion, and Gaganyaan are specifically designed for splashdown recovery.

Gujarat's Tribal Genome Sequencing Project

Context:

Gujarat has become the first Indian state to launch a Tribal Genome Sequencing Project aimed at creating a reference genetic database to improve healthcare for tribal communities.

About the Project:

Nature: A genomic research initiative to sequence genomes of 2,000 tribal individuals across 17 districts of Gujarat.

Implementing Agency: Gujarat Biotechnology Research Centre (GBRC).

Objectives:

Identify genetic risk markers associated with inherited disorders including:

Sickle cell anaemia

Thalassemia

Hereditary cancers

Develop personalized healthcare strategies tailored to tribal genetic profiles.

Use science-driven approaches to bridge health disparities and empower tribal populations.

Key Features:

Employs advanced infrastructure for sample collection, genome sequencing, and data analysis.

Focuses on natural immunity markers and customized medical care.

Engages tribal communities through inclusive consultation and awareness programs.

Ensures representation of diverse tribal groups from 17 districts for comprehensive coverage.

Significance:

Healthcare Equity: Enables early diagnosis and tailored treatment of genetic diseases in underserved tribal populations.

Data-Driven Public Health: Establishes a foundational genomic database for ongoing health research and policy formulation.

National Model: Serves as a blueprint for other states to develop region-specific genomic initiatives.

AI Appreciation Day in India

Context:

India observed AI Appreciation Day on July 16 to recognize the country's swift advancements in artificial intelligence across multiple sectors.

About AI Appreciation Day:

Definition: An annual event celebrating AI's transformative impact and honoring developers, scientists, and policymakers who advance AI for societal benefit.

Date: Observed globally on July 16, with active participation in India.

Objectives:

- Celebrate innovations that address real-world problems.
- Promote ethical AI use across public and private sectors.
- Encourage inclusive growth by integrating AI into governance and services.
- Inspire youth engagement and skill development in AI technologies.

India's AI Journey Highlights:

Historical Roots: Originated in the 1960s with early computing research, progressing through the 1986 Knowledge-Based Computer Systems (KBKS) project.

Institutional Support: Digital India initiative (2015) and NITI Aayog's National Strategy for AI (2018) have institutionalized AI adoption.

Sector Applications:

- Healthcare: Early diagnostics, telemedicine.
- Agriculture: Precision farming, pest prediction.
- Education: Adaptive learning, language translation.
- Governance: Chatbots, e-courts, grievance redressal systems.

Ethical Emphasis: The day underscores responsible AI practices addressing bias, transparency, and cybersecurity.

Significance:

- Enhances India's capacity to become a global AI hub.
- Empowers citizens via smart governance tools.
- Strengthens the digital economy by driving innovation and startups.
- Promotes equity by including underserved communities in technological progress.

Ground Penetrating Radar (GPR) Technology

Context:

A research team from IIT Kanpur used Ground Penetrating Radar (GPR) to discover ancient Buddhist stupas and buried structures in Haryana's Yamuna Nagar district.

About GPR Technology:

A geophysical method using high-frequency electromagnetic waves to detect subsurface features.

The waves reflect, refract, or scatter based on underground material differences (soil, rock, buried objects).

Typical detection depth is up to 10 meters.

Used for locating bedrock depth, water tables, soil layers, buried streams, cavities, and fractures.

Record-Breaking Black Hole Merger Detected Through Gravitational Waves

In a major breakthrough in astrophysics, scientists have detected **gravitational waves** from the **largest black hole merger ever recorded**, a cosmic event that challenges existing scientific theories and expands our understanding of the universe.

Why This Discovery Is Historic

The Event: GW231123

Named **GW231123**, the event marks the most massive black hole merger ever observed through gravitational waves.

It involved the collision of two supermassive black holes:

One with a mass of **140 times** that of the Sun

The other with **100 solar masses**

Their merger created a new black hole approximately **225 times the Sun's mass**—a size never before detected through this method.

A Scientific Surprise

This mass range (100–150 solar masses) is known as the **"mass gap"**, where stars are **not expected to form black holes**. Instead, current theories suggest they explode in supernovae.

One of the black holes was spinning at nearly the **maximum speed allowed** under **Einstein's General Theory of Relativity**.

The discovery contradicts existing **stellar evolution models** and provides new data on **how massive stars die** and how **black holes grow**.

Gravitational Waves: A New Lens on the Cosmos

What Are Gravitational Waves?

First predicted by **Albert Einstein** in 1915, gravitational waves are **ripples in spacetime** caused by extreme cosmic events like black hole mergers.

Though all moving objects generate gravitational waves, only massive events produce waves strong enough to be detected on Earth.

Transforming Astronomy

Before 2015, astronomy relied on **electromagnetic radiation**—light, X-rays, radio waves—to study celestial phenomena.

However, many cosmic phenomena (like black holes and dark matter) **do not emit light** and were largely **invisible**.

The detection of gravitational waves opened up a **new branch of observational science**, allowing scientists to “hear” rather than “see” the universe.

Who Detected It: The LIGO Collaboration

LIGO, Virgo, and KAGRA

The first detection of gravitational waves occurred in **2015** by the **LIGO observatories** in the U.S.

Since then, a global network has formed, including:

Virgo in Italy

KAGRA in Japan

Together, these form the **LIGO-Virgo-KAGRA (LVK) collaboration**, responsible for the GW231123 discovery.

India's Role: LIGO-India

Expanding the Global Network

A third LIGO observatory is planned in **India**, aiming to enhance the global detection grid.

Known as **LIGO-India**, the project:

Was initially expected to launch in **2024**

Secured final government approval and a ₹2,600 crore budget in **2023**

Will be built in **Hingoli district, Maharashtra**

Once operational, LIGO-India will significantly improve the **sensitivity and accuracy** of gravitational wave detection worldwide.

Conclusion

The detection of **GW231123** is more than a record-breaking scientific achievement—it is a moment that **redefines what we know about**

black holes, stellar death, and the structure of the universe. With gravitational wave astronomy gaining momentum and global collaboration expanding, including India's participation, the field is poised to uncover even deeper cosmic secrets in the years ahead

Chronic Venous Insufficiency (CVI)

Context:

Former U.S. President Donald Trump was recently diagnosed with Chronic Venous Insufficiency (CVI), a circulatory condition that impairs blood flow from the legs back to the heart.

What is CVI?

CVI occurs when the **valves in leg veins fail to function properly**, causing **blood to flow backward and pool** in the legs.

Though not always life-threatening, CVI can lead to:

Pain and swelling

Muscle cramps

Skin changes

Varicose veins

Leg ulcers

Risk Factors:

Higher likelihood in individuals who are:

Overweight

Pregnant

Have a family history

Also common among those with:

Previous leg injuries

Past surgeries

History of blood clots

Prevalence and Demographics:

Affects approximately **1 in 20 adults**, more commonly in **older individuals**, with **risk increasing with age**.

Treatment Options:

Lifestyle modifications such as:

Regular physical activity

Elevating the legs

Maintaining a healthy weight

Medical interventions:

Medications to improve blood circulation

Compression therapy using tight bandages or stockings

In severe cases, **surgical procedures** may be necessary.

Protostar Discovery by IIST

Context:

Researchers from the **Indian Institute of Space Science and Technology (IIST)**,

Thiruvananthapuram, have identified **radio emissions with circular polarisation** from a **massive young protostar**, around **4,500 light-years** away.

What is a Protostar?

A **protostar** is an early-stage celestial object formed from **contracting gas and dust** in a molecular cloud.

The **gravitational collapse** of the cloud increases internal pressure, converting gravitational energy into heat.

This phase lasts between **100,000 to 10 million years**, depending on mass.

Formation Timeline:

Starts with **density buildup** in the molecular cloud.

Ends with a **pre-main-sequence star**.

Example: **T-Tauri stars** are solar-mass pre-main-sequence stars.

Transition to Main Sequence Star:

Once **hydrogen fusion** ignites in the core, the protostar evolves into a **main sequence star**.

Observation Challenges:

Protostars are enveloped in dust, **blocking visible light**, making them observable primarily in **radio or infrared wavelengths**.

Akash Prime Missile

Context:

India recently **successfully intercepted two high-speed aerial targets** at high altitudes in **Ladakh** using the **Akash Prime missile**.

About Akash Prime:

An **upgraded variant** of the Akash surface-to-air missile system, tailored for **high-altitude deployment**.

Designed to defend **mobile, semi-mobile, and static installations**.

Key Features:

Medium-range surface-to-air missile.

New **indigenous Radio Frequency (RF) seeker** enables accurate targeting during terminal flight.

Effective range: **25–30 km**.

Engineered for reliable performance in **low-temperature, high-altitude environments** (above **4,500 metres**).

Enhancements based on feedback from armed forces.

Hydrogen Peroxide Innovation

Context:

Scientists have developed a novel technique using **Mo-DHTA COF**, a dimolybdenum-based material, to **synthesize hydrogen peroxide (H₂O₂)** from **water and sunlight**.

About Hydrogen Peroxide:

A **colorless liquid** with a **bitter taste**, occurring naturally in trace amounts in the air.

Breaks down into **water and oxygen**, making it **eco-friendly**.

Properties:

Unstable and decomposes readily.

Non-flammable, but a **strong oxidizing agent** that can cause **spontaneous combustion** in contact with organic materials.

Common Uses:

Household (3–9% concentration):
Antiseptics, bleaching agents.

Industrial:

Textile and paper bleaching

Rocket fuel

Foam rubber and organic chemical production

Environmental Concerns:

Conventional production methods are **energy-intensive and hazardous**.

The new method aims to **cut costs**, reduce environmental impact, and support **green chemistry**.

Agni-I and Prithvi-II Missiles

Context

India conducted **successful test-firings** of its nuclear-capable **short-range ballistic missiles (SRBMs)**—**Agni-I** and **Prithvi-II**—from the **Integrated Test Range, Chandipur, Odisha**, a day after testing the **Akash Prime** in Ladakh.

Overview

Developed under the **Integrated Guided Missile Development Programme (IGMDP)** by **DRDO**.

Tested under the **Strategic Forces Command** to assess operational readiness.

Objectives

Validate:

Combat and strategic readiness

Accuracy and deterrence capability

Second-strike capacity

Reinforce India's nuclear posture post-May 2025 Indo-Pak tensions.

Prithvi-II Features

Range: ~350 km

Payload: Up to 500 kg
Warheads: Conventional or nuclear
Guidance: Inertial navigation system
Launch Platform: Road-mobile
Speed: Over Mach 1

Agni-I Features

Range: 700–900 km
Payload: Up to 1,000 kg
Warheads: Both types
Deployed by: Indian Army (since early 2000s)

Role: Key to India's **Minimum Credible Deterrence**

Zimislecel Therapy for Type 1 Diabetes

Recent Development

A small clinical trial published in *The New England Journal of Medicine* has highlighted the effectiveness of a new treatment—**zimislecel therapy**—in restoring insulin production in individuals with **Type 1 Diabetes**.

What is Zimislecel Therapy?

Zimislecel is an **allogeneic stem cell-derived islet cell therapy**, where **lab-grown islet cells** are infused into the **liver** of the patient.

The **pancreas** contains **islet clusters**, responsible for producing hormones like **insulin**.

Scientists developed zimislecel by differentiating **pluripotent stem cells** into **mature islet cells** in the laboratory.

These islets are then infused into the **hepatic portal vein**, allowing them to potentially embed in the liver and begin producing insulin naturally.

Potential Benefits

The therapy aims to **restore pancreatic islet function**, particularly **glucose-responsive insulin secretion**.

The transplanted cells have shown the ability to:

- Produce insulin**
- Improve blood sugar regulation**
- Prevent dangerous hypoglycemia**
- In many cases, **eliminate the need for external insulin administration**

Understanding Type 1 Diabetes

Type 1 diabetes is an **autoimmune condition** in which the body's **immune system destroys insulin-producing beta cells** in the pancreas.

The body produces **little or no insulin**, leading to **high blood sugar levels**.

Management typically requires **daily insulin injections**.

It is most commonly diagnosed in **children and young adults**, previously termed **juvenile diabetes**.

Symptoms Include:

- Excessive urination (**polyuria**)
- Constant thirst (**polydipsia**)
- Increased hunger
- Unintended **weight loss**

Fatigue

Blurred vision

Three-Person In Vitro Fertilization (IVF)

Recent Development

In the UK, **eight children** have been successfully born free of debilitating genetic conditions due to a **three-person IVF technique**, as recently reported by researchers.

What is In Vitro Fertilization (IVF)?

IVF is a widely used **assisted reproductive technology (ART)** for individuals facing fertility issues.

Process:

Eggs are retrieved from a woman's ovaries and fertilized with **sperm** in a lab.

The resulting **embryo** is implanted into the uterus.

Pregnancy occurs if the embryo successfully implants in the uterine lining.

IVF may use **a couple's own or donated** eggs, sperm, or embryos.

Success rates depend on age, fertility history, health conditions, and lifestyle.

Three-Person IVF Technique

Humans inherit most DNA from both parents, but **mitochondrial DNA (mtDNA)** is inherited solely from the **mother**.

Mutations in mtDNA can lead to severe diseases such as:

- Muscle weakness**
- Seizures**
- Organ failure**
- Developmental delays**

Currently, **no cure** exists for mitochondrial diseases.

How the Technique Works

The nucleus from the **mother's fertilized egg** (carrying the parental DNA) is inserted

into a **donor egg** with **healthy mitochondria** but without its nucleus.

The resulting embryo has:

Nuclear DNA from the parents

Mitochondrial DNA from the donor

The **donor's DNA** constitutes **only about 0.2%** of the child's total DNA.

The procedure allows women with mitochondrial mutations to have **genetically related children** free from mitochondrial disorders.

Measles: Alarming Global Resurgence

Current Concern

Scientists have warned about a sharp **resurgence of measles** cases globally, including in the **United States**.

What is Measles?

Measles is a **highly contagious airborne viral infection**, primarily affecting **children**.

Caused by a virus in the **paramyxovirus family**, it spreads through **respiratory droplets** or direct contact.

Symptoms

Initial symptoms (10–14 days post-infection):

High fever

Runny nose

Cough

Red, watery eyes

White spots inside the cheeks (Koplik spots)

A **rash** typically appears on the **face and neck**, later spreading across the body over several days and lasts about a week.

Risks and Complications

Can lead to **pneumonia**, **brain swelling**, **vision loss**, and **death**, especially in:

Unvaccinated children

Pregnant individuals

Prevention and Treatment

There is **no specific antiviral treatment** for measles.

Vaccination remains the most effective tool for prevention.

Any **non-immune** person (unvaccinated or non-responsive to vaccine) is at **high risk of infection**.

Nuclear Medicine Using Radioactive Iodine (¹³¹I)

Context

Radioactive iodine-based nuclear medicine is emerging as a **non-invasive and effective treatment** in India, particularly for **thyroid disorders** and **differentiated thyroid cancers**.

What is Radioactive Iodine Therapy?

It involves the use of **iodine-131 (¹³¹I)** to **diagnose and treat thyroid conditions**, forming a part of **nuclear medicine's theranostic approach** (combined therapy and diagnostics).

Historical Background

The concept was first introduced by **Saul Hertz in 1936** following a lecture at MIT by **Karl Compton**.

The isotope iodine-131 was discovered in **1938** by **Glenn Seaborg and John Livingood** at the **University of California, Berkeley**.

This marked the **origin of nuclear medicine**, bridging **physics and biology**.

How It Works

The patient consumes radioactive iodine in **capsule or liquid form**.

The iodine is **selectively absorbed** by overactive or cancerous **thyroid tissues**.

The **beta particles** released by ¹³¹I **destroy the abnormal thyroid cells**, reducing hormone overproduction.

Gamma rays emitted allow for **imaging** and monitoring of the therapy's progress.

Key Features

Targeted therapy: Only thyroid cells absorb iodine, minimizing impact on surrounding tissues.

Minimally invasive: Ingestion-based method—**no surgery required**.

Safe and regulated: Conducted in **specialized wards** with stringent **radiation safety protocols**.

Custom dosing: Adjusted based on condition severity—**lower for hyperthyroidism**, **higher for cancer ablation**.

Pregnancy restrictions: **Contraindicated** in pregnant or lactating women due to fetal radiation risks.

Importance and Applications

Primary treatment for **hyperthyroidism** (e.g., **Graves' disease**, **toxic goitre**).

Post-surgical follow-up in **thyroid cancer** cases to destroy residual tissue or metastases—**reduces recurrence** and **ensures remission**.

Affordable and accessible: Widely available in both **public and private hospitals** across India.

Netra MkII – Next-Gen AWACS

Overview

The Indian government has approved production of the next-generation **Airborne Early Warning and Control System (AWACS)** under the **Netra MkII** programme.

Platform

Will be mounted on the **Airbus A321** aircraft.

Key Features

Capable of **detecting, tracking, and monitoring threats** across large distances.

Functions as an **airborne command centre**, enhancing national surveillance capabilities.

Equipped with **Active Electronically Scanned Array (AESA)** radars and **mission control systems** for advanced threat management.

INVICTUS - Hypersonic Aerospace Initiative Background

The **European Space Agency (ESA)** and UK-based **Frazer-Nash** have launched **INVICTUS**, a project aimed at developing **hypersonic technology**.

About INVICTUS

A **fully reusable experimental vehicle** capable of reaching **Mach 5** (five times the speed of sound).

Funding

Supported through ESA's **General Support Technology Programme (GSTP)** and **Technology Development Element (TDE)**.

Notable Features

Designed for **sustained atmospheric hypersonic flight**.

Modular and upgradable—components like materials, software, and propulsion systems can be replaced between test campaigns.

Significance

Will **validate** the use of a **hydrogen-fuelled, precooled air-breathing propulsion system**.

Paves the way for **horizontal take-off** and **reusable hypersonic flight vehicles**.

Javelin Anti-Tank Guided Missiles (ATGMs)

Recent Update

India has submitted a **Letter of Request (LoR)** to the United States, expressing intent for **co-production of Javelin ATGMs** domestically.

About Javelin ATGMs

Considered one of the world's **most advanced medium-range anti-tank systems**.

Man-portable and designed for single-operator use.

Operates on a **"fire-and-forget"** system—after launch, the missile autonomously navigates to the target without further input.

Antimatter Mystery: First Evidence of CP Violation in Baryons

European researchers have made a groundbreaking discovery that could help unravel the mystery of why the universe is predominantly composed of matter rather than antimatter. For the first time, they have observed **CP violation** in **baryons**, a class of subatomic particles. This discovery marks a significant stride in understanding one of the most fundamental questions in physics.

Understanding Matter and Antimatter

Matter: Everything in the visible universe—stars, planets, people—is made of matter, comprising particles such as **protons, neutrons, and electrons**.

Antimatter: Antimatter consists of **mirror-image counterparts** of matter particles. Each antimatter particle has the same mass but an **opposite electrical charge**.

Examples:

The **positron** is the antiparticle of the **electron**.

The **antiproton** is the antiparticle of the **proton**.

Mutual Annihilation: When a particle meets its corresponding antiparticle, they **annihilate each other**, releasing energy in the process.

Why More Matter Than Antimatter Exists

The Puzzle: The Big Bang should have produced equal quantities of matter and antimatter. Yet, the observable universe is **almost entirely composed of matter**, a mystery that has confounded physicists for decades.

CP Violation as a Clue: This imbalance may be explained by **CP violation**—a phenomenon in which the laws of physics **do not apply equally to matter and antimatter**.

What is CP Violation?

Charge Conjugation (C): Replaces particles with their antiparticles.

Parity (P): Inverts spatial coordinates—like flipping the system in a mirror.

If CP symmetry held, then matter and antimatter would behave identically in all circumstances. However, experiments have shown that **this symmetry is sometimes broken**, a fact that could explain why matter gained the upper hand in the early universe.

Breakthrough: First Observation of CP Violation in Baryons

Previous Observations: CP violation had previously only been observed in **mesons**—particles made of one quark and one antiquark.

New Discovery: For the first time, CP violation has been detected in **baryons**, which are particles made of **three quarks**, such as **protons and neutrons**.

The Particle in Focus: The researchers studied the **Λ_b^0 baryon (Lambda-b-zero)**—a neutral particle composed of one up quark, one down quark, and one **bottom quark**.

Decay Observation: The Λ_b^0 and its antimatter counterpart, **$\Lambda_b^0\text{-bar}$** , were observed decaying into different final states—specifically into a **proton, a kaon, and two pions**. The difference in decay rates provides **direct evidence of CP violation in baryons**.

How the Discovery Was Made

Experimental Setup: The observation was made at **CERN's Large Hadron Collider (LHC)** using the **LHCb detector**, which collected data from **billions of proton-proton collisions**.

Methodology:

These collisions occasionally produced both **Λ_b^0 baryons** and **$\Lambda_b^0\text{-bar}$ antiparticles**.

Scientists meticulously compared the frequency and pattern of their decays.

They corrected for experimental biases and used **control channels** (where CP violation is not expected) to validate the findings.

Conclusion and Future Implications

This landmark observation of CP violation in baryons does not yet fully explain the universe's matter-antimatter asymmetry but opens exciting new research paths. Scientists plan to explore **other baryon decays** and improve precision measurements to identify **deeper sources of CP violation**—potentially revealing **new forces or unknown particles**. Ultimately, this discovery brings us one step closer to answering one of the most profound questions in science: **Why does anything exist at all?**

INS Sandhayak: India's Advanced Survey Vessel

Maiden Mission

The **INS Sandhayak** recently made its **first port call at Port Klang, Malaysia**, as part of a mission to boost **hydrographic cooperation** between the two nations.

About INS Sandhayak

Commissioned: February 2024

Constructed by: Garden Reach Shipbuilders & Engineers (GRSE), Kolkata

Class: First of the indigenously designed **Sandhayak-class hydrographic survey ships**

Capabilities and Roles

Primary Role: Conducts **hydrographic surveys** for coastal and deep-sea navigation, port access, and channel mapping.

Secondary Roles:

Search and Rescue (SAR)

Humanitarian operations

Can function as a **hospital ship**

Offers **limited defence capabilities**

Technology and Equipment

Equipped with:

Data Acquisition & Processing Systems

Autonomous Underwater Vehicles (AUVs)

Remotely Operated Vehicles (ROVs)

Digital Side-Scan Sonar

DGPS long-range navigation systems

Performance: Powered by **two diesel engines**; capable of reaching speeds over **18 knots**

Strategic Significance

The visit to Malaysia aims to:

Enable **technical exchanges**

Enhance **institutional collaboration**
Support **technology-sharing** and **joint hydrographic projects**

Exercise Prachand Shakti: Indian Army's Tech-Driven Combat Demo

What Is It?

Exercise Prachand Shakti was a **high-impact combat demonstration** conducted by the **Indian Army's Ram Division** under the **Kharga Corps**, in **Meerut, Uttar Pradesh**.

Key Focus

The exercise highlighted the **deployment of disruptive technologies** in **Strike Corps operations**.

It aimed to showcase **real-time combat adaptability** and **future warfare capabilities**.

Technologies Demonstrated

Unmanned Aerial Vehicles (UAVs)

Artificial Intelligence-enabled systems

Loitering munitions

Autonomous combat platforms

These tools were shown to **enhance the agility, lethality, and survivability** of infantry units involved in **deep offensive operations**.

Strategic Relevance

Part of the Army's **"Year of Tech Absorption"** initiative.

Focuses on **incorporating indigenous innovations** and **advanced tech solutions** from **civilian sectors** into military strategies.

BioEmu: Next-Generation Deep Learning for Protein Flexibility

Overview

BioEmu (short for **Biomolecular Emulator**) is an advanced **generative deep learning system** designed to predict the full range of structural conformations a protein can adopt under biological conditions.

Developed by:

Microsoft

Researchers from **Rice University, USA**

Freie Universität, Germany

Core Functionality

BioEmu generates **thousands of statistically independent protein structures per hour** using just a **single GPU**.

It approximates the **equilibrium distribution** of structures for a **protein**

monomer, based on its **amino acid sequence**.

It predicts the **dynamic conformational landscape** of proteins, allowing scientists to observe **flexibility, folding, and functional shifts** with high resolution.

Key Features and Capabilities

Speed & Efficiency:

Outperforms traditional methods like **molecular dynamics (MD)** in both **cost and speed**.

Generates protein structural "snapshots" **within minutes to hours**, using standard computational resources.

Biological Insight:

Captures complex biological phenomena such as:

Large structural shifts in enzymes

Local unfolding events responsible for switching proteins on/off

Transient cryptic pockets, which are hidden crevices in proteins that can be targeted by drugs (e.g., in cancer-linked protein **Ras**)

Demonstrated accuracy:

Predicts **83% of large conformational changes**

Predicts **70–81% of small structural shifts**

Successfully models both **open and closed states** of enzymes like **adenylate kinase**

Versatility:

Can simulate **disordered proteins** that lack a fixed 3D shape

Analyzes how **mutations** affect **protein stability and dynamics**

Limitations

While powerful, BioEmu has notable limitations compared to systems like **AlphaFold**:

Cannot model:

Cell membranes

Temperature changes

Drug molecules

pH-dependent behavior

Does not provide **prediction confidence scores**

Lacks support for complex environmental conditions (e.g., lipid bilayers, organelles)

SNIFS: Solar EruptionN Integral Field Spectrograph

Introduction

NASA, in collaboration with international solar scientists, is set to launch the **Solar EruptionN Integral Field Spectrograph (SNIFS)** via a **sounding rocket** from **New Mexico**, aiming to unlock mysteries of the Sun's **chromosphere**.

What Makes SNIFS Unique?

World's first solar ultraviolet integral field spectrograph

Integrates both:

Imaging (for capturing photos/videos of a wide solar area)

Spectroscopy (for breaking down light to analyze elemental composition, temperature, and motion)

Captures **real-time, high-resolution spectral data** from:

The **chromosphere** — the middle layer of the solar atmosphere

The **transition region** — where temperatures rise dramatically into the corona

Scientific Objectives

Investigate the **energetics and dynamics** of the **Sun's chromosphere**

Focus on observing **magnetically active solar regions**

Special attention to:

The **hydrogen Lyman-alpha line**, the **brightest UV spectral line** from the Sun

This line is a **key diagnostic tool** for studying upper chromospheric conditions

Indian Astronomical Observatory (IAO), Hanle Recent Achievement

Indian astronomers used the **Himalayan Chandra Telescope (HCT)** at Hanle to capture images of the **interstellar comet C/2025 N1 (ATLAS)**, also known as **3I/ATLAS** — marking a milestone in Indian observational astronomy.

About the Indian Astronomical Observatory

Location: Hanle Valley, Ladakh, at an altitude of **4,500 meters** above sea level

Established: 2001

Managed by: **Indian Institute of Astrophysics (IIA), Bengaluru**

Why Hanle Is Ideal for Astronomy

Located in a **dry, cold desert** with **minimal human interference**

Has **low atmospheric water vapor** and frequent **cloudless skies**

Recognized as one of the world's best locations for:

Optical

Infrared

Sub-millimeter and millimeter wavelength observations

Key Features

Himalayan Chandra Telescope (HCT):

2-meter aperture

Remotely operated from CREST (Bengaluru)

Additional infrastructure:

Solar power plant

Satellite-based communications

Liquid nitrogen plant for detector cooling

Dark Sky Reserve

Hanle is India's first **Dark Sky Reserve**, certified by the **International Dark-Sky Association**

A **Dark Sky Reserve** is a specially protected zone with extremely low light pollution and **exceptional night sky visibility**

The village of Hanle has **fewer than 1,000 residents**, making it ideal for preserving the natural darkness required for astronomical research

Cyber Skill Centre: Empowering India's Youth in Cybersecurity

Context

The **Union Minister** inaugurated a **Cyber Skill Centre** in **Kandivali, Mumbai**, under the **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**. The initiative is aimed at equipping youth—especially in urban areas—with essential cybersecurity skills.

Overview of the Cyber Skill Centre

Purpose:

A state-of-the-art training hub focused on **cybersecurity education**, designed to impart **practical skills** and prepare youth for employment in India's growing **digital economy** and **cyber defense landscape**.

Nodal Ministry: Launched by the **Ministry of Commerce and Industry** in partnership

with the **Data Security Council of India (DSCI)** and the **Kyndryl Foundation**.

Objective:

To close the cybersecurity skill gap, nurture job-ready professionals, and bolster India's cybersecurity infrastructure.

Key Features

Training Capacity: The centre aims to train **1,000 individuals annually**, with special emphasis on women's participation.

PMKVY Integration Operates under the **Pradhan Mantri Kaushal Vikas Yojana**, ensuring alignment with national skilling strategies.

Practical Learning Modules: Offers:

Live cyberattack simulations

Advanced cyber range environments

Industry-aligned curriculum for real-world readiness

Urban-Centric Deployment: Focuses on urban regions like **North Mumbai**, targeting high-density areas for greater reach and scalability.

Career and Innovation Opportunities: Provides a platform for **employment pathways** and fosters **entrepreneurial innovation** in the cybersecurity space.

INVICTUS Programme: Advancing Hypersonic Technology

Recent Launch

The **European Space Agency (ESA)**, in collaboration with **Frazer-Nash Consultancy (UK)**, has initiated the **INVICTUS research programme**.

Programme Overview

Aimed at developing **hypersonic flight technologies** for future **reusable aerospace vehicles**

Designed for **horizontal launch** and **Mach 5** (five times the speed of sound) operations

Technical Features

Vehicle is **fully reusable** and allows for upgrades between flight tests

Supports testing of various **materials, propulsion systems, and software**

Demonstrates sustained hypersonic flight **within Earth's atmosphere**

Funding

Supported through **ESA's**:

General Support Technology Programme (GSTP)

Technology Development Element (TDE) Significance

Will validate the use of **hydrogen-fuelled precooled air-breathing propulsion systems**

Enables **industry, academia, and space agencies** to test advanced hypersonic systems in real-world environments

Chikungunya: China Launches Emergency Health Campaign

Context

The **Chinese Ministry of Health** has launched an emergency response to protect communities from the spread of **Chikungunya fever**.

About Chikungunya

Nature of the Disease

A **viral infection** caused by the **chikungunya virus (CHIKV)**

Characterized by **fever** and **severe joint pain**
The name derives from the **Makonde** language, meaning "bent over in pain"

History and Global Spread

First recorded in **Tanzania in 1952**

Now present in over **110 countries** across **Asia, Africa, the Americas, and Europe**

Transmission

Spread by bites from infected female **Aedes mosquitoes**, primarily:

Aedes aegypti

Aedes albopictus

Also vectors for **dengue** and **Zika** viruses

Not contagious—cannot be transmitted directly between humans

Symptoms

Often misdiagnosed due to similarities with dengue and Zika

Common symptoms:

Sudden high fever

Severe joint pain

Headache, muscle pain, nausea, fatigue, skin rash

Joint pain can last for days to **several months or years**

Rarely leads to complications or death, though risk is higher for:

Infants under 1 year

Elderly patients

Treatment

No vaccine or antiviral medication currently available

Treatment focuses on **symptomatic relief**, such as rest, fluids, and pain management

Cy-TB Skin Test Introduced in Kerala

Context

Kerala has launched the **Cy-TB skin test** as a simplified and efficient diagnostic tool for detecting **Latent Tuberculosis Infection (LTBI)** under the **National TB Elimination Programme (NTEP)**.

About Cy-TB Skin Test

Type: Next-generation **intradermal skin test** for identifying latent TB.

Developed by: Backed by **India's NTEP**, in collaboration with **ICMR** and **state TB units**.

Purpose

Designed for the **early identification** of dormant TB to prevent its progression into **active disease**.

Target Population

Adults aged **18 and above**, especially:
Individuals in **high-risk environments**

Close contacts of TB patients

How the Test Works

A **0.1 ml solution** with TB-specific antigens (**ESAT-6** and **CFP-10**) is injected into the inner forearm.

If an **induration (swelling)** of **≥5 mm** appears within **48–72 hours**, it signals a TB infection.

Distinct from Mantoux or IGRA, Cy-TB:

Is **more specific**

Has **fewer false positives**

Requires **no blood samples**

Can detect **boosted responses** in long-latent cases, making it effective for **repeat screening**.

Cannot differentiate between **latent** and **active TB**, but confirms prior **TB exposure**.

Key Advantages

High specificity: Reduces cross-reactions from **BCG vaccination** or environmental mycobacteria.

Long shelf life: Multi-dose vials (10 doses) remain usable for **28 days** when refrigerated.

Low infrastructure demand: Needs **no laboratory equipment**; ideal for **community-level deployment**.

Quick results: Outcomes visible in **2–3 days**, facilitating **mass screening**.

Mild side effects: Mostly limited to **itching** or **swelling**; rare adverse events are under **active safety monitoring**.

In Vitro Biotransformation (ivBT) System Developed in China

Overview

Chinese scientists have developed an **in vitro biotransformation (ivBT)** system that can **synthesize sucrose from methanol**, derived from **industrial waste or carbon dioxide (CO₂)**.

About ivBT

Definition: A chemical alteration of substances using **enzymes** or biological agents **outside the body** (in vitro).

Goal: Artificially convert **CO₂** into **usable food and chemicals**, contributing to:

Environmental sustainability

Solutions to **population-related challenges**

AdFalcivax – India's First Indigenous Two-Stage Malaria Vaccine

Context

The **Indian Council of Medical Research (ICMR)** is developing **AdFalcivax**, a vaccine targeting **Plasmodium falciparum**, with a **dual-stage antigen design** for comprehensive malaria protection.

About AdFalcivax

A **recombinant, chimeric vaccine candidate** combining antigens from **two stages** of the malaria parasite's lifecycle.

Aims to offer **prevention and transmission-blocking** immunity.

Developed By

Collaborative effort between:

ICMR

RMRC-Bhubaneswar

NIMR

DBT-National Institute of Immunology (NII)

Production Platform: Uses **Lactococcus lactis**, a **safe food-grade bacterium**.

Objectives

Prevent **individual infection**

Break the **malaria transmission chain** within communities

Provide immunity against:

Liver-stage infection

Mosquito-stage transmission

Key Features

Dual-stage protection: Blocks both **pre-erythrocytic** and **sexual stages** of the parasite.

Thermal stability: Functional at **room temperature** for over **9 months**, ideal for **tropical storage**.

Enhanced immune coverage: Multiple antigens reduce chances of **immune evasion** and increase **long-term efficacy**.

Scalable and safe production: Cost-effective and **non-toxic** due to the use of *Lactococcus lactis*.

Licensing Model: ICMR to offer **non-exclusive licenses**, encouraging **domestic and global manufacturing partnerships**.

Significance

Positions India as a **pioneer in tropical disease vaccine innovation**

Supports the **Malaria Elimination Roadmap (2030)** and the **Make in India** initiative

Potential to reduce **malaria-related mortality**, particularly in **endemic tribal regions**

Dark Patterns

Context

Increasing complaints about **manipulative practices** on **OTT platforms**, such as **hidden charges**, **auto-renewing subscriptions**, and **misleading prompts**, despite official warnings and guidelines.

What Are Dark Patterns?

Design tactics intended to **mislead or coerce** users into actions they may not want to take.

Examples include:

Drip pricing (hidden fees shown late in the process)

False urgency (limited time offers)

Disguised advertisements

Bait and switch tactics

Regulatory Measures

In **2023**, the **Central Consumer Protection Authority (CCPA)** issued:

Guidelines for Prevention and Regulation of Dark Patterns, 2023

Identified **13 manipulative design tactics** as **unfair trade practices** under the **Consumer Protection Act, 2019**

NISAR Satellite

Context

The **NISAR satellite**, a joint venture between **NASA and ISRO**, is scheduled for **launch on July 30, 2025** from **Sriharikota**, using the **GSLV-F16** rocket. This marks a major milestone in global Earth observation and US-India space cooperation.

About NISAR (NASA-ISRO Synthetic Aperture Radar)

NISAR is the **first dual-frequency Earth observation satellite** using both **L-band (NASA)** and **S-band (ISRO)** Synthetic Aperture Radar (SAR).

Designed to provide **high-resolution Earth imaging** in **all weather conditions**, both **day and night**.

Collaborating Agencies

NASA (Jet Propulsion Laboratory):

Supplies the **L-band radar**, **GPS**, **communication systems**, and **data subsystem**.

ISRO:

Provides the **S-band radar**, **satellite bus**, **GSLV-F16 launch vehicle**, and **ground segment**.

Objectives

Monitor:

Land surface deformation

Glacier dynamics and ice sheet changes

Agricultural and forest ecosystem activity

Assist in:

Disaster response

Climate change studies

Resource and soil moisture mapping

Key Features

Dual-Frequency SAR: Combines **L-band** and **S-band** radars for comprehensive surface scanning.

Unfurlable Antenna: 12-meter mesh reflector enhances imaging precision.

SweepSAR Technology: Covers a swath of **242 km**, revisiting the same area every **12 days**.

High Precision: Capable of detecting **surface movement under 1 cm**, aiding in **fault line and landslide mapping**.

Global Coverage: Provides **24/7** all-weather scanning of the Earth's surface.

India's Contribution

ISRO is responsible for:

- S-band radar system**
- Modified I3K satellite bus**
- Launch via GSLV-F16**
- Ground operations and mission control**

Significance

First-of-its-kind Earth observation mission using **dual radar frequencies**.

Symbol of **enhanced Indo-US space diplomacy**, following the 2014 MoU.

Supports global **Sustainable Development Goals (SDGs)** through environmental and disaster monitoring.

Surge in Intellectual Property Filings in India (2019–2024)

Overview

India has witnessed a **44% increase in Intellectual Property (IP) filings** over the past five years, according to data recently shared by the Minister of State for Commerce and Industry in the Lok Sabha.

The most notable rise was seen in **Geographical Indications (GI)**, which grew by **380%**, followed by increases in **Designs, Patents, Copyrights, and Trademarks**.

This surge reflects the impact of **strategic policy reforms** aimed at promoting innovation and expanding IP activity in India.

Key Government Initiatives

1. Procedural Reforms

- Set timelines for patent grants.
- Reduced the number of forms required for trademark registration from 74 to 8.

2. Fee Concessions

- Patents:** 80% fee reduction for Startups, MSMEs, and Educational Institutions.
- Designs:** 75% fee concession for Startups and MSMEs.

3. Digitalization

- IP Dashboard:** Offers real-time, comprehensive insights into IP filings.
- AI-based Tools:** Implemented AI-powered trademark search to enhance accuracy and speed in application processing.

4. Awareness and Support Programmes

- National IP Awareness Mission (NIPAM)**
- IPR Internship Programme**
- Startups Intellectual Property Protection (SIPP) Scheme**
- National IP Awards**

5. Alignment with International Standards

Adopted **International Classification of Industrial Designs** under the **Locarno Agreement**, a 1968 WIPO treaty for harmonizing industrial design standards.

National Sports Governance Bill 2025 – Transforming Sports Administration in India Introduction

The **Union Government** is preparing to introduce the **National Sports Governance Bill 2025** during the monsoon session of Parliament. The proposed legislation aims to **modernise and reform India's sports governance** structure by making it **athlete-centric, transparent, and accountable**.

Key Objectives

- Streamline **regulatory oversight** of sports federations
- Ensure **timely dispute resolution**
- Enhance **athlete welfare**
- Promote **global competitiveness** in Indian sports
- Transition the **Ministry of Youth Affairs and Sports** from a regulatory role to a **facilitator role**

Main Provisions

1. National Sports Board

- A new **National Sports Board** will be established to:
 - Recognise or suspend **National Sports Federations (NSFs)**
 - Monitor compliance with governance norms and athlete welfare standards
 - Ensure fair and timely elections
- The Board, chaired and appointed by the **central government**, will act as an **ethical and administrative watchdog** over NSFs.

2. National Sports Tribunal (NST)

- To resolve legal conflicts in sports administration, the Bill proposes a **National Sports Tribunal**:
 - Headed by a **Supreme Court judge**
 - Handles disputes on **elections, selections, and internal NSF governance**
 - Appeals from NST decisions will lie **only with the Supreme Court**

Excluded from NST jurisdiction:

- Disputes during **Olympics, Asian, or Commonwealth Games**

Cases governed by **international sports federations**

Anti-doping cases, which remain under **NADA**

3. Bringing BCCI Under Governance Framework

The Bill proposes inclusion of the **Board of Control for Cricket in India (BCCI)** under the same governance umbrella as other NSFs.

Currently registered under the **Tamil Nadu Societies Registration Act, 1975**, BCCI operates autonomously.

Post-legislation:

BCCI must seek recognition from the **National Sports Board**

Will fall under **RTI Act** for public transparency

Disputes involving BCCI will go to the **NST**

Note: Although BCCI has adopted **Lodha Committee reforms**, including age and tenure limits, it has resisted full NSF classification due to its **financial independence**.

Empowering Athletes and Good Governance

The Bill ensures **athlete representation** in sports governance.

Focuses on:

Athlete rights

Transparent selection processes

Anti-doping enforcement

Aligns with international norms (e.g., **IOC guidelines**):

Raises upper age limit from **70 to 75**

Permits tenure flexibility if consistent with global standards

Rationale Behind the Bill

Over **300 legal disputes** involving NSFs are currently pending, hindering progress.

Governance and electoral disputes have affected both **administrators and athletes**.

With India aiming to host the **2036 Olympics** and **T20 cricket debuting** in the **2028 Los Angeles Olympics**, ensuring **institutional credibility** is a strategic priority.

By addressing structural and legal bottlenecks, the **National Sports Governance Bill 2025** seeks to establish a transparent, athlete-first sports ecosystem and strengthen India's global sporting stature.

Biostimulants in India: Benefits, Market Trends & Evolving Regulation

Recent Developments

Union Agriculture Minister Shivraj Singh Chouhan has instructed state governments to stop the **forced bundling of nano-fertilisers and biostimulants** with **subsidised fertilisers** such as **urea and DAP**.

This action comes after farmers raised concerns that:

Retailers were refusing to sell subsidised fertilisers unless farmers also bought biostimulants.

The biostimulants being sold were **ineffective**.

The Minister has called for a **comprehensive review**, warning that **ineffective biostimulants will be banned** from sale.

What Are Biostimulants?

Biostimulants are **natural substances or microorganisms** used to enhance **plant growth and productivity**. They work by:

Stimulating **natural biological processes** in plants

Improving **nutrient absorption**

Enhancing **stress tolerance**

Boosting **overall yield**

Common sources include **plant waste** and **seaweed extracts**.

Under the **Fertiliser Control Order (FCO), 1985**, biostimulants are defined as products applied to **plants, seeds, or soil** to support growth. They are **distinct** from:

Pesticides

Plant Growth Regulators (PGRs)
(both regulated under separate laws)

Key Benefits of Biostimulants

1. Enhanced Stress Tolerance

Help plants cope with drought, heat, and other environmental stresses

Improve germination, root growth, and nutrient uptake

2. Improved Grain and Fruit Quality

Support better grain fill in crops like maize

Improve fruit colour, postharvest quality, and resilience during critical growth stages

3. Growth Promotion

Contain beneficial microbes

Increase leaf area, seedling height, and overall yield

Differences Between Biostimulants and Fertilisers

Feature	Fertilisers	Biostimulants
Primary Function	Provide essential nutrients (NPK)	Stimulate natural plant processes
Approach	Focus on basic growth via nutrition	Enhance resilience and stress adaptation
Soil Impact	Overuse may harm soil health and microbes	Support microbial health and long-term fertility
Regulation	Strictly regulated by nutrient content	Historically less regulated; defined by function
Environmental Impact	Potential for runoff and pollution	Eco-friendly; reduce excessive fertiliser dependency

India's Biostimulant Market: Growth and Challenges

Market size (2024): USD 355.53 million

Projected size (2032): USD 1,135.96 million

Growth rate: CAGR of **15.64%**

However, the market has faced issues due to **unregulated products**:

Nearly **30,000 biostimulant products** were being sold without proper oversight.

In the last four years, about **8,000 unverified products** remained in circulation.

Thanks to **recent regulatory enforcement**, this number has dropped to **around 650** as of **July 15, 2025**.

In **May 2025**, the Ministry of Agriculture introduced **new product specifications** for crop-specific applications, signalling a shift towards more **standardised and stringent regulations**.

Why Regulation Was Needed

Biostimulants were long sold without regulatory approval because they were not covered under:

The **Fertiliser Control Order (FCO), 1985**

The **Insecticides Act, 1968**

In **2011**, the **Punjab and Haryana High Court** ruled that products making claims similar to fertilisers or pesticides must be **examined by state authorities** before being marketed.

As usage increased, the **Centre took notice**, and by **2017**, the **Agriculture Ministry and NITI Aayog** began drafting a regulatory framework. This effort culminated in the **February 2021 amendment of the FCO**, officially bringing biostimulants under regulation for **manufacture, sale, and import**.

FCO Guidelines on Biostimulants

The **Fertiliser Control Order (FCO)** now empowers the Central government to regulate biostimulants through defined specifications.

Classification

Biostimulants are grouped into **eight categories**, including:

- Botanical extracts
- Seaweed extracts
- Biochemicals
- Vitamins
- Antioxidants

Approval Requirements

Manufacturers or importers must submit:

- Product chemistry
- Source and shelf-life details
- Bio-efficacy trial data
- Toxicity reports

Testing Protocols

Five acute toxicity tests on rats and rabbits

Four eco-toxicity tests assessing impact on birds, fish, bees, and earthworms

Must not contain **pesticide residues above 0.01 ppm**

Efficacy trials must be conducted using:

Three different doses

Across **three agro-ecological zones**

For at least **one growing season**

Through **recognised agricultural institutions**

Institutional Oversight: Central Biostimulant Committee

Established in **April 2021** and chaired by the **Agriculture Commissioner**, this committee advises the government on:

- Inclusion of new biostimulant products
- Setting standards
- Creating testing protocols
- Determining laboratory infrastructure
- Guiding other regulatory and compliance aspects

Conclusion

While India's biostimulant market is expanding rapidly, a history of **unregulated products and**

misuse has made **stringent oversight essential**.

The government's current efforts aim to:

Ensure only **scientifically tested and effective** products reach farmers

Prevent **exploitative sales practices**

Promote **environmentally friendly, sustainable agriculture**

The regulatory reforms now in place are a step towards **greater accountability, farmer protection, and sustainable crop productivity.**

Fusariosis in Pineapple

Context

Indian scientists have made a significant breakthrough in combating **Fusariosis**, a severe fungal disease that threatens pineapple crops, by identifying a key gene that enhances the plant's natural defense mechanisms.

About the Disease

Causal Agent: *Fusarium moniliforme*, an aggressive fungus.

Symptoms:

Deformation of the plant stem

Leaf blackening

Internal fruit rot

Impact: Leads to major yield losses and unreliable harvests for farmers.

Research Highlights

Traditional breeding methods have struggled to control fast-mutating fungal strains.

Scientists discovered the role of the **Somatic Embryogenesis Receptor Kinase (SERK)** gene family in plant immunity.

In particular, the **AcSERK3 gene**, a component of pineapple's genetic makeup, was found to:

Aid in stress response and reproduction

Boost the plant's resistance when **genetically overexpressed**

Genetically enhanced plants with **overactive AcSERK3** showed **greater resistance to Fusariosis** compared to conventional varieties.

Key Facts About Pineapple Cultivation

Scientific Name: *Ananas comosus* (L. Merr.)

Family: Bromeliaceae (economically most significant fruit in this family)

Climate Requirements

Temperature: Grows best between 15°C and 30°C

Drought Tolerance: Adapted to dry periods due to water-storing tissue

Rainfall: Optimal range of 1000–1500 mm/year (can grow in 600–2500 mm range)

Soil: Versatile soil tolerance, except for waterlogged conditions

Cropping System

Can be grown:

As a **monoculture** on plantations

As an **intercrop** in **coconut plantations**

Major Producing Regions

India: Assam, Meghalaya, Tripura, Manipur, West Bengal, Kerala, Karnataka, Goa

Global Producers: Thailand, Philippines, Brazil, China, Nigeria, Mexico, Indonesia, Colombia, USA

Human Rated Launch Vehicle (HLVM3)

Context

The Union Minister recently informed Parliament that **India has completed the development and ground testing of the Human Rated Launch Vehicle (HLVM3)**—a major step toward the country's first human spaceflight mission under **Gaganyaan**.

India's long-term space goals also include:

Establishing the **Bharatiya Antariksha Station by 2035**

Achieving an **Indian crewed Moon landing by 2040**

About HLVM3

What is HLVM3?

HLVM3 is **India's first human-rated launch vehicle**, adapted from the reliable **LVM3 (GSLV Mk III)** platform.

It is designed to **safely transport Indian astronauts (Gaganyatris)** to **Low Earth Orbit (LEO)** under the **Gaganyaan programme**.

Developed by

Indian Space Research Organisation (ISRO)

Under the leadership of the **Human Space Flight Centre (HSFC)**

Mission Objectives

Ensure the **safe launch, orbital insertion, and return** of Indian astronauts.

Serve as the **foundation for future space missions**, including:

A permanent Indian space station

A manned Moon mission

Establish indigenous capability in **human spaceflight and space safety systems**.

Key Features of HLVM3

1. Three-Stage Launch Vehicle

S200 solid rocket boosters (2 units)

L110 liquid core stage

C25 cryogenic upper stage

Can carry approximately **10 tonnes** to **Low Earth Orbit**

2. Human-Rating Enhancements

Systems upgraded for **redundancy**, **fault tolerance**, and **emergency escape options**

Increased safety margins and stringent **quality assurance protocols**

3. Crew Escape System (CES)

Equipped with **five independently tested motors**

Enables safe **emergency ejection of astronauts** during launch and ascent

Functional from **liftoff through orbital injection**

4. Crew Module (CM) & Service Module (SM)

Crew Module (CM):

Tested for **re-entry capability**, **parachute deployment**, and **thermal protection**

Service Module (SM):

Manages **power**, **propulsion**, and **life support systems**

5. Support Infrastructure

Gaganyaan Mission Control Centre

Dedicated **astronaut training facilities**

Launch pad modifications at SDSC (Sriharikota)

A robust **recovery and communication network**

Star - HOPS 315

Context

Astronomers, for the first time, have observed **solid rock condensing from vapor** around a young star — **HOPS 315** — marking the **earliest known stage of rocky planet formation**. This was made possible through data from the **James Webb Space Telescope (JWST)** and **ALMA**.

About HOPS 315

What is HOPS 315?

A **protostar** located in the **Orion Molecular Cloud**.

Surrounded by a **dense, tilted protoplanetary disc** of gas and dust.

The **disc's inclination** allows astronomers a unique, unobstructed view into its inner structure where planets are forming.

Key Discoveries

JWST Findings:

Detected **silicon monoxide (SiO) gas** at **~470 K**.

Observed **crystalline silicates** within **2.2 AU** of the star — the likely zone for rocky planet formation.

ALMA Observations:

Identified **cooler surrounding gas**.

Found **no signs of slow-moving SiO**, indicating the crystals formed **within the disc**, not from stellar outflows.

Crystallization Process:

Near **1 AU**, dust vaporizes at **~1300 K** and **re-condenses into minerals** like **forsterite**, **enstatite**, and **silica** — similar to those found in ancient meteorites on Earth.

Significance:

First direct **observational evidence** of **rock vapor transforming into solid crystals** in a distant planetary system.

Importance of the Discovery

Planetary Genesis: Reveals the **initial stage of rocky planet formation**.

Solar System Parallel: Mirrors **early Solar System processes**, bridging gaps in planetary evolution models.

Rare Observational Opportunity: The **disc's tilt** provided rare access to its **inner chemical structure**.

Universal Chemistry Clues: Similarity with **chondritic meteorites** suggests a **common mineral makeup** in planet-forming systems.

Chikungunya - WHO Warning

Global Alert

The **World Health Organization (WHO)** has issued a warning about the **growing threat of a global chikungunya epidemic**.

About Chikungunya

Cause: Chikungunya virus

Transmission: Spread by infected female mosquitoes—mainly *Aedes aegypti* and *Aedes albopictus*—which also transmit dengue and Zika.

Treatment: No specific antiviral therapy currently available.

Indian Government Response

Managed under the **National Vector Borne Disease Control Programme (NVBDCP)**, which

addresses diseases like **dengue** and **chikungunya**.

Lumpy Skin Disease (LSD)

Current Situation

Over 900 cases have been reported in Pune district, raising concerns about a potential drop in milk supply.

Overview

Type: Viral disease affecting cattle and, to a lesser extent, buffaloes.

Cause: Lumpy Skin Disease Virus (LSDV), a member of the *Capripoxvirus* genus under the *Poxviridae* family (same as smallpox and monkeypox).

Zoonotic Risk: Not transmissible to humans.

Transmission

Spread by blood-feeding insects such as mosquitoes, flies, and ticks.

Can also be transmitted through contaminated food and water troughs or direct contact with infected animals.

Symptoms

High fever, swollen lymph nodes, and multiple skin nodules.

May lead to sterility in bulls, reduced milk yield, skin damage, and, in some cases, death.

Seasonal Occurrence

More prevalent in wet seasons and low-lying areas near water but can occur year-round.

Treatment & Control

No specific antiviral treatment exists.

Control is through **vaccination** and **supportive care** including antibiotics and pain relief.

MiG-21 Retirement

Key Update

The Indian Air Force (IAF) will retire all **MiG-21 Bison jets** by **September 2025**, ending over six decades of service.

About MiG-21

Origin: Designed by the Mikoyan-Gurevich Bureau (Soviet Union).

Induction in India: 1963, as India's first supersonic jet.

Manufacturing in India: 657 units produced under license by HAL.

Global Standing: Second most-produced jet aircraft globally.

NATO Code: Fishbed.

Combat History

Played a major role in the 1965, 1971, and Kargil wars, Balakot airstrikes (2019), and Operation Sindoor.

Known for its distinctive shape and nicknames such as *Balalaika* and *Silver Swallow*.

UAV-Launched Precision Guided Missile (ULPGM)-V3

Context

India has **successfully conducted flight trials** of the **ULPGM-V3** at the **NOAR test range** in **Kurnool**, marking a major development in its indigenous **drone strike capabilities**.

About ULPGM-V3

Type: **Air-to-surface missile** launched from **Unmanned Aerial Vehicles (UAVs)**

Purpose: Designed to **accurately engage fixed and moving targets** with **minimal collateral damage**

Developed by:

Defence Research and Development Organisation (DRDO)

In collaboration with **Bharat Dynamics Limited (BDL)**, **Adani, MSMEs**, and startups under the **Make in India initiative**

Variants

ULPGM-V1: Initial prototype

ULPGM-V2: Production-ready standard version

ULPGM-V3 (ULM-ER): **Extended-range** and **enhanced-capability variant**

Key Features of ULPGM-V3

Precision Targeting:

Uses **imaging infrared (IR) seekers**
Effective in both **day and night** operations

Range:

Up to **4 km in daylight**
Up to **2.5 km at night**
Powered by **dual-thrust solid propulsion**

Advanced Control:

Equipped with **two-way datalink** for real-time updates and improved accuracy

Warhead Options:

Supports multiple warhead types:
Anti-tank
Bunker-busting
Soft-target engagement

Drone Compatibility:

Lightweight (**12.5 kg**) and integrable with UAVs like **Rustom** and **TAPAS-BH**

Strategic Significance

Enhances India's strategic autonomy in UAV-based warfare, vital for:

Border security

Counter-terrorism operations

Boosts Defence Exports under the **Defence Export Policy 2020**

Validates Indigenous Capability: Showcases India's ability to design, test, and deploy **next-gen autonomous weapon systems**

AI-Driven Dynamic Targeting Technology Context

NASA's Jet Propulsion Laboratory (JPL) has successfully tested **Dynamic Targeting**, an artificial intelligence-based system that enables **Earth observation satellites** to autonomously bypass cloud cover and focus on high-priority scientific targets.

Overview of Dynamic Targeting Technology

What is it?

Dynamic Targeting is a **real-time AI-enabled onboard software** that empowers satellites to **independently detect, analyze, and respond** to Earth-surface phenomena **without human intervention**.

Developed By

Created by **NASA's Jet Propulsion Laboratory (JPL)** in collaboration with:
Open Cosmos
Ubotica

Under the aegis of **NASA's Earth Science Technology Office**.

Purpose and Objectives

To **maximize the scientific value** of satellite-collected data by **autonomously prioritizing** observation zones such as:

Clear-sky areas

Wildfires

Storm systems

Volcanic activity

Reduces dependency on ground-based commands and enhances **mission responsiveness**.

Working Mechanism

1. Lookahead Sensor Strategy

The satellite **tilts forward** mid-orbit to scan up to **500 km ahead**, identifying upcoming regions for analysis.

2. AI-Powered Cloud Detection

Utilizes **onboard AI processors** to distinguish **cloud-covered** vs **clear-sky** regions using **optical and near-infrared imagery**.

3. Decision-Making in Under 90 Seconds

The AI system rapidly assesses conditions and **adjusts the imaging plan autonomously**, avoiding cloud-obstructed zones.

4. Pivot and Capture

After analysis, the system returns to a **nadir (straight-down) view** and initiates **image capture within 60-90 seconds**, ensuring precision targeting.

Key Features

Fully Autonomous Functioning: Operates independently in space without real-time instructions from Earth.

AI Edge Computing: Uses neural networks directly onboard, eliminating latency from ground processing.

Compact & Scalable Design: Successfully tested on **CubeSat-class satellites**, enabling deployment across a range of satellite sizes.

Optimized Imaging Efficiency: Reduces **data loss due to cloud coverage**, a significant issue in Earth observation.

Fleet-Wide Integration: Can be expanded to **satellite constellations**, with potential applications in **planetary observation missions**.

Strategic Importance

Climate Event Monitoring: Captures fleeting phenomena such as wildfires, storms, and ice events more effectively.

Operational Optimization: Reduces unnecessary image storage and transmission, freeing up **satellite bandwidth and onboard storage**.

Disaster Response Capabilities: Enables real-time autonomous detection of **volcanoes, hurricanes, and other natural disasters**, enhancing early warning systems and disaster preparedness.

Bambusa tulda: Eco-Friendly Innovation in Automobiles

Context

Researchers at **IIT Guwahati** have developed a **sustainable bamboo-based composite** for use in the automobile sector using **Bambusa tulda** and **biodegradable polymers**.

About Bambusa tulda

Type: A fast-growing **clump-forming bamboo** species.

Habitat: Grows in **India, Bangladesh, Myanmar, and Thailand**; thrives in **moist lowlands** up to 1500m elevation.

Flowering Pattern: **Monocarpic**—blooms once every 25–40 years and then dies.

Local Names

Jati Bahn (Assam)

Mritinga (Tripura)

Also known as **spineless Indian bamboo**

Uses

Edible Shoots: Slightly bitter, commonly **pickled**.

Medicinal Uses: Secretion used as a **tonic and aphrodisiac**.

Industrial: Used in **agarbatti (incense) sticks, paper, furniture, and handicrafts**.

Comets and Interstellar Visitor 3I/ATLAS

Recent Development

NASA's **Hubble Space Telescope** captured high-resolution images of **interstellar comet 3I/ATLAS**, offering a rare glimpse of a visitor from beyond our solar system.

What is a Comet?

Comets are **icy and dusty celestial bodies** that orbit the Sun, originating from the early solar system (~4.6 billion years ago).

Known for: Their **long glowing tails** and elliptical orbits.

Types of Comets

Short-period comets: Found in the **Kuiper Belt**, take <200 years to orbit the Sun.

Long-period comets: Reside in the **Oort Cloud**, may take **thousands to hundreds of thousands of years** to complete an orbit.

Comet Structure

Nucleus: Solid icy-dusty core, a few km wide.

Coma: Cloud of gas and dust formed when the comet nears the Sun.

Dust Tail: Curved tail pushed by solar radiation (usually yellowish/white).

Ion Tail: Straight tail composed of ionized gases, pointing directly away from the Sun (bluish in color due to CO⁺ ions).

Indian Regional Navigation Satellite System (IRNSS/NavIC)

Overview

The **Indian Space Research Organisation (ISRO)** is set to launch **three additional satellites** for the **Indian Regional Navigation Satellite System (IRNSS)**, also known as **NavIC (Navigation with Indian Constellation)**, by 2026.

Key Features

Purpose: NavIC is India's **independent regional satellite navigation system**, offering precise positioning and timing information.

Design:

Combination of **Geosynchronous (GSO)** and **Geostationary (GEO)** satellites.

Comprises a **constellation of 7 satellites** and an integrated **network of ground stations**.

3 satellites in **GSO**.

4 satellites in **inclined GEO**.

Coverage and Services

Service Region: Covers all of India and up to **1,500 km beyond its borders**.

Types of Services:

Standard Positioning Service (SPS): Open to all users.

Restricted Service (RS): Encrypted and accessible to authorized users only.

Compatibility: Interoperable with other global GNSS systems like **GPS, Galileo, GLONASS, and BeiDou**.

Hydrogen-Powered Driving Power Car Context

India has successfully tested its first **hydrogen-powered Driving Power Car** at the **Integral Coach Factory (ICF)** in Chennai, advancing its clean mobility initiatives.

Key Details

What is a Hydrogen Train?

It runs on **hydrogen fuel cells**, which generate electricity through a chemical reaction between **hydrogen and oxygen**.

Emissions are limited to **water vapor and heat**, making it a **zero-emission** transport option.

Developed By

Designed and built by **ICF, Chennai**, under **Indian Railways**, with technical oversight from **Northern Railways**.

Aligned with the plan to deploy **35 hydrogen trains** under the '**Hydrogen for Heritage**' scheme.

Technical Highlights

Power Output: 1200 HP – the highest for any hydrogen train worldwide.

Coach Formation: 10-car rake, compared to the international norm of five.

Pilot Route: Jind–Sonipat in Haryana.

Cost Estimates: ₹80 crore per train and ₹70 crore per supporting infrastructure.

Working Mechanism:

Fuel cells convert hydrogen into electricity for traction motors.

Excess energy is stored in onboard **batteries**.

Regenerative braking improves energy efficiency.

Significance

Supports Indian Railways' goal of **achieving net-zero emissions by 2030**.

Places India among a select group of countries developing **hydrogen rail technology**.

Opens up potential applications in **trucking, shipping, and heavy industries**.

Black Hole GRS 1915+105

Context

Researchers from ISRO, using **AstroSat**, have reported rapid X-ray variability in the black hole **GRS 1915+105**, contributing to our understanding of black hole environments.

About GRS 1915+105

A **stellar-mass black hole** located in a **binary star system**.

Discovered in 1992 by the **WATCH all-sky monitor** on the **Granat satellite**.

Situated about **28,000 light-years** from Earth in the **Aquila constellation** of the **Milky Way**.

Characteristics

Mass: Around 12 times the mass of the Sun.

Known for **frequent and intense X-ray fluctuations**, with alternating dips and flares.

Detected **quasi-periodic oscillations (QPOs)** at 70 Hz during high-energy phases.

Has a **plasma corona** oscillating between **compact-hot** and **expanded-cool** states.

Accretes material from its companion star into:

A **superheated accretion disk** (1–10 million °C).

A surrounding **corona** (about 100 million °C).

Significance

AstroSat Milestone: First Indian observatory to capture live corona oscillations.

Reinforces theories about the **origins of high-frequency QPOs**.

Offers valuable insights into physics near **event horizons**, where gravity is strongest.

CROPIC (Collection of Real-Time Observations and Photos of Crops)

Overview

The Ministry of Agriculture has launched **CROPIC**, a mobile-based initiative under the **Pradhan Mantri Fasal Bima Yojana (PMFBY)** to digitally track crop development and support agricultural insurance.

Key Features

Allows users to capture **geotagged crop images** multiple times during the crop cycle.

Uses **AI-powered cloud platforms** for:

Image analysis

Data extraction

Provides a **web-based dashboard** for visualization and real-time insights.

Funding

Financed through the **Fund for Innovation and Technology (FIAT)** under PMFBY.

Significance

Enhances **transparency** and **accuracy** in crop monitoring.

Aids in better **risk assessment** for agricultural insurance.

Bridges the gap between **on-ground data** and **policy formulation**.

NISAR Satellite: A Historic NASA-ISRO Partnership in Earth Observation

The **NASA-ISRO Synthetic Aperture Radar (NISAR)** satellite represents the most ambitious joint space mission between India and the United States. Scheduled for launch on **July 30** from **Sriharikota** aboard a **GSLV Mk-II**, this Rs. 12,000-crore collaboration merges advanced radar technologies from both space agencies to create one of the world's most sophisticated Earth observation platforms.

Mission Overview

Objective: To provide high-resolution, near real-time radar data for global environmental monitoring, land deformation, disaster assessment, and agricultural insights.

Global Scope: Though India-centric enhancements are included, the mission is designed for **planet-wide coverage**.

Collaborators: A decade-long partnership between **NASA (USA)** and **ISRO (India)**.

Technological First: Dual-Frequency SAR Capability

First-of-its-kind Dual Radar System

NISAR is the **world's first Earth observation satellite equipped with dual-frequency Synthetic Aperture Radar (SAR)**:

L-band radar (1.257 GHz) – Developed by NASA:

- Penetrates deep vegetation and soil
- Captures subsurface deformation and tectonic shifts

S-band radar (3.2 GHz) – Built by ISRO:

- Detects surface-level changes such as crop growth, biomass, and water levels

Imaging Capabilities

Operates in **all weather and lighting conditions**—through cloud, smoke, and vegetation

Swath width: 240 km

Resolution: 3–10 meters

Revisit time: Every location on Earth imaged **once every 12 days**

Can detect **vertical displacement** changes with **centimetre-level precision**

Scientific and Societal Impact

NISAR supports research and real-world applications across six major areas:

Solid Earth: Monitors earthquakes, fault lines, and landslides

Ecosystems: Tracks forest health, biodiversity, and woody biomass

Cryosphere: Maps glacial motion and polar ice thickness

Coasts and Oceans: Observes shoreline erosion, storm surges, and oil spills

Disaster Management: Delivers damage maps within **five hours** of events like floods or quakes

Agriculture & Infrastructure: Assists in food security, soil moisture analysis, and monitoring of roads, dams, and reservoirs

India-Specific Enhancements

While the L-band operates globally, ISRO's **S-band radar** will be used specifically over **Indian territory** for:

Detailed **biomass estimation** and **soil moisture mapping**

Enhanced **agricultural monitoring**

Ionospheric correction for precision radar imaging

These capabilities align with India's national priorities in:

- Rural development
- Climate resilience
- Natural resource management
- Early disaster warning

Satellite Design and Orbit

Orbit: Sun-synchronous polar orbit at **747 km altitude**

Key Structures:

12-metre mesh antenna for radar imaging

9-metre deployable boom to support SAR operations

Synthetic Aperture Radar (SAR):

Mimics a large antenna by combining radar signals collected over time

SweepSAR mode enables efficient electronic steering of radar beams for wide, continuous coverage without losing resolution

Data Access and Ground Operations

Open-Data Policy: All radar data will be **freely accessible** to the public, typically available within **hours of acquisition**

NASA: Will handle international data downlinks through its **Near Earth Network** (Alaska, Norway, Chile) – up to **3 TB/day**

ISRO: Will manage Indian data through its stations in **Shadnagar** and **Antarctica**

National Remote Sensing Centre (NRSC): Will process and disseminate NISAR data for domestic use in India

Division of Responsibilities: A Balanced Collaboration

ISRO Contributions	NASA Contributions
Spacecraft bus	L-band radar and radar electronics
S-band radar system	Radar reflector and deployable structure

Ka-band communication systems	Onboard data systems and avionics
GSLV Mk-II launch	Global data downlink and processing systems

Satellite was **assembled and tested in Bengaluru**, reflecting Indian manufacturing and engineering leadership in the project

Conclusion: A New Era in Earth Science and Cooperation

The NISAR satellite exemplifies a **technological milestone and diplomatic success**, combining cutting-edge radar science with shared global goals. From tracking glaciers and forest cover to aiding in disaster recovery and agricultural planning, NISAR is poised to **transform Earth observation** and empower both science and society across borders.

Foot and Mouth Disease (FMD)

Recent Incident

Lab reports have confirmed that **16 spotted deer (chitals)** at Pune's **Rajiv Gandhi Zoological Park** died due to **Foot and Mouth Disease (FMD)**.

Overview

Foot and Mouth Disease is a **highly contagious viral infection** affecting **cloven-hoofed animals** such as cattle, pigs, sheep, goats, camelids, and deer.

It does not affect horses, dogs, or cats.

Cause

Caused by an **aphthovirus** from the **Picornaviridae** family.

There are **seven known strains**: A, O, C, SAT1, SAT2, SAT3, and Asia1.

Immunity to one strain **does not guarantee** protection against others.

Transmission

Direct contact with infected animals

Indirect exposure to bodily fluids (e.g., saliva, milk, semen)

Mechanical carriers: humans, birds, vehicles, or tools

Airborne spread over land or water is also possible

Symptoms

Fever, excessive salivation

Blisters and ulcers on the tongue, lips, teats, and between hooves

Lameness, reluctance to eat or move

Decline in **milk production**, **weight loss**, and **growth delay**

High mortality rate among **young animals**, though rarely fatal in adults

Impact and Significance

Categorized as a **Transboundary Animal Disease (TAD)**

Disrupts **livestock production** and **international trade**

Affects **77%** of the global livestock population (especially in Africa, the Middle East, Asia, and parts of South America)

Not a threat to human health or food safety

Not related to Hand, Foot, and Mouth Disease seen in children

Prevention and Control

Vaccines available, but must match the specific strain

Recognized by the **World Organisation for Animal Health (WOAH)** as the first disease with official status

India's Hydrogen Train Coach: A Landmark in Green Railway Innovation

Successful Trial of Hydrogen-Powered Coach

Indian Railways has successfully conducted a trial run of its first hydrogen-powered coach at the Integral Coach Factory (ICF) in Chennai. This milestone moves the country closer to launching its first fully hydrogen-powered train and reflects India's broader push towards decarbonizing the transportation sector.

Environmental Commitment: The initiative aligns with India's goal to reduce greenhouse gas emissions and increase renewable energy usage.

Final Testing Phase: The project is currently undergoing final equipment testing before entering commercial service.

Global Context: Few nations have implemented hydrogen trains, and most such efforts remain at the trial stage.

Key Features of the Hydrogen Train Project

Launched by **Northern Railway in 2020-21**, the project centers on converting diesel-powered railcars to hydrogen fuel cell systems:

Coach Conversion: Two 1600 HP diesel power cars are being retrofitted with hydrogen fuel cells.

Train Composition: The modified train will have 10 coaches, capable of transporting over **2,600 passengers**.

Operational Route: The service will run between **Jind and Sonapat** in Haryana,

with two round trips daily covering **356 km**.

Project Leadership:

RDSO: Oversees design, testing, and technical validation.

Medha Servo Drives: Leads engineering execution at ICF, Chennai.

Safe and Sustainable Operation

Hydrogen's volatility necessitates stringent safety protocols, all of which have been integrated into the system:

Fuel Storage: Each power car holds **220 kg of hydrogen** stored at 350 bar in specially designed tanks.

Safety Features:

- Pressure relief valves
- Hydrogen leak and flame detection sensors
- Temperature monitoring
- Optimized ventilation systems

Simulation and Testing:

CFD studies simulate potential leak and fire scenarios.

Key components like traction and auxiliary converters have been rigorously tested.

Independent Safety Audit: German firm **TUV-SUD** has been enlisted to ensure compliance with international safety standards.

Hydrogen Fuelling Infrastructure at Jind

A dedicated hydrogen fuelling station is under construction in **Jind, Haryana**, forming the operational backbone of the project:

Storage Capacity: 3,000 kg of hydrogen, divided into:

- 2,320 kg at low pressure**
- 680 kg at high pressure**

Safety Oversight: Designed in compliance with **Petroleum and Explosives Safety Organisation (PESO)** regulations.

Support Infrastructure:

- Power lines
- Access roads
- Firefighting facilities

Hydrogen for Heritage: Expanding Green Rail Initiatives

The coach is part of Indian Railways' broader "**Hydrogen for Heritage**" program, which envisions deploying **35 hydrogen-powered**

trains on eco-sensitive and heritage routes, including hilly terrains.

Cost Estimates:

₹80 crore per train

₹70 crore per route for infrastructure development

Long-Term Vision: Although current running costs are high, they are expected to decline with scaling and technological advancements.

Environmental Benefit: Hydrogen fuel emits **zero carbon**, supporting India's climate and energy goals.

Beyond Rail: India's Wider Hydrogen Mobility Push

India's hydrogen efforts extend to other transport sectors:

In 2024, **Union Minister Hardeep Singh Puri** presented a hydrogen-powered bus—developed by Indian Oil—to the **Prime Minister of Bhutan**, reflecting India's expanding commitment to hydrogen-based clean mobility solutions.

Conclusion

The successful trial of India's first hydrogen-powered coach marks a significant step in building a **sustainable, zero-emission railway network**. With supportive infrastructure underway and plans to expand hydrogen transport to heritage routes and beyond, India is positioning itself as a serious player in the global green mobility landscape.

Heavy Water (D₂O)

Context

India has achieved a milestone in nuclear technology with **TEMA India Ltd** commissioning the country's **first private-sector test facility for depleted heavy water upgradation**, marking progress toward nuclear self-reliance.

What is Heavy Water?

Chemical Name: Deuterium Oxide (D₂O)

Composition: Similar to regular water (H₂O), but contains **Deuterium** (a heavier isotope of Hydrogen) instead of the regular hydrogen atom.

Properties: Heavier and denser than ordinary water due to the presence of deuterium.

Key Applications

1. Nuclear Industry

Moderator: Slows down neutrons in **Pressurized Heavy Water Reactors**

(PHWRs) to sustain nuclear fission reactions.

Coolant: Helps in transferring heat from the reactor core.

2. Scientific Research

Nuclear Magnetic Resonance (NMR)

Spectroscopy: Acts as a solvent due to its non-interfering properties.

Neutrino Detection: Used in specialized physics experiments to detect subatomic particles.

Flame Retardant Materials

Context

ICMR has informed the **National Green Tribunal (NGT)** that it will conduct a study to evaluate if chemicals used in flame retardants are **potentially carcinogenic**.

What Are Flame Retardants?

Function: Chemicals applied to materials (like textiles or plastics) to **prevent or delay fire**.

Environmental Concern: Persistent and resistant to degradation.

Common Chemicals Used

TCIPP: Tris (1-chloro-isopropyl) phosphate

TDCIPP: Tris (1,3-dichloro-2-propyl) phosphate

TCEP: Tris (2-chloroethyl) phosphate

India's First Private Test Facility for Depleted Heavy Water Upgradation

Background

India's first **privately built testing facility** for upgrading **depleted heavy water** has been launched by **TEMA India Ltd**, in collaboration with:

BARC (Bhabha Atomic Research Centre)

NPCIL (Nuclear Power Corporation of India Ltd)

Key Highlights

Purpose: Enables **testing and upgradation** of depleted heavy water, critical for **Pressurised Heavy Water Reactors (PHWRs)**

Location: Mumbai, Maharashtra

First-of-its-kind in India's **private nuclear sector**

Facility Features

Component Testing: Focus on validating:

Distillation columns

Activated phosphor bronze modules used in PHWRs

BARC Involvement: Developed with tech transfer and guidance from **BARC's Chemical Engineering Group**

NPCIL Projects: Will support nuclear projects such as:

RAPP-8

GHAVP Units 1-4

KAIGA Units 5-6

Strategic Importance

Energy Security: Strengthens India's capacity for domestic nuclear energy development

Public-Private Collaboration: A milestone for partnerships in the **nuclear sector**

Technological Self-Reliance: Reduces reliance on foreign testing infrastructure

Export Potential: Establishes capabilities that can be extended to **global nuclear markets**

Deep-Brain Stimulation (DBS)

Overview

A neuro-medical procedure where **electrodes are implanted** in specific brain regions.

Over **1.6 lakh people globally** have undergone DBS treatment.

How It Works

Electrodes connect to a **pulse generator** implanted under the skin near the chest.

Delivers **mild electrical impulses** to modulate abnormal brain signals or chemical imbalances.

Key Applications

Movement disorders:

Parkinson's disease

Essential tremor

Dystonia

Psychiatric conditions:

Approved for **Obsessive-Compulsive Disorder (OCD)**

Under research for **severe depression and epilepsy**

Mechanism

Modifies **neural communication** in brain circuits

Disrupts faulty or irregular signals that cause symptoms like tremors, rigidity, or compulsive behaviours.

Benefits

Non-destructive: Unlike surgery, DBS doesn't destroy brain tissue and is **reversible**

Targets dysfunction at both **cellular** and **network** levels

Can be **adjusted or turned off** without long-term effects

NASA's TRACERS Mission: Studying Magnetic Reconnection

Mission Overview

NASA has launched the **TRACERS** mission—a pair of satellites designed to study how **solar activity** affects **Earth's magnetic field** and **upper atmosphere**.

About TRACERS

Full name: **Tandem Reconnection and Cusp Electrodynamics Reconnaissance Satellites**.

The satellites operate in **low Earth orbit**, especially through **polar cusps**, which are funnel-shaped regions where Earth's magnetic shield is weakest.

Objectives

Investigate the process of **magnetic reconnection**—where magnetic field lines break and reconnect, releasing large amounts of energy.

Study the effect of **solar wind** and **charged particles** on Earth's **magnetosphere**.

Importance

Magnetic reconnection causes natural phenomena like **auroras**, but can also **disrupt satellites, GPS, and power systems**.

TRACERS aims to improve **space weather forecasting**, helping to protect essential technologies on Earth.

Expected Outcomes

In its first year, the mission is expected to observe over **3,000 magnetic reconnection events**.

It will provide critical insights into **solar-terrestrial interactions** and contribute to the **global understanding of space weather**.

Human-Made Dams and Earth's Rotational Shift

Scientific Context

A recent study has revealed that **large-scale dam construction** since **1835** has caused a measurable shift—**over one meter**—in Earth's **rotational axis**, a phenomenon known as **True Polar Wander (TPW)**.

Understanding True Polar Wander (TPW)

Definition: TPW refers to the **reorientation of Earth's solid crust and mantle** around its liquid outer core to maintain rotational

stability in response to **mass redistribution**.

Natural Drivers:

Glacial and ice sheet melting
Tectonic plate movements
Ocean mass shifts

Role of Human-Made Dams in TPW

Water

Large **reservoirs trap massive volumes of water**, shifting mass from the oceans to inland areas and thereby disturbing the Earth's rotational equilibrium.

Variable

The study found that this **shift is irregular**, varying with the **size and geographical placement** of individual dams over time.

Impact:

4. Implications of Pole Shifts

Satellite Navigation Disruptions:

Changes in Earth's rotation can affect **satellite positioning systems** and **space-based observations**.

Lengthening of Days:

As a result of mass redistribution, **Earth's rotation is slowing**, causing days to become **incrementally longer**, with the rate of change accelerating.

Conclusion

India's Third VNR at the HLPF underscores its growing leadership in implementing the SDGs through **inclusive policy design, digital innovation, and clean energy adoption**. Simultaneously, global scientific insights such as the study on **dams and polar shifts** remind us of the **profound planetary impacts of human activity**, highlighting the urgent need for **sustainable infrastructure planning and environmental governance**.

Geosynchronous Satellite Launch Vehicle (GSLV)

Context

In preparation for the upcoming launch of the NASA-ISRO joint NISAR satellite, ISRO announced that the satellite had been successfully integrated with the **Geosynchronous Satellite Launch Vehicle (GSLV)** and that all systems of the rocket had undergone comprehensive checks.

Overview of GSLV

The GSLV is a space launch vehicle developed and operated by the **Indian Space Research Organization (ISRO)**, designed to deploy satellites and other payloads into

Geosynchronous Transfer Orbits (GTOs). Compared to the Polar Satellite Launch Vehicle (PSLV), the GSLV can carry significantly heavier payloads.

Dimensions & Structure:

Height: 49.13 meters (ISRO's tallest launch vehicle)

Lift-off mass: 420 tonnes

Three stages: solid first stage with four liquid strap-on boosters, liquid second stage, and a cryogenic third stage.

Stage Details:

First Stage: S139 solid booster with 138 tonnes of propellant, supported by four liquid strap-on motors carrying 40 tonnes of propellant.

Second Stage: Liquid engine with 40 tonnes of liquid propellant.

Third Stage: Indigenous Cryogenic Upper Stage (CUS) using 15 tonnes of cryogenic propellant.

The GSLV enhances PSLV's capability by incorporating liquid strap-on boosters and a cryogenic upper stage. While the solid and liquid stages are adapted from the PSLV, the cryogenic upper stage was initially supplied by Russia until ISRO developed its own indigenous version.

Variants of GSLV

GSLV Mk I:

First-generation variant with a payload capacity of 2–2.5 tonnes to GTO.

Utilized Russian cryogenic upper stage due to early challenges in indigenous cryogenic technology.

Conducted around five launches (2001–2010), including suborbital tests, with the last flight in 2010.

GSLV Mk II:

Improved model with an indigenously developed cryogenic upper stage.

Payload capacity around 2.5 tonnes to GTO.

First successful launch in 2014.

GSLV Mk III (LVM-3):

Most powerful and advanced variant, currently operational.

Can carry payloads up to 4 tonnes to GTO.

Performance and Notable Missions

The GSLV has launched numerous important satellites, including communication satellites such as INSAT and GSAT, navigation satellites from the NavIC series, and Earth observation satellites like IDRSS. Some prominent missions are:

The **South Asia Satellite** (2017)

Military communication satellite (2018)

Chandrayaan-2 lunar mission (2019)

Chronic Traumatic Encephalopathy (CTE)

A 27-year-old suspect involved in a recent deadly shooting at the NFL headquarters in New York City reportedly left a multi-page suicide note attributing his actions, in part, to chronic traumatic encephalopathy (CTE).

About Chronic Traumatic Encephalopathy:

CTE is a degenerative brain disorder caused by repeated head injuries. It leads to the progressive death of nerve cells in the brain, a process called degeneration. The condition is most commonly observed in athletes participating in contact sports such as American football, boxing, and hockey, as well as military veterans exposed to blast injuries. CTE typically manifests years after repeated brain trauma and worsens over time.

Symptoms:

Early symptoms may be subtle or unnoticed, including depression, suicidal ideation, aggression, mood swings, and changes in personality.

As the disease progresses, individuals may experience confusion, memory loss, and difficulties with planning and decision-making.

In advanced stages, patients may develop problems with movement.

Treatment:

Currently, there is no cure for CTE. However, medications and other supportive therapies can help manage symptoms.

Pralay Missile

The Defence Research & Development Organisation (DRDO) recently conducted two successful consecutive flight tests of the Pralay missile from Dr APJ Abdul Kalam Island, located off the coast of Odisha.

About Pralay Missile:

Pralay is an indigenously developed quasi-ballistic missile that uses advanced guidance and navigation systems to achieve high precision.

Key Features:

It is a solid propellant quasi-ballistic missile capable of carrying various types of warheads.

The missile has a range of 150 to 500 kilometers and can be launched from mobile launchers.

Its payload capacity ranges between 500 to 1,000 kilograms, with the ability to carry conventional warheads.

The missile's guidance system achieves a Circular Error Probable (CEP) of less than 10 meters, ensuring high accuracy.

It can reach terminal speeds up to Mach 6.1 and is designed to engage strategic targets such as radar installations, command centers, and airstrips.

Pralay possesses the ability to alter its flight path midair after covering a certain distance.

Development and Partnerships:

The missile was developed primarily by the Research Centre Imarat in collaboration with other DRDO laboratories. Key industry partners include Bharat Dynamics Limited, Bharat Electronics Limited, and various other industries and Micro, Small and Medium Enterprises (MSMEs).

N-Nitrosodimethylamine (NDMA)

Recent Regulatory Action:

The Drug Controller General of India (DCGI) has directed drug controllers across all states and Union Territories to instruct manufacturers to monitor the presence of N-Nitrosodimethylamine (NDMA), a potentially carcinogenic chemical, in the antacid drug Ranitidine.

About NDMA:

NDMA is a volatile organic chemical commonly found in the environment due to its easy formation from frequently occurring precursor substances. It is classified as a probable human carcinogen based on animal studies.

Formation:

NDMA forms when a secondary or tertiary amine reacts with a nitrite ion under acidic conditions.

Characteristics of NDMA:

- **Appearance:** Yellow, odorless liquid.
- **Historical Use:** Previously utilized in the production of rocket fuel.
- **Production Byproduct:** It emerges as a byproduct in various manufacturing processes and water chlorination.

- **Stability:** Breaks down when exposed to sunlight.

Applications:

Historically, NDMA was commercially used to produce rocket fuel, antioxidants, copolymer softeners, and lubricant additives.

Exposure to NDMA:

People are generally exposed to small amounts of NDMA through the environment, food, and water. Certain chemicals in food and water, such as nitrosamines and alkylamines, can convert into NDMA within the acidic environment of the stomach. NDMA is also generated during the processing of foods and drinks. Common dietary sources include cured meats (especially bacon), beer, fish, cheese, and some vegetables. Additionally, exposure can occur through contaminated medications.

Discovery of a New Human Blood Group — CRIB

Context:

A new human blood group antigen named CRIB has been discovered at the Rotary Bangalore TTK Blood Centre. This is the first global identification of this antigen, officially recognised by the International Blood Group Reference Laboratory (IBGRL), UK.

About the CRIB Blood Group:

What is CRIB?

CRIB stands for Cromer India Bengaluru. It is a newly identified antigen within the Cromer (CR) blood group system that had not been observed in any human sample worldwide until now.

Discovery:

The antigen was found in a 38-year-old South Indian woman undergoing cardiac surgery in Kolar, Karnataka.

Her blood showed panreactivity, meaning it reacted with all tested blood samples and was incompatible even with O+ blood.

No compatible donor was found among 20 family members.

The sample was sent to IBGRL in the UK, where after 10 months of molecular testing, the new antigen was confirmed and officially named CRIB.

Scientific Importance:

CRIB represents a new addition to global transfusion medicine.

It is named following the standard nomenclature of the International Society of Blood Transfusion (ISBT).

This discovery adds to India's significant contributions in rare blood immunogenetics.

It underscores the importance of maintaining rare donor registries

and promoting international collaboration in blood typing.

About the Cromer Blood Group System: The Cromer system is a rare blood group classification comprising antigens located on the Decay-Accelerating Factor (DAF) protein on red blood cells. These antigens play a critical role in immune responses during blood transfusions.

HISTORY, HERITAGE AND CULTURE

Santhal Rebellion (Hul Diwas) - 170th Anniversary

- The 170th anniversary of the Santhal Rebellion is commemorated as **Hul (Revolution) Diwas**.
- **About the Rebellion (1855-56):**
 - One of the earliest tribal uprisings against British colonial rule.
 - Considered an inspiration for the 1857 Indian Rebellion.
- **Region:**
 - Took place in the Damin-i-Koh area of the Rajmahal Hills, Jharkhand.
- **Leadership:**
 - Led primarily by four brothers: Sidhu, Kanhu, Chand-Bhairav, and Phulo & Jhano Murmu.
 - The rebellion was against British rule and exploitation by landlords (zamindars) and police.
- **Cause:**
 - Triggered by the Permanent Settlement Act of 1793, which displaced the Santhals from Birbhum and Manbhum (present-day Bengal).
 - Resulted in severe exploitation by zamindars, police, and British authorities.

Mahabodhi Temple - Supreme Court Update

- The Supreme Court declined to hear a petition challenging the **Bodh Gaya Temple Act**, which regulates management of the Mahabodhi Temple Complex in Bihar.

Historical Background:

- Original temple constructed by Emperor Ashoka in the 3rd century BCE.
- Present structure dates back to the 5th-6th century CE, during the late Gupta period.

Architectural Features:

- Has a curvilinear **shikhara** topped with an **amalaka** and **kalasha**.
- Design is unique — neither purely Dravidian nor Nagara style.

- Temple is narrow like Nagara temples but rises without curving like Dravidian temples.

Key Components:

- Main temple building.
- **Vajrasana** (Diamond Throne) — site of Buddha's enlightenment.
- Sacred Bodhi Tree.
- Surrounded by votive stupas and three protective enclosures (inner, middle, outer).

Global Recognition:

- Designated as a UNESCO World Heritage Site.

Girmitiyas

Recent Context

- The **Prime Minister of India** recently acknowledged the transformation of **Girmitiya descendants**, stating they are no longer seen through the lens of hardship, but rather recognized for their **success, service, and strong values**.

Who Were the Girmitiyas?

- The term '**Girmitiyas**' refers to **Indian indentured labourers** who were sent abroad under contractual agreements during the **mid to late 19th century**.
- These individuals were transported primarily to work in **British colonial plantations**, and many later **settled permanently** in those foreign lands.

Etymology

- The word '**Girmitiya**' originates from the Indianized pronunciation of '**agreement**', rendered as '**gimit**'.
- Labourers who signed indenture contracts—agreements with colonial authorities—were referred to as **Girmitiyas**.

Conditions of Indentureship

- Although these agreements promised **better wages** and **employment opportunities**, the reality was often harsh and exploitative.
- Labourers:
 - **Traveled long distances** in overcrowded and unsafe ships, many of which had previously transported enslaved people.
 - Lived in **barrack-like housing** under **poor working conditions**.

- Were **paid meagre wages** and had **limited legal protection** or mechanisms for **grievance redressal**.

Blackbirding Practices

- While indentured labour was not **legally classified as slavery**, it bore many similarities to it.
- Many Girmityas were victims of "**blackbirding**"—a coercive or deceptive system of recruiting people for forced labour, often involving **fraudulent promises** or **misinformation**.

Legacy and Impact

- Despite enduring exploitative circumstances, the **descendants of Girmityas** have significantly contributed to the societies in which they settled.
- Many have risen to **prominent positions** in government, **excelled in business**, and made impactful contributions to the **arts and culture** of their respective countries.

Countries with substantial Girmitya-descendant populations include **Fiji, Mauritius, Suriname, Trinidad and Tobago**, and **South Africa**.

Alluri Sitarama Raju

Context

- On the **128th birth anniversary** of Alluri Sitarama Raju, the **Union Defence Minister** paid tribute to his role in India's freedom struggle and reaffirmed the government's commitment to eliminate **Maoist insurgency by August 2026**.

Who Was He?

- **Alluri Sitarama Raju** was a **freedom fighter and revolutionary** who led a **tribal uprising** against British colonial rule in the Eastern Ghats of **Andhra Pradesh**.
- Though not a tribal himself, he is **venerated by tribal communities** for defending their rights and way of life.

Early Life and Influences

- **Born:** 4 July 1897 in **Mogallu village**, near **Bhimavaram**, present-day Andhra Pradesh.
- **Education:** Received schooling locally and later in Visakhapatnam.
- At **age 18**, renounced worldly life to become a **sanyasi**, travelling extensively

through forests and hills, forging strong ties with tribal groups.

- Initially inspired by **Mahatma Gandhi's Non-Cooperation Movement**, he advocated nonviolent resistance and urged tribals to **boycott British institutions**. When this failed, he turned to **armed struggle**.

Major Contribution: The Rampa Rebellion (1922–1924)

- **Cause:** The **Madras Forest Act, 1882** severely restricted tribal agricultural practices such as **Podu cultivation**, displacing thousands from their ancestral lands.
- Tribals were subjected to **forced, unpaid labour** (begar) for British infrastructure projects.
- **Leadership:** Raju mobilized tribal youth and led **guerrilla attacks** on British police stations, seizing arms and resisting colonial authority.
- His efforts made him a formidable figure, prompting the British to place a **₹10,000 bounty** on his head.

Martyrdom

- In **May 1924**, he was **captured through deceit**, tied to a tree, and **executed by the British** on **7 May 1924**.

Legacy

- Revered as "**Manyam Veerudu**" (Hero of the Forest).
- The **Government of Andhra Pradesh** commemorates **4 July** each year as a **state festival** in his honour.
- Symbol of **tribal resistance, justice, and sacrifice** during the independence movement.

Chautal Context

- During his visit to **Port of Spain, Trinidad & Tobago**, the **Prime Minister of India** shared a video of a **Bhojpuri Chautal performance**, underscoring the **cultural connection** between India and the global Indian diaspora.

What is Chautal?

- **Chautal** (also spelled **Chowtal** or **Chartal**) is a **traditional 12-beat rhythmic cycle** (tāl) in Indian classical music.
- It is **primarily used in the dhrupad tradition**, the oldest surviving form of classical music in India.
- The name 'Chautal' refers to "**four claps**," describing its **vibhag** (section) structure.

Key Characteristics

- Comprises **12 matras (beats)** in total.
- Has **two interpretative structures**:
 1. **Four vibhags**: 4 + 4 + 2 + 2 beats (all marked by claps).
 2. **Six vibhags**: 2 beats each, like **Ektal**, often with **clap-wave alternation**.
- Typically played at **medium tempo**; not used in very slow or fast compositions.
- Emphasizes a **powerful and resonant rhythmic style**, particularly when played on the **pakhawaj**.
- Does **not always follow a fixed theka**; instead, it may follow a more flexible pattern known as "**thapi**."

Instruments

- **Pakhawaj** is the principal percussion instrument for Chautal performances.
- Unlike tabla, the pakhawaj allows greater **freedom and improvisation**, adding depth and intensity to the rhythm.

Cultural and Musical Significance

- Deeply embedded in the **dhrupad tradition**, Chautal reflects the **spirituality, strength, and discipline** of Indian classical rhythm.
- Its continued use in diaspora performances (e.g., in the Caribbean) showcases the **resilience of Indian cultural traditions** abroad.

Penico: Peru's Newly Unearthed Ancient City Context:

Archaeologists have uncovered a 3,500-year-old ancient city named **Penico** in northern Peru. It likely functioned as a key trade hub connecting the Pacific coast, Andean highlands, and Amazonian cultures following the decline of the Caral civilization.

About Penico:

- **Location**: Barranca Province, northern Peru, approximately 200 km north of Lima.
- **Altitude**: Situated on a hillside terrace around 600 meters above sea level.
- **Time Period**: Established between 1800 and 1500 BCE, contemporary with early civilizations in Egypt, Sumeria, and India.

Key Features:

- **Urban Layout**: Central circular structure surrounded by 18 stone and mud buildings.
- **Structures**: Ceremonial temples, residential complexes, and a central plaza decorated with sculpted reliefs.
- **Artifacts**: Clay figurines (humans and animals), conch shell trumpets (pututus), beaded necklaces, and various ceremonial objects.

Significance:

- Served as a **strategic trade center** linking coastal, highland, and Amazonian societies.
- Represents a **cultural continuation** of the Caral civilization, which declined due to climatic changes.
- Provides valuable insights into urban planning, trade, and ritual life in pre-Inca Peru.
- Developed independently during the same epoch as Bronze Age civilizations but in geographic isolation.

Relation to Caral Civilization:

- Caral (circa 3000 BCE) is the oldest known civilization in the Americas, noted for monumental pyramids, advanced irrigation, and urban design.

Penico sheds light on the resilience and cultural shifts following Caral's decline.

Dr. Syama Prasad Mookerjee (1901–1953)

Tribute:

The Prime Minister paid homage to Dr. Mookerjee on his 125th birth anniversary.

About Dr. Syama Prasad Mookerjee:

- Born in Calcutta.
- Youngest Vice-Chancellor of the University of Calcutta.

Key Contributions:

- Acting President of the All-India Hindu Mahasabha (1940).
- Member of the Constituent Assembly.

- Minister for Industry and Supply in the interim government under Jawaharlal Nehru.
 - Instrumental in establishing industrial institutions like the Chittaranjan Locomotive Factory.
- Known as "The Lion of Parliament."
- Founder of the Bharatiya Jana Sangh (1951).

Literary Works:

- Leaves from a Diary* (Autobiography), *A Phase of the Indian Struggle*, among others.

Values:

- Leadership, empathy, social harmony, nationalism, and cultural distinctiveness.

Sheesh Mahal: Restoration and Historical Significance

Overview:

Sheesh Mahal, a Mughal-era palace situated within Shalimar Bagh, North Delhi, has recently been restored and inaugurated by the Union Minister for Culture and Tourism.

Historical Background:

- Built in 1653 by Izz-un-Nisha Begum, the wife of Emperor Shah Jahan.
- Constructed as a tribute to, and replica of, Kashmir's Shalimar Bagh.
- Designed as a royal garden retreat, offering a peaceful escape from the busy city of Shahjahanabad (Old Delhi).

Architectural Features:

- Constructed using bricks and red sandstone.
- Features entry gates on both east and west sides.
- The palace includes an archway flanked by a three-arched corridor (dalan) on each side.
- Contains two well-preserved chambers adorned with intricate mirror work and paintings inspired by Kangra and Rajasthani styles.
- The artwork depicts poetic scenes related to renowned poets Keshav, Surdas, and Bihari.

Historical Importance:

- Served as the site for Aurangzeb's imperial coronation in 1658.
- Declared a monument of national importance in 1983 and has since been

maintained by the Archaeological Survey of India (ASI).

National monuments commemorate important aspects of a country's heritage, including its founding, independence, significant wars, or notable historical figures.

Tiruchendur Subramanya Swamy Temple

Recent Event: After a hiatus of 16 years, thousands of devotees recently gathered to witness the grand consecration ceremony of the Subramanya Swamy Temple in Tiruchendur.

About the Temple:

- The temple is dedicated to Lord Murugan, the son of Lord Shiva and Goddess Parvati, a revered deity in Hinduism.
- Situated in Tiruchendur, within the Thoothukudi district of Tamil Nadu, it holds a significant place among the six sacred abodes (Arupadai Veedu) of Lord Murugan.
- Uniquely, it is the only one among the six that is located along the seashore; the other five are positioned atop hills or mountains.
- Overlooking the Bay of Bengal, the temple is continuously kissed by the waves of the Gulf of Mannar, offering a scenic and spiritual setting.

Architectural Significance:

- With a history spanning over 2,000 years, the temple stands as a magnificent example of Tamil architecture.
- Constructed primarily from red sandstone, it provides a breathtaking panoramic view of the sea.
- The temple's Raja Gopuram (main tower) is situated on the western side, which is unusual as most temples have their Raja Gopuram on the eastern side. This positioning is due to the close proximity of the sea on the eastern boundary.
- The Raja Gopuram is a nine-tiered structure rising to a height of 138 feet.
- Atop the Gopuram, nine Kalasams (sacred copper pots) symbolize the nine stories of the tower.
- The sanctum sanctorum houses Lord Subramanyam's idol in a standing posture, serving as the focal point for worship.

Additional Features:

- The temple complex includes expansive mandapams (large halls) and long streets that facilitate pilgrim movement.

It showcases intricately carved pillars and hosts several smaller shrines within its precincts, adding to its architectural grandeur and spiritual ambiance.

Vice President Calls for Preserving India's Traditional Knowledge Systems (IKS)

Context

During the inaugural session of the Annual Conference on Indian Knowledge Systems (IKS), the Vice President emphasized that India's global ascent must be matched by a revival of its **intellectual, cultural, and philosophical depth**. He stressed that the time has come to reclaim and reintegrate traditional Indian knowledge into mainstream discourse and policy.

Understanding the Indian Knowledge System (IKS)

- Represents a **rich, multi-disciplinary intellectual tradition** dating back thousands of years, encompassing diverse domains such as **arts, music, architecture, mathematics, astronomy, medicine, agriculture, and philosophy**.
- This vast body of knowledge is preserved in classical languages like **Sanskrit, Tamil, Prakrit, and Pali**, with texts and treatises forming the foundation of disciplines still relevant today.
- Key contributions include **Ayurveda, Yoga**, the astronomical treatise **Surya Siddhanta**, dramatic theory in **Natya Shastra**, and the **concept of zero** in mathematics.
- India was home to **ancient global centres of learning** like **Takshashila, Nalanda, Vikramashila, Vallabhi, and Odantapuri**, which attracted scholars from **Korea, China, Tibet, and Persia**.

Why Preserving IKS is Crucial

- **Reclaiming Intellectual Sovereignty**
 - Essential to decolonize the Indian mindset and challenge the dominance of **Western-centric knowledge systems** that historically dismissed indigenous knowledge as unscientific.
- **Combating Cultural Marginalization**
 - Traditional Indian knowledge often remains **excluded from**

mainstream academia, partly due to colonial legacies and the prevailing **Eurocentric frameworks**.

- For instance, the patent dispute over the medicinal properties of **haldi (turmeric)** in the US reflects the dangers of ignoring and failing to protect indigenous knowledge.

- **Reviving Scholarly Interest**

- Many young scholars are reluctant to study IKS due to its **perceived irrelevance or lack of institutional support**, leading to underrepresentation in research and innovation.

- **Soft Power and Cultural Diplomacy**

- IKS offers tools to enhance India's **cultural influence on the global stage** through events like **International Yoga Day**, the **revival of Nalanda University**, promotion of **cultural tourism**, and showcasing **UNESCO World Heritage Sites** like **Rani ki Vav** with its sophisticated architecture.

Efforts to Preserve and Promote IKS

- **Traditional Knowledge Digital Library (TKDL)**

- A digital repository developed by **CSIR and Ministry of AYUSH** in 2001 to document and protect traditional knowledge against **biopiracy and wrongful patenting**.

- **Indian Knowledge Systems (IKS) Division**

- An initiative under the **Ministry of Education** aimed at **integrating traditional knowledge into the national education framework**, fostering cross-disciplinary learning and innovation.

- **Project 'Mausam'**

- A cultural diplomacy project that seeks to **re-establish maritime ties and cultural exchange routes** across Indian Ocean

countries, based on ancient trade and cultural connections.

- **Legal Safeguards**
 - Laws like the **Biological Diversity Act (2002)** and the **Indian Patents Act (1970)** provide **legal frameworks to protect traditional knowledge** from unauthorized use and commercial exploitation.

Resumption of the Kailash-Mansarovar Yatra in 2025

- After a five-year suspension caused by the COVID-19 pandemic and diplomatic tensions between India and China, the Kailash-Mansarovar Yatra officially resumed in 2025.
- The Ministry of External Affairs selected 750 pilgrims for the pilgrimage this year.
- Of these, five groups of 50 pilgrims each are travelling through Uttarakhand's Lipulekh Pass, while ten similar groups are using Sikkim's Nathu La Pass for the journey.

Mount Kailash and the Sacred Lakes: Religious and Geographical Relevance

- Mount Kailash, standing at 6,638 metres in Tibet's Ngari Prefecture near the India-Nepal-China border, holds deep spiritual meaning across multiple faiths — Hinduism, Buddhism, Jainism, and the Bon tradition of Tibet.
- In Hindu belief, the mountain is revered as the celestial abode of Lord Shiva.
- Jains consider it the site where their first Tirthankara, Rishabhanatha, attained enlightenment.
- Buddhists revere it as the cosmic axis or the centre of the universe, while Bon traditions regard it as the dwelling of the sky deity Sipaimen.
- Situated south of Kailash are two significant lakes: the freshwater Lake Manasarovar and the saline Lake Rakshastal, both central to these religious narratives.
- Geographically, Mount Kailash is also the source of four prominent rivers: the Brahmaputra, Sutlej, Indus, and Karnali, emphasizing its ecological and

hydrological importance alongside its spiritual significance.

Historical Emergence of Kailash-Mansarovar as a Pilgrimage Site

- Despite its longstanding reverence in sacred texts, Kailash-Mansarovar did not become a common pilgrimage destination for most Indians until the early 20th century.
- Early Hindu and Buddhist scriptures portrayed Kailash as a mystical realm accessible only to spiritually advanced seekers.
- The turning point came in 1904, following Tibet's partial opening to British colonial access.
- In 1905, Charles Sherring, the then-district collector of Almora, undertook the pilgrimage, advocated for route enhancements, and actively promoted the journey.
- Sherring's initiatives, particularly his promotion of the Lipulekh route, led to increased awareness and pilgrim interest among Hindus, linking spiritual motivation with regional economic benefits.
- By the 1930s, an estimated 730 Indian pilgrims undertook the yatra each year.
- The route was closed after the People's Republic of China annexed Tibet in 1950 but reopened in 1981, allowing Indian pilgrims to resume the journey via the Lipulekh Pass.

The Yatra Experience: Past and Present

- The Kailash-Mansarovar pilgrimage traditionally includes two distinct circuits:
 - A 90-kilometre circumambulation of Lake Manasarovar, typically completed in three to five days.
 - A more arduous 52-kilometre circumambulation (kora) around Mount Kailash itself, usually completed in three days.
- During the 1990s, pilgrims would begin at the Tseti camp, proceed around Manasarovar through locations such as Huore and Seralung Monastery, and then undertake the Kailash circuit from Tarchen, passing key sites including

- Dirapuk and the high-altitude Dolma La pass.
- Over time, the trek on the Indian side has become less physically demanding. While in 2019, pilgrims had to walk about 27 kilometres, the 2025 route now requires only 1 kilometre of trekking due to road development.
- The Nathu La route, which was inaugurated in 2015, offers an even more accessible alternative. Pilgrims travel the entire 1,500-kilometre distance from Nathu La to Lake Manasarovar entirely by motor vehicle, using buses and cars.
- These infrastructural changes signify how the pilgrimage has evolved from a challenging spiritual journey into a more physically accessible experience, expanding participation across age groups and physical capabilities.

Maratha Military Landscapes of India: UNESCO World Heritage Inscription

Overview

- The 'Maratha Military Landscapes of India' were recently inscribed as India's 44th UNESCO World Heritage Site.
- This collection comprises a network of twelve forts built between the 17th and 19th centuries, showcasing the military acumen and architectural innovation of the Maratha Empire.

Geographical Spread

- The forts are located across Maharashtra and Tamil Nadu.
- Notable forts include Salher, Shivneri, Lohgad, Khanderi, Raigad, Rajgad, Pratapgad, Suvarnadurg, Panhala, Vijaydurg, Sindhudurg (all in Maharashtra), and Gingee Fort in Tamil Nadu.

Protection and Administration

- Several forts (Shivneri, Lohgad, Raigad, Suvarnadurg, Panhala, Vijaydurg, Sindhudurg, and Gingee) are protected by the Archaeological Survey of India.
- Others like Salher, Rajgad, Khanderi, and Pratapgad fall under the Directorate of Archaeology and Museums, Government of Maharashtra.

Classification by Terrain

- Hill forts: Salher, Shivneri, Lohgad, Raigad, Rajgad, Gingee.
- Hill-forest fort: Pratapgad (surrounded by dense forest).
- Hill-plateau fort: Panhala (located on a plateaued hill).
- Coastal fort: Vijaydurg (along the shoreline).

Island forts: Khanderi, Suvarnadurg, Sindhudurg (surrounded by sea).

Behdeinkhlam Festival

Occasion:

The Behdeinkhlam festival, a significant cultural event, was celebrated in Meghalaya.

About Behdeinkhlam Festival:

- Meaning:** The name translates to "driving away the plague," symbolizing spiritual purification and community strength.
- Importance:** It is the most important dance and cultural festival of the Pnar (Jaintia) community, observed annually in July following the sowing season.
- Rituals:** Young men perform a symbolic ritual by striking the roofs of houses with bamboo poles to drive away evil spirits, disease, and plague.

Traditional Games: Include *Dat-lawakor* (a football-like game using a wooden ball) and *Iatan-Bhang* (a tug-of-war competition).

K. Kamaraj – Freedom Fighter and Statesman Occasion

Nation commemorated the birth anniversary of **Kumaraswami Kamaraj on July 15.**

Biography

- Born:** 1903 in **Virudhunagar, Tamil Nadu**
- Caste Background:** Belonged to the **Nadar community**, historically disadvantaged.
- Chief Minister:** Took charge of **Madras Province in 1954**

Role in India's Freedom Movement

- Member of the **Indian National Congress**
- Inspired by the **Jallianwala Bagh massacre**
- Participated in:
 - Salt Satyagraha**
 - Nagpur Flag Satyagraha**
 - Sword Satyagraha**
 - Neil Statue Satyagraha**
- Imprisoned during the **Quit India Movement** in 1942 for **three years**

- Elected to the **Constituent Assembly** from Madras

Kamaraj Plan (1963)

- Proposed a major reform strategy for the **Congress Party** post the **1962 Indo-China War**
- Aimed at rebuilding the party by encouraging senior leaders to resign from posts and work at the grassroots

Gangaikonda Cholapuram

Context

India is celebrating the **1000th anniversary** of **Rajendra Chola I's northern expedition**, which led to the founding of **Gangaikonda Cholapuram**, a monumental Chola capital and a **UNESCO World Heritage Site**.

About the Capital

- Served as the **imperial capital of the Chola Empire** from **1025 CE to 1279 CE**.
- Located in **Ariyalur district, Tamil Nadu**.

Founded By

- **Rajendra Chola I**, after his victorious expedition to the **Gangetic plains**.
- He assumed the title '**Gangaikonda Cholan**' and brought **Ganga water** to fill a tank in the city, symbolising **southern dominance over the north**.

Architectural Highlights

- **Gangaikonda Cholisvaram Temple** (dedicated to **Lord Shiva**) mirrors the grandeur of the **Brihadisvara Temple** in Thanjavur.
- Features include **majestic vimanas**, **intricate carvings**, and a unique **jalasthambam** (liquid victory pillar).
- City once had **fortified palaces**, **planned roads**, and **multiple royal buildings**.

Epigraphic Records

- Copper plates like **Tiruvalangadu** and **Karanthai**, and Tamil literary works such as **Kalingattuparani** and **Muvar Ula**, praise the city's splendour.
- Inscriptions from **Vira Rajendra** describe the palace as **Chola-Keralan Thirumaaligai**, indicating political outreach and power.

Cultural and Political Role

- Acted as a **strategic hub** for **politics, culture, and trade** for over **two centuries**.

- Stretched Chola influence from the **Tungabhadra River in the north** to **Sri Lanka in the south**.

Part of the **UNESCO 'Great Living Chola Temples'**, alongside Thanjavur and Darasuram.

Marungur Excavation, Tamil Nadu

Context

The **Tamil Nadu State Department of Archaeology (TNSDA)** has completed an extensive excavation at **Marungur** in **Cuddalore district**, revealing a **habitation-cum-burial site** spanning from the **Iron Age to the Early Historic Period**.

About the Marungur Excavation

- **Nature of the Project:** A multidisciplinary archaeological effort led by TNSDA to explore ancient human settlement and burial practices.
- **Location:** Situated in **Panruti taluk, Cuddalore district, Tamil Nadu** — between the **Thenpennai** and **Vada Vellar** rivers, part of the historical **Naduvil Mandalam** region.

Key Discoveries

- **Habitation and Burial Site:** Unique dual presence of both components in one site — a rare occurrence in Tamil Nadu.
- **Artifacts Uncovered:**
 - A total of **95 artifacts**, including:
 - **Tamil-Brahmi potsherds**
 - **Terracotta ware**
 - **Microlithic tools**
 - **Beads**
 - **Bone implements**
 - **Conch shells**
 - **Iron tools**
 - **Antimony rods**
 - **Coins from the Chola period**
- **Burial System:**
 - **Megalithic urn burials** encircled by **concentric laterite stone rings**
 - Burial items included **grave goods, iron swords, and jasper beads**
- **Scientific Techniques Used:**
 - **UAV-based mapping**
 - **LiDAR**
 - **AMS Carbon Dating**
 - **Phytolith analysis** for botanical insights

- **Excavation Depth:** Stratified trenching revealed human activity layers up to **6 meters**, showing continuous occupation.

Significance

- **Historical Continuity:** Helps trace the transition from **Iron Age to Early Historic era** in **Naduvil Nadu**.
- **Epigraphic Importance:** Discovery of **Tamil-Brahmi inscriptions on burial pots**—among the **earliest known written scripts** in Tamil Nadu.
- **Cultural Insights:**

Sheds light on **urbanization, burial rituals, and trade links** with ancient ports like **Arikamedu** and **Poompuhar**.

King Rajendra Chola I – 1000th Anniversary of Gangetic Campaign

Context

The **Prime Minister** is set to participate in a commemoration event in **Tamil Nadu**, marking the **1000th year** of **King Rajendra Chola I's** conquest of the **Gangetic plains**.

About Rajendra Chola I (r. 1014–1044 CE)

- **Dynasty:** Chola
- **Parentage:** Son and successor of **Rajaraja Chola I**
- **Titles:**
 - **Gangaikonda Cholan** – “Bringer of the Ganges”
 - **Kadaram Kondan** – “Conqueror of Kedah”

Military Campaigns and Naval Power

- Expanded the **Chola Empire** to:
 - **Ganges river plains** in the north
 - **Southeast Asia** (Kedah, Srivijaya, Java, Sumatra, Malaya)
 - **Islands:** Andaman & Nicobar, Lakshadweep, Maldives
 - **Southeast Burma (Pegu Islands)**
- Defeated **Mahipala**, the Pala ruler of Bengal and Bihar.
- His forces exacted tribute from regions including:
 - **Thailand**
 - **Khmer kingdom of Cambodia**
- **Pioneered overseas military expeditions**—the **first Indian ruler to do so**.
- Led the **largest naval fleet** in Indian history up to that time.

Cultural and Administrative Legacy

- **Capital Shift:** Moved from **Thanjavur** to **Gangaikondacholapuram**, a new city he founded.
- **Architectural Achievement:** Built the **Gangaikondacholeshwaram Temple** dedicated to **Lord Shiva**, symbolizing his Ganges victory.
- Promoted **local self-governance**, contributing to Chola-era **administrative excellence**.
- Fostered trade links with **Song China** and **Arab traders**, turning the empire into a **wealth hub**.

Religion

- A devout **Shaivite (Shaivism)**, but also:
 - Supported **Buddhism**
 - Built **stupas** in **South India** and **Southeast Asia**

Successor: His son, Rajadhiraja I

Mangal Pandey – Freedom Fighter

Context

The **Prime Minister** paid tribute to **Mangal Pandey** on his **birth anniversary** for his pivotal role in India's first war of independence.

About Mangal Pandey (1827–1857)

- **Birthplace:** Ballia district, Uttar Pradesh
- **Joined Service:** Enlisted in the **34th Bengal Native Infantry**, British East India Company, in **1849** at the age of 22.
- **Role in 1857 Revolt**
- Became one of the **first revolutionaries** of the **First War of Independence** (Sepoy Mutiny).
- **Protested against greased cartridges** suspected to be coated with cow and pig fat.
- **Rebelled on March 29, 1857**, at **Barrackpore**, near Calcutta, sparking a wave of mutiny.
- **Executed: April 8, 1857**, by court-martial.
- **Legacy**
- A symbol of:
 - **Patriotism**
 - **Bravery**
 - **Leadership**

Resistance to colonial oppression

Sri Dharmasthala Manjunatheshwara Temple: SIT Investigation and Cultural Significance

Recent Development

- The **Karnataka government** has formed a **Special Investigation Team (SIT)** to

probe serious allegations involving the **secret mass burial of unidentified bodies** at the Dharmasthala pilgrimage centre.

- The **temple authorities have welcomed** the formation of the SIT, indicating support for transparency.

About the Temple

- **Location:** Dharmasthala town, Karnataka
- **Deity:** Lord Shiva, worshipped as **Lord Manjunatha**
- **Heritage:** The temple is approximately **800 years old**
- **Administration:** Managed by the **hereditary Jain Heggade family**, with rituals performed by **Madhwa Vaishnava Brahmins**

Architectural Features

- **Style:** Built in **Kerala temple architecture**, distinct from traditional South Indian temple styles.
- **Materials Used:**
 - **Granite and laterite** for the base structure
 - **Wood, clay, and metals** used in construction
- **Design Characteristics:**
 - **Square layout** with a **pyramidal, sloped roof**
 - **Gold-plated copper sheets** cover the wooden roof for protection

Wooden pillars support the front pavilion

The Paika Rebellion Controversy: Odisha's Forgotten Uprising

Recent Controversy

Former Odisha CM **Naveen Patnaik** criticized NCERT for omitting the **1817 Paika Rebellion** from the revised Class VIII history textbook, calling it a **"huge dishonour"** to the Paikas' legacy.

In response, **NCERT clarified** the rebellion will appear in **Volume II**, scheduled for release later this year.

Who Were the Paikas?

- The **Paikas** were **traditional foot soldiers** under the Gajapati kings of Odisha.
- In exchange for military service, they received **hereditary, rent-free land (nish-kar jagirs)**.
- With the rise of the British, their **privileges eroded**, and **economic**

hardships increased, setting the stage for revolt.

Colonial Betrayal and the Fall of Khurda

- In **1803**, British officer **Colonel Harcourt** struck a deal with **Mukunda Deva II** of Khurda for military passage through Odisha.
- The British **reneged** on the agreement, sparking opposition from **Jayee Rajguru**, who led an armed group of Paikas to Cuttack.
- Rajguru was **executed in 1806**, the Khurda king **deposed**, and royal lands **seized**.

Build-Up to the 1817 Rebellion

- The Paikas suffered **land loss, heavy taxation, and economic marginalization**.
- British land policies benefitted **absentee Bengali landlords**, and a **silver-based tax system** burdened tribal populations.
- British control over the **salt trade** added to regional distress, especially among the hill communities.

The Paika Rebellion of 1817

- In **March 1817**, **400 Kondhs** and Paikas led by **Bakshi Jagabandhu Bidyadhar** launched an armed revolt.
- They attacked police stations, looted treasuries, and burned British offices.
- Though the rebellion spread across regions, it was eventually **suppressed**.
- Jagabandhu evaded capture for years, finally **surrendering in 1825** under a truce.

Modern-Day Recognition and Political Narratives

- The rebellion is a **powerful symbol of Odia identity and sub-nationalism**.
- In **2017**, Odisha demanded it be recognised as **India's "first war of independence"**, predating the 1857 revolt.
- While the Centre **did not confer that status**, it acknowledged the rebellion as an early **anti-colonial movement**.

Paika descendants were honoured by **PM Modi**, and a **Paika Memorial** was initiated by **President Kovind** in 2019.

Chola Gangam Lake Development Announcement

- The Tamil Nadu government will develop **Chola Gangam Lake** to mark the birth anniversary of **Rajendra Chola I**.
- Part of the celebration of **Aadi Thiruvathirai Festival** and the **1000th anniversary** of Rajendra Chola's Southeast Asia expedition.

About Chola Gangam Lake

- **Location:** Near Gangaikonda Cholapuram in **Ariyalur district**, Tamil Nadu; also known as **Ponneri Lake**.
- **Historical Origin:** Built by Rajendra Chola I to commemorate his **northern campaign** (as mentioned in Tiruvalangadu copper plates).
- **Water Source:** A canal was built from the **Kollidam River** to supply water.
- Historically irrigated over **1,500 acres** and provided **drinking water** to Gangaikonda Cholapuram.

About Rajendra Chola I

- Ruled between **1014–1044 CE**.
- Titles: *Gangaikonda Cholan* (Bringer of the Ganges), *Kadaram Kondan* (Conqueror of Kedah).
- Founded **Gangaikonda Cholapuram**, shifting the capital from Thanjavur.

Built the **Gangaikondacholeswaram Temple** to celebrate his conquests

Ashokan Pillar Replica in Sri Lanka Context

- India unveiled a **replica of the Ashokan Pillar** at Waskaduwa Sri Subhuthi Viharaya, Sri Lanka, to honour **Emperor Ashoka** and his role in spreading **Buddhism**.

Key Features of Ashokan Pillars

- Built by Emperor **Ashoka** (3rd century BCE) post-Kalinga war as moral and religious symbols.
- **Structure:** Made from monolithic sandstone; topped with lotus bases and animal figures (e.g. lions).
- **Inscriptions:** In Brahmi, Kharosthi, Aramaic, and Greek; spread messages of non-violence, justice, and welfare.
- **Lion Capital at Sarnath:** India's **National Emblem**; symbolizes power and Buddhist influence.
- Influenced by **Persian-Achaemenid** art but adapted for Buddhist messaging.

Promoted Buddhism in India, Sri Lanka, and Central Asia through peaceful means.

Legacy of Radio Broadcasting in India National Broadcasting Day

- Observed on **July 23** to commemorate **India's first radio broadcast in 1927** from Bombay under the **Indian Broadcasting Company (IBC)**.

Historical Evolution

- Early radio clubs in **Calcutta (1923)** and **Madras (1924)** started informal broadcasting.
- IBC failed financially; taken over by British government in **1930** and renamed **Indian State Broadcasting Service (ISBS)**.
- Renamed **All India Radio (AIR)** in **1936**.

Developments Post-Independence:

- AIR adopted the name **Akashvani** in **1956**.
- **Vividh Bharati** launched in **1957** for entertainment and music.
- AIR expanded from 6 stations in 1947 to cover wider areas and populations.

AIR's Role

- Promoted public awareness in areas like **literacy, health, and agriculture**.
- Supported **freedom movement** and **cultural preservation** through diverse programming.

External Services Division began in **1939**, now broadcasting in **11 Indian and 16 foreign languages**, reaching over 100 countries.

Traditional Indian Art Forms Context

Artists from Sohrai, Pattachitra, and Patua traditions recently visited the President of India as part of **Kala Utsav 2025's 'Artists in Residence Programme'** hosted at Rashtrapati Bhavan.

Details of the Art Forms

- **Sohrai Art**
 - Origin: **Jharkhand**
 - Cultural Link: Associated with the **Sohrai harvest festival**.
 - Practiced by: **Sadan, Oraon, Munda, and Santal** tribal communities.
 - Style: **Wall paintings** using natural pigments to depict animals, plants, and ritual symbols.
- **Pattachitra**

- Origin: **Odisha**
- Meaning: Derived from Sanskrit words '**patta**' (cloth) and '**chitra**' (painting).
- Features: **Intricate scroll paintings** on cloth, depicting mythological and religious themes, especially related to Lord Jagannath.
- **Patua Art**
 - Origin: **West Bengal**
 - Form: **Folk scroll paintings**, traditionally painted on **pati or patta** (cloth).

Unique Trait: Often includes **narrated storytelling**, where the artist sings the story as they unroll the scroll.

Scheme for Promotion of Culture of Science (SPoCS)

Context

The Union Minister for Culture and Tourism recently briefed the Rajya Sabha on the progress of the *Scheme for Promotion of Culture of Science*.

Overview

- **Ministry:** Ministry of Culture, Government of India
- **Objective:** To foster scientific temper and raise awareness of science among the general public, especially students.
- **Nodal Agency:** National Council of Science Museums (NCSM), an autonomous body under the Ministry.

Key Components

- Establishment of:
 - **Science Cities**
 - **Science Centres**
 - **Innovation Hubs**
 - **Digital Planetariums**
- **Category-III Centres:** Set up in areas with populations below 5 lakh.
- **Current Status** (as of July 2025): 27 Science Centres established across India.

Significance

- Enhances informal science education and public engagement.

Provides hands-on learning through exhibits, digital tools, and outreach programs.

Sohrai Paintings: Tribal Art of Jharkhand

Recent Recognition

The indigenous **Sohrai painting tradition** was featured at the **Kala Utsav 2025 - Artists in**

Residence Programme held at **Rashtrapati Bhavan**.

Origin and Heritage

- Name derived from "**soro**", meaning "**to drive with a stick**"
- Originates from the **Meso-chalcolithic period** (9000–5000 BC)
- Ancient **Isko rock shelter** in Hazaribagh, Jharkhand, holds similar rock art

Key Features

- Created by **tribal women** using **natural materials**: clay, charcoal, soil
- Themes focus on **nature and the universe**: forests, rivers, animals
- Known for **vibrant colors, symbolic motifs, and intricate patterns**
- Celebrated during the **Sohrai festival**, coinciding with harvest and winter

Practicing Communities

- Practiced by tribes such as **Kurmi, Santal, Munda, Oraon, Agaria, and Ghatwal**
- Common in **Jharkhand, Bihar, Odisha, and West Bengal**

The **Sohrai art form** from Hazaribagh holds a **Geographical Indication (GI) tag**

Trimbakeshwar Shiva Temple: Jyotirlinga of Maharashtra

Recent Development

Authorities uncovered a **black-market scam involving darshan passes** at the **Trimbakeshwar Shiva Temple**.

Temple Overview

- Located in **Trimbak**, 28 km from Nashik, Maharashtra
- Constructed by **Peshwa Balaji Bajirao** (1740–1760)
- Near **Brahmagiri Hill**, the origin point of the **Godavari River**
- Recognized as one of the **12 sacred Jyotirlingas**

Architectural Highlights

- Blends traditional **Hindu temple architecture** with regional elements
- Features **detailed carvings** and **mythological depictions**
- Houses **three lingams** in the sanctum:
 - Representing the **Hindu trinity**: **Brahma** (creation), **Vishnu** (preservation), and **Shiva** (destruction)
- About **Jyotirlingas**

- Shrines where Lord Shiva is worshipped in his **radiant ("jyoti") form**
- **12 principal Jyotirlingas** in India, each considered a unique manifestation of Shiva

List of 12 Jyotirlingas:

1. **Somnath** (Gujarat)
2. **Mallikarjuna** (Andhra Pradesh)
3. **Mahakaleshwar** (Madhya Pradesh)
4. **Omkareshwar** (Madhya Pradesh)
5. **Baidyanath** (Jharkhand)
6. **Bhimashankar** (Maharashtra)
7. **Ramanathaswamy** (Tamil Nadu)
8. **Nageshwar** (Gujarat)
9. **Kashi Vishwanath** (Uttar Pradesh)
10. **Trimbakeshwar** (Maharashtra)
11. **Kedarnath** (Uttarakhand)

Ghrishneshwar (Maharashtra)

Legacy of the Chola Dynasty in Contemporary India

PM Modi's Visit to Gangaikonda Cholapuram

Prime Minister Narendra Modi recently visited Gangaikonda Cholapuram in Tamil Nadu during the concluding ceremony of the Aadi Thiruvathirai festival, marking the birth anniversary of Emperor Rajendra Chola I. During the event, he underscored the historical significance of the Chola Empire and connected its achievements to India's vision of becoming a developed, unified, and culturally enriched nation.

Revisiting the Chola Empire

The Chola dynasty, a Tamil empire, was a dominant force in South India from the 9th to the 13th centuries CE. Founded by Vijayalaya Chola, the empire reached its zenith under rulers like Rajaraja Chola I and his son Rajendra Chola I. Their reigns witnessed:

- **Military and Naval Supremacy:** Expansion from the Maldives to the Ganges, including overseas territories in Southeast Asia.
- **Cultural Contributions:** Notable advancements in bronze sculpture, Dravidian temple architecture (e.g., Brihadisvara Temple), and Tamil literature.
- **Administrative Innovations:** Decentralised governance, efficient water management, and structured local bodies.
- **Government Initiatives Honouring Chola Emperors**

- **Commemorative Coin:** A special coin was released in tribute to Rajendra Chola I.
- **Statue Installation:** The government announced plans to erect statues of Rajaraja and Rajendra Chola in Tamil Nadu to foster historical consciousness.

Chola Legacy as a Model for Modern India

PM Modi highlighted the Chola era as a source of inspiration for modern India, particularly in:

- **Strategic Governance:** Emphasising economic planning, defence, trade, and civic administration.
- **Naval Heritage and Defence:** Drawing parallels between Chola maritime power and India's current defence strategies, such as Operation Sindoor.
- **Democratic Traditions:** Praising the **Kudavolai system** as an early form of grassroots democracy.
- **The Kudavolai System: An Early Electoral Framework**

This innovative electoral method involved:

- **Public Lot Drawing:** Candidates' names were written on palm leaves and drawn from a pot by a neutral child to ensure transparency.
- **Strict Eligibility Norms:** Candidates had to be literate, tax-paying landowners aged between 35 and 70, with no criminal background, debts, or unethical conduct.
- **Disqualification Mechanisms:** Records, such as Inscription No. 24 from *Epigraphia Indica*, show removal or fining of unqualified candidates.

Democracy and Governance in Chola Administration

PM Modi emphasized that India's democratic traditions predate many Western systems:

- **Uttaramerur Inscriptions:** Evidence of village self-rule and electoral procedures.
- **Local Governance Structures:**
 - *Sabha*: Assembly in Brahmin settlements.
 - *Ur*: Governing body for non-Brahmin villages.
- **Merchant Guilds:** Groups like Manigramam and Ayyavole played pivotal roles in trade and local governance.

Despite these strengths, the Chola system had limitations:

- **Exclusionary Practices:** Women, landless workers, and lower castes were largely excluded from the democratic process.
- **Modern Viewpoints:** Historians regard the Chola model as an early form of civic responsibility and decentralised governance, albeit with social restrictions.

Cultural Revival and National Unity

PM Modi linked the Chola legacy to ongoing efforts to revive India's cultural roots:

- **Cultural Integration Initiatives:** Events like *Kashi Tamil Sangamam* and *Saurashtra Tamil Sangamam* promote pan-Indian unity.
- **Repatriation of Artefacts:** Since 2014, over 600 antiquities have been returned to India, including 36 from Tamil Nadu.
- **Spiritual Heritage:** The Shaivite principle *Anbe Shivam* (Love is God) was highlighted as a timeless philosophical guide.

Conclusion

Through the lens of the Chola dynasty, PM Modi emphasized the importance of India's indigenous political, administrative, and cultural heritage in shaping a confident, inclusive, and forward-looking nation. The Chola Empire's legacy of strategic governance, democratic thought, and civilizational sophistication challenges Eurocentric narratives and provides a robust foundation for India's developmental journey.

Gavri Festival

Overview

The **Gavri Festival** is a vibrant 40-day dance-drama ritual performed annually by the **Bhil community** of Mewar, Rajasthan.

Significance

- It blends theatrical acting and dance to depict the mythical battle between a goddess and a demon, symbolizing the triumph of good over evil.
- The narrative originates from the legend of **Lord Shiva** and the demon **Bhasmasur**, with a key focus on the fierce fight between **Goddess Amba** and **Demon Bhiamwal**.
- The festival reflects the deep spiritual and cultural worldview of the Bhil tribe and dates back to as early as the 3rd or 4th century, including the era of SiddhRaj Jai Singh, a ruler from Gujarat.

Cultural Practices

- Performances are held in villages where the artists' married sisters or daughters reside, aimed at ensuring the well-being and pride of their loved ones after marriage.
- The dance-drama, known as **Gavri** or **Rai Nach**, combines mime and dialogue with energetic music and colorful costumes.
- The story is presented in multiple scenes called **Khel**, each introduced by a narrator called **Kutkadiya**, who helps the audience follow the plot.

All roles are traditionally performed by men.

Brihadisvara Temple

Recent Update

The Prime Minister of India recently visited the **Brihadisvara Temple** in **Gangaikonda Cholapuram**, Tamil Nadu, describing the experience as profoundly spiritual.

About the Temple

- Also known as **Peruvudaiyar Kovil**, this temple is dedicated to **Lord Shiva**, represented by a massive lingam.
- Constructed around 1010 AD by **Rajaraja Chola I**, it is one of the three famous **Great Living Chola Temples** (along with Gangaikondacholeeswaram and Airavatesvara temples) and a UNESCO World Heritage Site.
- It is celebrated as a landmark in South Indian architecture, with its towering **vimana** (temple tower) considered an icon of Indian architectural excellence.

Key Features

- The temple follows **Dravidian architectural style**.
- The pyramidal vimana rises over 200 feet (60 meters), symbolizing **Mount Meru**, the mythic cosmic mountain in Hindu cosmology.
- The **sikhara** (dome) is octagonal, carved from a single granite block weighing 80 tons.
- The temple houses an impressive statue of **Nandi**, the sacred bull of Shiva.

Inscriptions and frescoes document the historical rise and fall of the region's fortunes.

Paithani Sarees

Recent Recognition

The Prime Minister of India recently praised the exquisite craftsmanship of **Paithani sarees** during his monthly radio address.

About Paithani Sarees

- Known as the '**mahavastra**' of **Maharashtra**, Paithani sarees are renowned for their vibrant colors, pure silk fabric, and intricate gold zari work.
- Originating from the medieval town of **Paithan** on the banks of the Godavari River, these sarees are deeply rooted in Maharashtra's cultural heritage.

Distinctive Features

- Handmade from pure silk and traditionally dyed in rich hues.
- Characteristic designs on the **kath** (border) and **padar** (pallu/end-piece) feature motifs such as parrots, lotuses, and peacocks.
- Usually crafted in six- or nine-yard lengths, these sarees have been a preferred choice for Maharashtrian brides for generations.
- Awarded the **Geographical Indication (GI) tag** in 2010, confirming their unique regional identity.

Paithanis are considered among the finest and most valuable sarees in India, symbolizing skilled artistry and Maharashtrian tradition.

Mera Gaon Meri Dharohar (MGMD) Initiative Context

Over **4.7 lakh villages** have been culturally documented under the MGMD initiative, as reported by the Ministry of Culture in Parliament.

About MGMD

- What is it?**
A nationwide project focused on culturally mapping and documenting the **intangible heritage** of Indian villages.
- Launch Date:** June 2023, as part of the **Azadi Ka Amrit Mahotsav** celebrations.
- Aim:** To map, preserve, and digitally archive traditional knowledge, rituals, oral traditions, festivals, and local arts across **6.5 lakh villages**.

Key Features

- Implemented by the **Indira Gandhi National Centre for the Arts (IGNCA)**.
- Cultural database covers over **4.7 lakh villages**.
- 360° video documentation** conducted for 750 villages.

- Development of the **MGMD Web Portal**, designated as the **National Cultural Workplace (NCWP)**.
- Operates under the **National Mission on Cultural Mapping (NMCM)**.
- Portal supports user-edited data, artist registrations, unique identification codes (UICs), and links to welfare schemes.

National Mission on Cultural Mapping (NMCM)

- Overview**
- A flagship government mission aimed at digitally mapping India's cultural ecosystem and empowering artist communities.
- Launch & Objective**
- Initiated by the **Ministry of Culture, Government of India**.
- Seeks to identify and promote cultural assets, create a national artist and art form database, and encourage rural development through cultural industries.
- Key Features**
- Creation of **National Digital Inventories**.
- Virtual initiatives such as the **Virtual Living Museum**, **digital badges**, and **village travel passports**.
- Supports cultural event uploads, artist branding, and ranking via UICs.

Integration with government welfare schemes to benefit artists.

Bigha: Traditional Land Measurement in India and Beyond

What is a Bigha?

- A **bigha** is a **traditional unit of land measurement** widely used across **India, Bangladesh, and Nepal**.
- Commonly employed in **agriculture and land transactions**, especially in rural and farming regions.

Usage in India

- Still prevalent in many states including **Assam, Bihar, Uttar Pradesh, West Bengal, Punjab, Rajasthan, Madhya Pradesh, Jharkhand**, and others.
- Despite the introduction of **modern units** like **acre** or **hectare**, **bigha** remains popular for **measuring large agricultural plots** and **negotiating land prices**.
- Variation Across States**
- No uniform standard—**size varies significantly** between regions:

- **West Bengal/Assam:** ~14,400 sq. ft.
- **Punjab:** ~9,070 sq. ft.
- **1 acre** = 43,560 sq. ft. (for comparison)
- **Subdivisions**
- A bigha is often divided into **smaller units** such as:
 - **Biswa**
 - **Katha**
 - **Nalli** (varies by region)

Historical Context

- Originates from **ancient South Asian practices** of measuring land for **farming, taxation, and trade**.
- Deeply embedded in the **socio-economic framework** of rural India.

Bigha Outside India

- **Bangladesh:** Standardized during British rule at **14,400 sq. ft. (1,340 sq. m)**.
- **Nepal:** A bigha is approximately **6,772.63 sq. m**, with **regional differences**.

Recent Context

The **Assam government** launched an **eviction drive** in **Golaghat district's Uriamghat area**, reclaiming around **11,000 bighas** of **encroached forest land**.

Mansa Devi Temple

Recently, a tragic stampede occurred near the Mansa Devi temple in Haridwar, Uttarakhand, resulting in the deaths of eight individuals and injuries to 28 others.

About Mansa Devi Temple:

- The temple is a Hindu shrine dedicated to the goddess Mansa Devi, who is regarded as a form of Shakti, or Goddess Durga. It is situated in the city of Haridwar, located atop Bilwa Parvat, part of the Sivalik Hills, which form the southernmost range of the Himalayas. Also known as Bilwa Tirth, the temple is one of the five pilgrimage sites known as Panch Tirth within Haridwar. It stands as a significant symbol of the ancient tradition of Shakti worship in northern India.

The current main structure of the temple was constructed between 1811 and 1815 by Maharaja Gopal Singh of Manimajra. The entire temple complex spans approximately 100 acres and is built in the traditional North Indian architectural style. The temple houses two primary deities: Mansa Devi and her sister, Chandi Devi.

Ratadiya Ri Dheri

Context:

A new **Harappan archaeological site** has been discovered at **Ratadiya Ri Dheri**, marking the **first-known Indus Valley Civilization settlement** in Rajasthan's arid region.

About Ratadiya Ri Dheri:

- **Period:** Belongs to the **mature urban phase** of the **Indus Valley Civilization**, dating back to **2600–1900 BCE**.
- **Location:** Situated in the **Jaisalmer district** of Rajasthan, the settlement is estimated to be **4,500 years old**.
- **Significance:**
 - This discovery **bridges a significant archaeological gap** by connecting previously known Harappan sites in **northern Rajasthan and Gujarat**.

Other Indus Valley Sites in Rajasthan:

- **Kalibangan:**
 - Located in **northern Rajasthan**, it was a **planned city** established around **2900 BCE**.

Discovered by **Italian Indologist Luigi Pio Tessitori**, Kalibangan is a prominent Harappan site recognized for its **urban layout and early agricultural practices**.

Mani Maran and the Living Legacy of Tamil Palm Leaf Manuscripts

A Revival in Thanjavur

In the culturally rich town of **Thanjavur**, once the proud capital of the Chola dynasty and a vibrant center of Tamil heritage, **Mani Maran**, a soft-spoken archivist and educator, is quietly leading a remarkable revival. Disturbed by the **rapid disappearance of Suvadhiyial**—the ancient art of reading palm leaf manuscripts inscribed in traditional Tamil—he transformed his modest home into an **informal learning space**.

Each evening, Maran's veranda comes alive—not only with the warm glow of lamps, but with the **light of learning**. His home welcomes a mix of **students, researchers, and working professionals**, all united by a shared mission: to **decode and understand ancient Tamil manuscripts**, some dating back several centuries. These fragile palm leaves preserve knowledge on **medicine, astronomy, music, ethics**, and more—each deciphered text reconnecting modern minds with India's profound intellectual heritage.

Inspiring the Next Generation

Maran's initiative is already making an impact. One of his students has taken up research into **traditional Siddha medicine**, uncovering healing practices preserved in these texts. Another is **digitising transcribed manuscripts**, helping make this knowledge accessible to a global audience.

Crucially, **Maran's work is entirely self-funded**, powered not by grants or institutions, but by a deep belief: that if young people are unable to read these scripts, the **voices of India's ancestors will fade into silence**.

Echoing a National Mission

Maran's grassroots mission resonates with the objectives of the **Gyan Bharatam Mission**, recently launched by the Government of India. This national initiative aims to **digitise and disseminate India's scriptural and manuscript heritage** through the creation of a **National Digital Repository**.

A Modest Space with Monumental Impact

In Maran's humble classroom, **palm leaves whisper timeless stories**—not just of mythology and royalty, but of science, health, philosophy, and daily life. His dedication is a powerful reminder that preserving cultural heritage does not always require grand museums or large-scale projects. Sometimes, all it takes is **one passionate teacher** and a **circle of committed learners** to keep the legacy of a civilisation alive.

Indian Harmonium

Context

The Indian harmonium was recently highlighted in a *Building Blocks* science article for its innovative **non-electronic design** and ongoing role in **Indian classical, devotional, and folk music traditions**.

What is the Harmonium?

- A **portable, hand-pumped reed instrument** resembling a small suitcase, traditionally crafted from wood.
- Produces sound using **airflow and vibrating metal reeds**, without relying on strings or electricity.
- Part of the **free-reed aerophone** family, similar to European reed organs.

Musical Significance

- Extensively used in **Hindustani Classical Music** (North Indian tradition).

- Common in **devotional genres** like bhajans and qawwalis, as well as in **folk music**, theatre, and old Indian cinema.

How the Harmonium Works

Air-Powered Sound Production

- **Bellows System:**
 - Air is pumped manually through bellows into a **pressurized chamber** beneath the keys.
- **Key Mechanism:**
 - Pressing a key opens a **felt-lined valve (pallet)** that channels air through a **metal reed**, making it vibrate.
 - The **reed's length, thickness, and material** (brass or phosphor-bronze) determine the pitch.

Sound and Timbre

- Vibration splits the air into sound pulses, producing **rich harmonics**.
- **Wood, leather, and cloth components** shape the instrument's unique tonal quality.

Distinctive Features

- **Manual Volume Control:**
 - The **intensity of bellows pumping** controls dynamics—allowing for expressive nuances like fades and accents.
- **Multiple Reeds Per Key:**
 - Some harmoniums activate **two or more reeds** per key using **stop rods**, producing a layered tone akin to a small organ.
- **Octave Coupling:**
 - Certain models feature **octave coupling**, where pressing one key also triggers another an octave apart, reducing hand strain.
- **Tuning Flexibility:**
 - Pitch changes with ambient temperature. Musicians often **fine-tune reeds using screwdrivers** before performances.
- **Completely Acoustic:**

Requires **no power supply**, enabling uninterrupted use during **power cuts or outdoor events**.

ETHICS

Backdoor Layoffs

Context:

Google has introduced a Voluntary Exit Programme (VEP) and new hybrid work mandates, triggering discussions about 'backdoor layoffs' amid tech industry workforce restructuring.

What are Backdoor Layoffs?

Definition:

Indirect methods companies use to reduce staff without formal termination notices, often to avoid regulatory scrutiny and negative publicity.

How Do Backdoor Layoffs Work?

Voluntary Exit Programmes (VEP):

Employees are offered severance packages to voluntarily resign.

Helps companies reduce headcount without officially laying off employees.

Example: Google's VEP for Core Systems and Marketing teams.

Enforcing Unfavourable Work Conditions:

Forcing remote workers to adopt hybrid work schedules can lead to voluntary resignations.

Reduces staff without formal layoffs.

Strategic Role Dissolution:

Certain teams or roles (e.g., Knowledge, AR, Voice Assistant) are dissolved, indirectly prompting employees to leave.

Key Characteristics of Backdoor Layoffs

Disguised Downsizing:

Avoids public backlash and compliance with laws like the WARN Act in the U.S.

Legally Safer:

Less risk of lawsuits since employees technically resign rather than being fired.

Reduces Severance Burden:

Saves companies from paying large severance packages typically required in involuntary layoffs.

Preceded by Policy Changes:

Often introduced alongside new policies (e.g., return-to-office mandates) that encourage employees to quit.

Data Ethics: Principles, Challenges, and the Way Forward

Context

The **Ministry of Statistics and Programme Implementation (MoSPI)**, in collaboration with the **UN Statistical Institute for Asia and the Pacific (UN SIAP)**, is hosting a three-day regional workshop on *"Data Ethics, Governance, and Quality in a Changing Data Ecosystem."*

What is Data Ethics?

Data ethics refers to the principles governing the **responsible collection, use, storage, sharing, and analysis** of data—especially sensitive or personal data. It ensures that **data-driven systems, including AI**, respect **human rights, dignity, and fairness**.

Core Ethical Principles

Ownership

Individuals retain full control over their personal data and must give **informed consent** for its collection.

Transparency

Data handlers must disclose how data is collected, stored, used, and shared (e.g., AI usage notices, cookie policies).

Privacy Protection

Personal Identifiable Information (PII), like Aadhaar numbers or health records, must be safeguarded from misuse.

Purpose Limitation

Data should only be collected for **legitimate, fair, and non-exploitative** purposes.

Fairness of Outcomes

AI systems must avoid **bias** and **discrimination**, even if intentions are good (e.g., in hiring or lending algorithms).

Why Data Ethics Matters

Public Trust: 57% of users disengage from brands that mishandle personal data (Accenture).

Bias Prevention: Flawed datasets can produce biased algorithms, leading to social harm (e.g., predictive policing).

Legal Compliance: Laws like **GDPR** and India's **DPDP Act** require fairness, accountability, and lawful data handling.

Ethical AI Development: Promotes **explainable, inclusive, and accountable AI**.

Preventing Surveillance Abuse: Essential to prevent misuse of technology, especially against vulnerable populations.

Challenges to Data Ethics in India

Opaque Algorithms: Black-box models reduce transparency and accountability.

Consent Fatigue: Users often skip privacy terms due to complexity.

Weak Enforcement: India's data protection regime is still in its infancy.

Market Concentration: Dominance by big tech leads to **data monopolies** and influence over user behaviour.

Algorithmic Bias: Machine learning models inherit biases from training data (e.g., facial recognition errors for minorities).

The Way Forward

Ethical-by-Design Systems: Embed fairness and safety into data and AI systems from the design stage.

Explainable AI (XAI): Ensure algorithms are understandable, especially in sensitive domains like health and law.

Third-Party Audits: Mandate independent audits to check for data misuse and bias.

Public Awareness: Educate citizens about data rights and responsible digital behaviour.

Global Collaboration: Adopt global norms (e.g., OECD, UNESCO) for ethical data and AI governance.

Conclusion

Data ethics is a societal obligation, not just a tech issue. India must embed ethical principles into the entire data lifecycle to build a **safe, inclusive, and trustworthy digital future**.

Stray Dog Feeding Rules in India: Balancing Compassion and Public Safety

Supreme Court's Observation

While addressing a case from Noida, the **Supreme Court suggested that individuals who wish to feed stray dogs should ideally do so within their own premises**, highlighting the need to consider public safety and shared space concerns. The case underscores ongoing legal debates

involving **animal rights, civic duties, and public order** in urban spaces.

Background: Noida Dispute and Legal Proceedings

The issue arose when a **Noida resident alleged harassment** by her **Residents' Welfare Association (RWA) president** for feeding stray dogs in the housing society's common areas. She claimed the president:

Destroyed water pots placed for strays

Harassed her and was involved in the killing of 10 sterilized dogs

Received support from local authorities, who instead of acting on her complaints, instructed her not to reinstall the pots

Her petition to the **Allahabad High Court** was dismissed, citing the inconvenience caused to the "common man." The court also referred to the **Animal Birth Control (ABC) Rules, 2023**, which aim to manage stray dogs through sterilization and vaccination, while also ensuring that public safety and accessibility are not compromised.

Legal Framework: Animal Birth Control (ABC) Rules, 2023

The **ABC Rules, 2023**, framed under the **Prevention of Cruelty to Animals Act, 1960**, provide a structured approach to managing stray dogs:

Replace the 2001 rules

Introduce the term "**community animals**" to reflect that these dogs belong to and reside within specific territories

Emphasize sterilization, vaccination, and humane treatment

Seek a **balance between compassion and public order**

Supreme Court's Past Rulings and Constitutional Backing

In an earlier case, the Supreme Court **suspended a 2022 Nagpur Bench order** that banned public feeding of stray dogs and required feeders to adopt them. This ruling reinforced:

Citizens' right to feed stray animals

The **legal and constitutional safeguards** supporting compassionate treatment of animals

Key constitutional provisions include:

Article 21: Interpreted to extend the right to life and liberty to animals (e.g., in the 2014 *Jallikattu* case)

Article 51A(g): Places a **fundamental duty on citizens to show compassion** toward all living creatures

Guidelines for Feeding Community Dogs (Rule 20, ABC Rules, 2023)

Rule 20 outlines specific responsibilities and protocols for feeding community animals:

Responsibility lies with RWAs, AOAs, or local authorities to facilitate designated feeding areas

Feeding zones must be:

Away from **building entrances, stairwells, children's play areas, and high-traffic spots**

Clean and maintained

Used for feeding at **fixed times** to avoid disturbance

Dispute resolution mechanisms include forming panels with:

Veterinary officers

Police representatives

Local animal welfare NGOs

Members of the RWA

This structure ensures that the **rights of feeders and the presence of community dogs are respected**, while maintaining **public hygiene and safety**.

Conclusion: A Balanced Approach

Feeding stray dogs is not merely an act of kindness—it aligns with **India's legal and ethical responsibilities** toward animals. The **ABC Rules, 2023** and constitutional provisions collectively uphold the right to care for community animals while setting clear boundaries to protect shared public spaces.

To sustain this balance:

Feeders must adhere to **designated areas**

Local authorities and RWAs should **cooperate in implementation**

Citizens must act with both **compassion and responsibility**, in accordance with **Article 51A(g)**

The Noida case serves as a reminder that while compassion is legally supported, **public safety and community harmony must also be maintained**.

Epstein File Scandal: Ethics, Power, and the Quest for Justice

Context

Former U.S. President **Donald Trump's association** with convicted sex offender **Jeffrey Epstein** is again under the spotlight. This

renewed scrutiny follows revelations that the **Trump administration withheld portions of investigative files** related to Epstein's sex trafficking operations, citing insufficient evidence.

What Is the Epstein File Scandal?

The **Epstein file scandal** refers to the **U.S. Department of Justice's decision to withhold critical materials** from public release during the Epstein sex trafficking investigation. These include:

Flight records

Digital data

Sensitive documents implicating high-profile individuals

Despite widespread public and legal pressure for transparency, large parts of Epstein's connections to elite individuals remain concealed.

Legal and Ethical Dimensions

1. Accountability vs. Privacy

There is an ongoing debate between the **public's right to know** who was associated with Epstein and the **need to protect the reputations** of individuals who may not have been involved in any criminal conduct.

2. Allegations of Abuse of Power

Critics allege that **Trump used presidential authority** to selectively suppress or delay the release of documents that might have been **personally or politically damaging**.

3. Justice Delayed

Survivors of Epstein's crimes and **human rights advocates** argue that withholding names and documents:

Delays justice

Undermines legal accountability

Protects powerful individuals from scrutiny

4. Victim Protection vs. Institutional Transparency

Authorities cite concerns about **protecting survivor identities**, but this raises concerns about a **lack of institutional transparency** and potential shielding of abusers.

Safeguarding Culture: The Role of Geographical Indication (GI) Tags in Preventing Cultural Misappropriation in India

Prada's Kolhapuri Controversy: A Wake-Up Call

In June 2025, Italian luxury label Prada showcased a footwear line at its Spring/Summer

2026 menswear show in Milan that bore striking similarities to Kolhapuri chappals, a traditional Indian product protected by a Geographical Indication (GI) tag. The move sparked backlash in India, reviving concerns over cultural appropriation and questioning the efficacy of GI protection on the global stage.

This incident is emblematic of a larger trend where Indian cultural symbols and traditional knowledge are adopted by international brands without recognition or benefit-sharing, reigniting conversations about the limits of intellectual property protections in preserving cultural heritage.

Arguments in Favor of Using GI Tags to Prevent Cultural Misappropriation

1. Ethical Obligation to Respect Cultural Heritage

- GI tags reflect a community's intangible heritage — their history, identity, and craft traditions.
- Using GI-protected products without acknowledgment disrespects the original creators and erases their contribution.
- In the Prada case, not crediting Kolhapuri artisans amounts to ethical negligence toward centuries-old Indian craft.

2. GI Tags Enable Economic Justice

- Kolhapuri chappals are produced by artisans in Maharashtra and Karnataka, many from marginalized communities.
- GI protection is meant to ensure they are the sole economic beneficiaries of their heritage.
- When international brands copy these designs without licensing or compensation, it results in cultural theft and economic exploitation.

3. Cultural Appropriation vs. Cultural Appreciation

- Appropriation occurs when dominant groups profit off the culture of marginalized ones without consent or context.
- Prada's use of a traditional Indian design on a global runway, devoid of Indian representation or narrative, illustrates appropriation, not appreciation.
- GI tags are ethical tools that promote appreciation by encouraging licensing, collaboration, and credit-sharing.

4. Preservation of Authenticity and Cultural Integrity

- GI tags protect not only the product but its traditional methods and socio-cultural meaning.
- Commercial reinterpretations (like Prada's) may distort or decontextualize the original design, diluting its cultural value.
- Ethical protection involves maintaining the integrity of cultural expressions — which GI aims to ensure.

5. Global Ethical Responsibility

- Global brands have a moral duty to understand and respect international IP laws, including GI protections.
- Ethical globalization includes honoring localized traditions and intellectual rights, especially from the Global South.
- Ignorance of a GI tag should not be an excuse in the era of accessible global legal frameworks.

Counterarguments / Ethical Critiques of GI as a Tool for Cultural Protection

1. GI Tags Have Limited International Enforceability

- GI tags are protected domestically under Indian law, but enforcement globally (e.g., in Italy) is weak.
- Prada may not have technically violated Italian or EU law, raising questions about how effective GI tags are as a global deterrent.

2. Cultural Expression Is Not Always Proprietary

- Opponents argue that traditional cultural expressions (TCEs) evolve and travel over time — design elements often cross borders organically.
- Not all resemblances are unethical — sometimes they reflect global cultural diffusion rather than theft.
- Some argue that too strict a control over cultural elements stifles creativity and global collaboration.

3. Who Gets to Speak for Culture?

- Ethical concerns arise around who owns and controls GI-protected culture — often it's the state, not necessarily the individual artisans.
- Some argue GI systems can centralize control and exclude peripheral or evolving

communities of practice who don't meet official criteria.

4. Cultural Commodification Through GI Tags

- Ironically, GI itself commodifies culture by turning heritage into a marketable asset.
- Critics argue this reduces culture to a "brand," potentially undermining its spiritual, communal, or evolving dimensions.
- The ethical line between protecting culture and commodifying it can blur in the GI framework.

Broader Ethical Questions Raised by the Prada Incident

1. Is acknowledgment enough, or is compensation required?
2. Should there be an international GI system akin to trademarks or patents?
3. Are luxury brands morally obligated to engage in benefit-sharing with cultural communities?
4. What counts as "inspiration" vs. "misappropriation" in fashion?

Conclusion: A Wake-Up Call for Cultural Ethics

The Prada-Kolhapuri incident reveals the **inadequacy of current intellectual property frameworks** in ethically safeguarding indigenous and traditional knowledge systems in a globalized world. While GI tags are a start, **ethical global collaboration**, stronger international legal frameworks, and **active cultural respect** from multinational brands are needed to truly prevent misappropriation.

Slovenia Legalizes Assisted Dying

Recent Development

Slovenia has passed legislation permitting **assisted dying** for **terminally ill adults** experiencing **unbearable suffering**, aligning with a growing global movement toward legalized euthanasia.

Ethical Arguments For Assisted Dying Legislation

1. Respect for Autonomy

- Individuals have the moral right to make decisions about their own bodies and lives — including how and when they die.
- Terminally ill patients experiencing unrelievable suffering should be empowered to choose a dignified end on their own terms.
- Autonomy is a foundational principle in medical ethics.

2. Compassion and Relief from Suffering

- Assisted dying offers a compassionate response to extreme physical or psychological suffering that cannot be alleviated through palliative care.
- Denying this choice may prolong agony, undermining the ethical duty to prevent suffering.

3. Dignity in Death

- For many, maintaining dignity means having control over the dying process, avoiding the loss of personal identity and functionality.
- The legislation affirms that dying with dignity is a human right.

4. Equality and Non-Discrimination

- Allowing assisted dying ensures that all individuals, regardless of the nature of their illness, have equal access to end-of-life options.
- Denying this right can disproportionately affect those with severe, degenerative illnesses where suffering is prolonged.

5. Transparent and Regulated Framework

- Legalization brings assisted dying into a regulated medical framework with strict eligibility criteria, minimizing abuse.
- It replaces underground or unsafe practices with oversight and ethical safeguards, protecting both patients and healthcare providers.

Ethical Arguments Against Assisted Dying Legislation

1. Sanctity of Life

- Life is inherently valuable and inviolable, regardless of suffering or prognosis.
- Legalizing assisted dying risks eroding respect for life and could shift societal norms around the value of disabled or terminally ill lives.

2. Slippery Slope Risk

- Critics argue that allowing assisted dying, even under strict criteria, could lead to broader and ethically questionable applications — such as for non-terminal conditions or psychological suffering.
- Over time, safeguards could be weakened, as seen in some other jurisdictions.

3. Potential for Coercion or Social Pressure

- Vulnerable individuals — especially the elderly, disabled, or economically

disadvantaged — may feel pressure to opt for assisted dying to avoid being a burden.

- The existence of a legal option may subtly influence personal or family decisions, undermining true autonomy.

4. Undermining Palliative Care Investment

- Some argue that legalizing assisted dying could reduce the urgency or funding for high-quality palliative and hospice care.
- The focus should be on improving pain management, emotional support, and end-of-life care options, not enabling death.

5. Moral Objections from Medical Professionals

- Assisted dying contradicts the traditional ethical role of doctors to “do no harm.”
- Forcing or expecting physicians to participate can cause moral distress or violate personal/religious convictions.

Additional Ethical Questions Raised

- Can suffering truly be judged objectively enough to legislate death?
- Should psychological suffering qualify as unbearable?
- How do we balance individual choice with societal values and risks?

Ethical Middle Ground?

Some ethicists suggest a “middle path”, where:

- Assisted dying is permitted under extremely strict conditions.
- Strong emphasis is placed on mental health support, palliative care access, and review committees.
- Conscientious objection for healthcare providers is legally protected

Government Blocks 25 Websites for Hosting Obscene Content: Legal and Ethical Justifications

Overview

The **Ministry of Information and Broadcasting (I&B)** has directed intermediaries to **block 25 websites** found to be hosting **obscene and unlawful content**, invoking powers under the **Information Technology Act, 2000**, and the **IT (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021**.

The action targets websites that **violated Indian laws on obscenity and the indecent representation of women**, raising concerns over

online safety, moral standards, and the protection of vulnerable groups.

Legal Grounds for the Action

Applicable Provision: The blocked websites were found in violation of: **Section 67 and 67A**, IT Act, 2000 – relating to publishing or transmitting obscene or sexually explicit material in electronic form.

Section 294, Bharatiya Nyaya Sanhita (BNS), 2023 – addressing obscene acts and songs in public.

Section 4, Indecent Representation of Women (Prohibition) Act, 1986 – banning material that portrays women in a derogatory or indecent manner.

Constitutional Backing

Under **Article 19(2)** of the **Indian Constitution**, the right to free speech is subject to **reasonable restrictions** in the interest of **decency and morality**.

Cited precedent: **Ranjit D. Udeshi v. State of Maharashtra** – The Supreme Court upheld the conviction under the obscenity law (now Section 294 of BNS), affirming that **obscene material does not enjoy constitutional protection** under freedom of speech.

Why Regulating Obscene Content Matters

1. Protection of Women and Children: **Exposure to explicit content** at an early age can distort young minds, promoting unrealistic and harmful perceptions of relationships.

2. Objectification of women contributes to entrenched gender stereotypes, inequality, and even violence.

3. Upholding Societal Morality and Cultural Values: Obscene material is seen as **offensive to collective moral standards**, degrading public decency.

4. John Stuart Mill's “Harm Principle” (from *On Liberty*, 1859) is often cited to justify such restrictions: individual liberty can be curtailed when it **harms others** or **undermines social well-being**.

Conclusion

The Ministry's order to block these 25 websites reflects the government's growing emphasis on **digital content regulation** in line with constitutional values and societal norms. It also signals a proactive stance in protecting **women, children**, and the **moral fabric of society** from the unchecked spread of explicit material online.

