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SVAMITVA Yojana is a gamechanger for India's villages

- India's villages, in the last ten years, have witnessed an overall comprehensive development, encompassing the socio-economic welfare of its inhabitants.
- From toilets to tap water connections, the villages are no longer devoid of the most basic infrastructure they languished without for over six decades after independence.
- From the Swachh Bharat Abhiyaan, that eliminated the curse of open-defecation, to the Jal Jeevan Mission that took tap water connection to every household, to the Ujjwala Yojana that ushered healthier kitchens for the households, to MUDRA programme, ensuring collateral-free loans for aspiring entrepreneurs, the last decade has been all about unshackling the economic potential of India's villages.
- Alongside, the SVAMITVA Yojana, or Survey of Villages and Mapping with Improvised Technology in Village Areas, was launched in the early weeks of the pandemic, on April 2020.
- The objective of this programme is quite straightforward-to provide an integrated property validation solution for the rural villages of the country. Put simply, the idea was to digitise the land records in India's villages.
- By digitising these land records, the government, aided by several state-level departments and institutions, wants to ensure that the rural households have their respective rights to property, the disputes pertaining to property are either minimised or addressed altogether.
- Further, the Gram Panchayats will also be empowered to collect the rightful property tax from these households.
- Thus, the Gram Panchayats will have more monetary resources to allocate to local development work. The self-reliance of the Gram Panchayats will also improve once they are in a position to increase their tax base.
- The ownership clarity for both, the rural households and the Gram Panchayat, will usher an unprecedented economic shift in the financial planning.
- The SVAMITVA programme has several second order effects as well. The SVAMITVA scheme's drone requirements have significantly stimulated the drone manufacturing industry in India. Original Equipment Manufacturers (OEMs) have responded by developing Survey Grade Drones, leading to supply orders being directed towards companies under the "Make in India" initiative.
- The Survey of India (SoI), as the technological partner for the scheme's implementation, has been diligently working to meet the scheme's objectives. Put simply, the SVAMITVA programme has accelerated the manufacturing of drones in India, along with creating a demand for skilled manpower.

- Finally, an unintended consequence of the SVAMITVA programme is going to be the ability of willing households to use these lands to avail formal financing options.
- For instance, a household can mortgage a part of their land for their financing needs, or can now invest, from a long-term perspective in their tract of land. They can choose to build a warehouse, or explore options in vertical farming, for instance.
- The SVAMITVA programme, in the long run, will enable households to invest in unconventional business options as well. Some could build a homestay, assuming they are in a region which hosts a lot many travellers. Some may choose to lease out their land for organic farming to urban dwellers. In the larger scheme of things, the programme opens up more economic options for the households when it comes to land utility.
- The Sixth Schedule of the Indian Constitution, as outlined in Article 244, includes special administrative provisions for designated tribal areas in the states of Assam, Meghalaya, Tripura, and Mizoram. The SVAMITVA programme proves to be a gamechanger here as well.
- The inability to transfer land holding rights makes land unsuitable as collateral, which has long been identified as a barrier to providing institutional credit in the hilly regions' economies.
- In these states, SVAMITVA can give the local governments more clarity on the tracts of land that are not currently held by any community, are registered against a household, are transferable, are under any dispute, and will also enable the state governments to further customise their local laws to ensure better utility of land.
- In the Northeast, SVAMITVA will unlock the potential of landholdings, even in the remotest corners, in the long run.
- India's capital expenditure and long-term asset creation have gone from Rs 2.5 Lakh Crore, annually, to more than Rs. 11.11 Lakh Crore this year. However, this has more to do with urban areas or greenfield projects across the country. In villages, beyond the infrastructural development, a programme like SVAMITVA was essential to further unlock the potential of landholdings amongst rural households.
- Earlier this month, Prime Minister Narendra Modi distributed over 65 Lakh SVAMITVA property cards at an event, mapped across twelve states and union territories, and stated how economic value worth over Rs. 100 Lakh Crore would be unlocked in the long run. The process that began in April 2020, eventually, will prove to be a gamechanger for India's economy in the ongoing decade.

Highlights of Union Budget 2025-26

- Presenting the Union Budget 2025-26 in the Parliament, Union Finance Minister Nirmala Sitharaman proposed an across-the-board change in tax slabs and rates to benefit all tax-payers.
- The changes offer significant relief to the middle class, particularly those earning up to Rs 12 lakh annually.

Key Changes:

- **Tax Slabs Revised:**

- The new tax regime introduces fresh tax slabs with the aim to reduce the tax burden for middle-class earners.
- • No tax on incomes up to Rs 4 lakh.
- • 5 per cent tax for income between Rs 4 lakh and Rs 8 lakh.
- • 10 per cent tax for income between Rs 8 lakh and Rs 12 lakh.
- • For higher incomes, the tax rate increases progressively from 15 per cent (Rs 12-16 lakh) to 30 per cent (above Rs 24 lakh).

- **Tax Rebate under Section 87A:**

- A significant increase in the tax rebate means that individuals with a net taxable income up to Rs 12 lakh (after exemptions like standard deductions) will not pay any income tax.
- For someone earning exactly Rs 12 lakh, while taxes apply based on the slabs, the rebate will reduce the final tax liability.

Standard Deduction:

- The exemption limit is effectively increased to Rs 12.75 lakh for salaried individuals, accounting for the standard deduction. These further benefit those with regular income.

Old vs New Regime:

- Old Regime: The basic exemption limit was Rs 2.5 lakh, with various deductions available (e.g., Section 80C, housing loan interest, etc.). Tax rates were as follows:
- 5 per cent for income between Rs 2.5 lakh and Rs 5 lakh.
- 20 per cent for income between Rs 5 lakh and Rs 10 lakh.
- 30 per cent for income above Rs 10 lakh.
- However, this regime offered the option of various deductions, which could lower the taxable income.

New Regime

- In contrast, the new regime simplifies the tax structure but does not allow for the same deductions. The focus here is on providing tax relief, especially for those earning up to Rs 12 lakh.

Tax Savings:

- **Income of Rs 12 lakh:** A saving of Rs 80,000 under the new tax regime compared to the previous system.
- **Income of Rs 18 lakh:** A saving of Rs 70,000.
- **Income of Rs 25 lakh:** A saving of Rs 1,10,000.
- **Important Considerations:**

- **Capital Gains Tax:** Income from capital gains is still taxed separately under different rules and is not eligible for the rebate.
- **Effectivity:** The new tax regime will be applicable starting from the financial year 2025-26, which begins on April 1, 2025, subject to Parliament's approval.
- This new tax regime appears to favour individuals with incomes below Rs 12 lakh, simplifying the process and reducing their tax liabilities. However, those who previously benefited from various deductions under the old regime might find the new system less advantageous.

Other Important Announcements in Budget

- **Focus on Key Sectors for Growth:**

1) Agriculture:

- Launch of Prime Minister Dhan-Dhaanya Krishi Yojana covering 100 districts to improve agricultural productivity.
- A 'Mission for Aatmanirbharta in Pulses' to focus on pulses like Tur, Urad, and Masoor.
- Increased Kisan Credit Card loan limits from Rs 3 lakh to Rs 5 lakh.

PM Dhan Dhanya Krishi Yojana for farmers

- The Pradhan Mantri Dhan Dhanya Krishi Yojana for the developing agri-districts was announced in the Budget.
- The programme is motivated by the Aspirational Districts Programme which was launched in 2018 to "to quickly and effectively transform 112 most under-developed districts across the country". The Pradhan Mantri Dhan Dhanya Krishi Yojana will converge existing schemes and will be undertaken in partnership with States. It will cover 100 districts with low productivity, moderate crop intensity, and below-average parameters.

2) MSMEs:

- Enhanced credit availability and support for women, SC, and ST entrepreneurs.
- National Manufacturing Mission to strengthen 'Make in India' initiatives.

3) Investment:

- Investment in people and infrastructure, including 50,000 Atal Tinkering Labs and improved broadband connectivity for rural areas.
- Government's commitment to a Rs 1.5 lakh crore infrastructure fund and initiatives for MSME export promotion.

4) Exports:

- Government support for developing domestic manufacturing capacities for global supply chains.
- Initiatives to help MSMEs tap into export markets with digital platforms and improved infrastructure for logistics.

5) Infrastructure and Innovation:

- A Rs 20,000 crore initiative for private sector-driven R&D and innovation.
- New plans to promote regional connectivity, including an enhanced UDAN scheme for regional flights.
- National Geospatial Mission to improve urban planning with better data collection.

6) Fiscal and Regulatory Reforms:

- The fiscal deficit for FY-25 is expected to be 4.8 per cent, with a target of reducing it to 4.4 per cent in FY-26.

Major decriminalisation of certain tax offences, like delays in TCS payments, and the introduction of the Jan Vishwas Bill 2.0 for decriminalising over 100 provisions in various laws.

7) Customs Duty and Domestic Manufacturing:

- Customs duties on essential items like lifesaving drugs have been reduced or exempted to promote public health.
- Exemptions for key materials to support the domestic manufacturing of lithium-ion batteries and shipbuilding.

8) Social Welfare Initiatives:

- Provisions for gig workers' identity cards, healthcare access under PM Jan Arogya Yojana, and a Rs 1 lakh crore Urban Challenge Fund for city development.
- Overall, the Union Budget for 2025-26 emphasizes comprehensive reforms to support the middle class, improve the agricultural sector, boost MSMEs, and invest in infrastructure and innovation to drive India's growth. The aim is to increase savings, consumption, and investment while ensuring long-term economic development and inclusivity.

Increased allocation for Saksham Anganwadi and Poshan 2.0 scheme

- An increase has been announced in the money allocated to Saksham Anganwadi and Poshan 2.0 scheme, in the Budget presentation. The Budget mentioned that "the cost norms for the nutritional support will be enhanced appropriately".
- The Revised Estimate (RE) 2024-25 for Saksham Anganwadi and POSHAN 2.0 scheme stands at ₹20,070.90 crore, while the Budget 2024-25 allocation was ₹21,200 crore. The Budget 2025-26 estimate is ₹21,960 crore.

Interest-free loans to States for infrastructure development

- ₹1.5 lakh crore will be provided towards 50-year interest free loans to States, for infrastructure development.
- An asset monetisation plan will be launched for 2025-30 period to infuse ₹10 lakh crore capital in new projects. An outlay of ₹500 crore for setting up a centre of excellence in artificial intelligence for education was announced in the Budget.

Jal Jeevan Mission extended till 2028

- Jal Jeevan Mission, which aims to provide tap water connection to all rural households, has been extended till 2028 with an enhanced Budget outlay.
- Under the Jal Jeevan Mission, 15 crore households, representing 80% of India's rural population, have been provided access to potable tap water connection.

36 life saving drugs, medicines exempted from custom duty

- As many as 36 lifesaving drugs will now be fully exempted from customs duty. The Finance Minister has proposed to add six lifesaving medicines to the list attracting concessional customs duty of 5%. "Full exemption and concessional duty will also respectively apply on the bulk drugs for manufacture of the above,"
- Finance Minister Nirmala Sitharaman presented her eighth record Budget in the Lok Sabha that comes in the backdrop of growth slowing down to four-year-low of 6.4%. This is the second Budget of the BJP-led NDA Government in its third term in office.
- Ms. Sitharaman started her speech by saying that this Budget will initiate reforms in six domains — taxation, urban development, mining, financial sector, power and regulatory reforms.

Some of the priority areas in Budget 2025:

Tax relief for middle class

- No income tax upto ₹12 lakh under new regime. Effectively, under the new tax regime considering the erstwhile standard deduction of ₹75,000, income of up to ₹12.75 would have no income tax liability
- Enumerating revisions in tax slabs, the Finance Minister informed that incomes up to ₹4 lakhs would not be taxed, ₹4-8 lakh would host 5% taxation rate, ₹8-12 lakh 10%, ₹12-16 lakh 15%, ₹16-20 lakh 20%, ₹20-24 lakh 25% and incomes above ₹24 lakh 30%. A tax payer in the new regime with an income of ₹12 lakh will get a benefit of ₹80,000 in tax; a person having income of ₹18 lakh will get a benefit of ₹70,000 in tax; a person with an income of ₹25 lakh gets a benefit of ₹1.10 lakh, Ms. Sitharaman added.
- Rationalisation of TDS (Tax Deduction at Source) has been announced regime to ease compliance burden. Taxpayers can claim annual value of self-occupied homes as nil only on certain conditions. This will now be allowed for two such properties without any conditions.

PM Dhan Dhanya Krishi Yojana for farmers

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- The programme is motivated by the Aspirational Districts Programme which was launched in 2018 to "to quickly and effectively transform 112 most under-developed districts across the country". The Pradhan Mantri Dhan Dhanya Krishi Yojana will converge existing schemes and will be

undertaken in partnership with States. It will cover 100 districts with low productivity, moderate crop intensity, and below-average parameters.

Budget 2025: Key figures

- **Fiscal Deficit: 4.4% of GDP**
- **Government receipts: Total receipts other than borrowings at ₹34.96 lakh crore**
- **Total Expenditure: ₹50.65 lakh crore**
- **Net tax receipts: ₹28.37 lakh crore**
- **Gross market borrowings: ₹14.82 lakh crore**

Several schemes for Bihar

- A new Makhana Board, National Institute of Food Technology, Entrepreneurship and Management were announced for Bihar. Apart from these, greenfield airports will be added in addition to the expansion of Patna airport and the West Kosi canal project in Mithilanchal was also announced.
- The Makhana Board will provide handholding and training support to makhana farmers and will also work to ensure they receive the benefits of all relevant government schemes. It has been envisioned that support for food processing will result in (1.) enhanced income for the farmers through value addition to their produce, and (2.) skilling, entrepreneurship and employment opportunities for the youth.

Credit guarantee cover enhanced for MSME

- MSMEs are the second engine which encompasses manufacturing and services. Currently, over 1 crore registered MSMEs generating 36% of our manufacturing have come together to position India as a global manufacturing hub, Ms. Sitharaman mentioned in her Budget speech.
- The investment limit classification will be enhanced 2.5 times for MSMEs. To improve access to credit, the credit guarantee cover will be enhanced, leading to ₹1.5 lakh crore of additional credit over the next five years. This will also be granted for well-run exporter MSMEs, for term loans upto ₹20 crore.
- A new scheme will be launched for 5 lakh women Scheduled Caste and Schedule Tribe first-time entrepreneurs. A National Manufacturing Mission will be initiated for small, medium and large industries to further Make In India.

Insurance for Gig Workers

- Online platform workers and gig workers will get ID cards after registering on the E-shram portal. They will be provided healthcare under PM Jan Arogya Yojana. This measure is likely to assist nearly 1 crore gig-workers.
- It has been announced the government's decision to launch a scheme for the socio-economic development for urban worker.

Increased allocation for Saksham Anganwadi and Poshan 2.0 scheme

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- The Revised Estimate (RE) 2024-25 for Saksham Anganwadi and POSHAN 2.0 scheme stands at ₹20,070.90 crore, while the Budget 2024-25 allocation was ₹21,200 crore. The Budget 2025-26 estimate is ₹21,960 crore.
- The Saksham Anganwadi and POSHAN 2.0 integrated nutrition support programme was approved by the Government of India for implementation during the 15th Finance Commission period 2021-22 to 2025-26.

Interest-free loans to States for infrastructure development

- ₹1.5 lakh crore will be provided towards 50-year interest free loans to States, for infrastructure development.
- An asset monetisation plan will be launched for 2025-30 period to infuse ₹10 lakh crore capital in new projects. An outlay of ₹500 crore for setting up a centre of excellence in artificial intelligence for education was announced in the Budget.

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Skilling, schools receive boost

- 50,000 Atal Tinkering labs will be set up in government schools in the next five years “to cultivate the spirit of curiosity and innovation and foster a scientific temper among young minds”. Broadband connectivity would be provided to all government secondary schools and primary health centres in all rural areas under the Bharat Net Project.

Start up funding

- A Deep Tech Fund of Funds will also be explored to catalyse the next generation startups as a part of this initiative. It is proposed to extend the benefit provided under Section 80-IAC to startups for another period of five years, i.e. the benefit will be available to eligible start-ups incorporated before 01.04.2030.

- For Startups, the government will provide loans ranging from 10 crore to 20 crore, with the guarantee fee being moderated to 1% for loans in 27 focus sectors important for Atmanirbhar Bharat. The Alternate Investment Funds (AIFs) for startups have received commitments of more than 91,000 crore.

Higher education

- A Bharatiya Bhasha Pustak Scheme will be announced to provide digital-form Indian language books for school and higher education.
- In the next year, 10,000 additional seats will be added in medical colleges and hospitals, towards the goal of adding 75,000 seats in the next five years. Additional infrastructure will be created in the five IITs started after 2014 to facilitate education for 6,500 more students. Hostel and other infrastructure capacity at IIT, Patna will also be expanded.

Union Budget 2025: Understanding Revenue Budget and Capital Budget

- Finance Minister Nirmala Sitharaman presented the Union Budget 2025 in the Lok Sabha on February 1, marking her the first finance minister to present eight consecutive Union Budgets.
- As the country anticipates her address, it's essential to understand the key components of the government's financial structure: the Revenue Budget and the Capital Budget.

What are Revenue Budget and Capital Budget?

- The government's budget is divided into two main parts: the Revenue Budget and the Capital Budget. Each serves a distinct purpose in managing the nation's finances.
- **Revenue Budget**
- The Revenue Budget records the government's income (revenue receipts) and the expenditure funded by these receipts. It includes:
 - **1. Revenue receipts:**
 - **Tax revenues:** These are earnings from taxes such as income tax, corporate tax, customs duties, and excise duties, levied by the Union government.
 - **Non-tax revenues:** These come from sources like dividends from government investments, fees for services, and interest earned on loans extended by the government.
 - **2. Revenue expenditure:**
 - This refers to the spending required for the day-to-day operation of government departments and services.
 - It also includes subsidies, interest payments on debts, and grants to state governments or other organisations. Revenue expenditure does not result in the creation of long-term assets.
 - **Revenue deficit:** When revenue receipts fall short of revenue expenditure, a revenue deficit occurs, signalling that the government is spending more than it earns. Persistent deficits highlight financial imbalances and the need for corrective measures to align income with expenditure.

Capital Budget

- In contrast, the Capital Budget focuses on the government's capital receipts and payments, which are primarily tied to asset creation and fiscal stability
- **1. Capital receipts**
- These include funds that either create a liability for the government or reduce its assets. Examples are:
 - Loans raised from the public through market borrowings or Treasury Bills.
 - Loans from foreign governments or institutions.
 - Recoveries of loans previously granted by the central government to states, Union Territories, or other parties
- **2. Capital expenditure:**
- This involves spending on acquiring assets like land, buildings, machinery, and equipment.
- Investments in government companies, corporations, and infrastructure projects also fall under this category.
- Additionally, loans and advances granted by the central government are considered part of capital expenditure.
- The Capital Budget is critical for infrastructure development, boosting economic productivity, and ensuring long-term economic growth

Why is this distinction important?

- Under the Indian Constitution, the government is required to differentiate between expenditure on revenue accounts and other expenditures. This classification helps provide clarity on how funds are utilised—whether for immediate operational needs or long-term asset creation — and ensures transparency in fiscal management.
- As the Union Budget 2025 unfolds, understanding these components can offer deeper insights into the government's financial priorities and strategies to drive economic growth.

Budget 2025: Food, fertiliser, direct, indirect, interest subsidies decoded

- In the Union Budget, subsidies play a crucial role in economic planning and welfare. In India, both central and state governments offer subsidies to ease the financial burdens on farmers and improve agricultural productivity. Subsidies also help stabilise prices, promote economic growth, and support vulnerable populations.
- The Union Budget 2025 is out on February 1, 2025, where Finance Minister Nirmala Sitharaman presented her eighth consecutive Budget in front of the Parliament. Here is a closer look at what subsidies are and how they are allocated.

What is a subsidy?

- A subsidy is financial assistance provided by the government to individuals or businesses through cash payments, grants, or tax breaks. The primary purpose of subsidies is to make essential goods and services more affordable for the people and to encourage the production and consumption of certain items, particularly those with positive societal benefits.

Agricultural subsidies can be broadly classified into direct subsidies and indirect subsidies:

- **Direct subsidies**
- These subsidies involve actual payments made to farmers, businesses, or individuals. The government directly transfers funds or provides financial aid to the beneficiary.
- This type of subsidies in India include the PM Kisan Samman Nidhi Scheme, which provides Rs 6,000 annually to all landholding farmer families in three installments, and farm loan waivers, where the government repays farmers' loans using public funds to ease their financial burden

Indirect subsidies

- Indirect subsidies help lower the price of a particular commodity or service, making it more affordable for farmers. These subsidies are generally provided in the form of discounts, reducing the cost of key agricultural inputs or services.
- Common examples of indirect subsidies in India include Minimum Support Price (MSP) for crops, fertiliser subsidies (urea), irrigation subsidies (PMKSY), interest rate subsidies (Kisan Credit Card), crop insurance subsidies (PMFBY), electricity subsidies for irrigation, infrastructure subsidies (cold storage loans), and research and extension services to improve farming practices.

Interest subsidies

- Interest subsidies in the budget aim to reduce interest rates for specific sectors like education, housing, and agriculture. Examples include the Central Sector Interest Subsidy Scheme (CSIS) for students, the Interest Subvention Scheme for farmers, and the Credit Linked Subsidy Scheme (CLSS) for housing loans for the economically weaker sections.

Food subsidy

- The government of India provides food grains to targeted beneficiaries at highly subsidised rates through various central schemes under the National Food Security Act (NFSA), 2013, and other welfare schemes (OWS) such as Priority Household (PHH), Antodaya Anna Yojana (AAY), PM Poshan (earlier known as Mid-day Meal), and Integrated Child Development Services (ICDS).

Food-grains for these schemes are procured through two primary modes:

- **1. Centralised procurement (CP) mode:** The states and their agencies procure the food grains and hand them over to the Food Corporation of India (FCI), which then releases funds to the states as per the provisional cost sheet issued by the Department of Food and Public Distribution (DFPD). The state lifts food grains from FCI based on the allocation order issued by the DFPD for distribution under central schemes.

- **2. Decentralised procurement (DCP) mode:** Here, the responsibility for the procurement and distribution of food grains under central schemes lies with the state government. If surplus food grains are procured, they are delivered to FCI. In case of a deficit, FCI supplies the required food grains to the state. A Memorandum of Understanding (MOU) is signed between the state and DFPD to facilitate this process.
- The DFPD releases funds to FCI and DCP states to maintain adequate buffer stock and distribute food grains under various central schemes, including the National Food Security Act (NFSA) and other welfare schemes (OWS)

Food subsidy released:

- FY 2021-22: Rs 2,88,718.54 crore
- FY 2022-23: Rs 2,72,501.70 crore
- FY 2023-24: Rs 2,11,394.39 crore
- In July 2024, the government allocated Rs 2,05,250 crore for food subsidies.

Fertiliser subsidy

- Fertiliser subsidies are provided to help farmers buy fertilisers at a lower cost. The government provides these subsidies to make sure that the agricultural sector can thrive by keeping the prices of fertilisers affordable, especially since the cost of fertilisers can change due to fluctuations in the international market.

How does the fertiliser subsidy work?

- The government gives subsidies to companies that make or import fertilisers. These subsidies are paid based on how much fertiliser is actually sold to farmers by local retailers. The subsidy is transferred directly to fertiliser companies through a system called Direct Benefit Transfer (DBT).
- To ensure that the benefits reach the right people, the government uses Aadhaar cards, Kisan Credit Cards (KCC), or Voter Identity Cards to identify eligible farmers. The subsidies are transferred on a weekly basis

There are two main types of fertiliser subsidies:

- **1. Nutrient-Based Subsidy (NBS):** This subsidy is for Phosphatic and Potassic (P&K) fertilisers. The amount of subsidy depends on the nutrient content of the fertiliser, and it's decided on an annual or semi-annual basis. The Maximum Retail Price (MRP) is set by fertiliser companies based on market conditions
- **2. Urea Subsidy:** For urea (a common fertiliser), the government covers the difference between the cost of urea and the price at which urea is sold to farmers. Urea is sold at a fixed price, and the government compensates manufacturers for the difference.

Fertiliser subsidy budget:

- For FY 2022-2023 the government spent Rs 2,25,222 crore on fertiliser subsidies.

- For FY 2023-2024, the government had allocated Rs 1,75,103 crore for fertiliser subsidies.
- In July 2024, the fertiliser subsidy was set at Rs 1,64,000 crore

Advantages of subsidies

- Subsidies offer several advantages, including lowering prices and controlling inflation by reducing the cost of essential goods, such as fuel, particularly during rising global prices. They also help prevent the decline of key industries like agriculture and fishing, ensuring these sectors remain viable and continue to support the population.
- Additionally, subsidies incentivise production, leading to an increased supply of critical goods and services such as food, water, and education, thereby improving access for the broader population.

Potential drawbacks of subsidies

- Despite their benefits, subsidies can also have some drawbacks. One major disadvantage is the potential for supply shortages, as increased demand driven by subsidised prices may outpace production capacity.
- Additionally, measuring the success of subsidies can be difficult, making it challenging to assess their long-term economic impact.
- Finally, funding subsidies often necessitates higher taxes, which can place a financial burden on the general population and businesses, as they contribute to the government's ability to subsidise industries.

Budget 2025: Women, SC/STs entrepreneurs can now get up to Rs 2 crore loan

- In the 2025-26 Budget, Finance Minister Nirmala Sitharaman announced on Saturday a scheme offering Rs 2 crore for first-time women entrepreneurs, Scheduled Castes, and Scheduled Tribes.
- "For 500,000 first-time entrepreneurs, including women, ST and SCs, a new scheme, to be launched, to provide term loans up to Rs 2 crore during the next 5 years,".
- "The Rs 2 crore loan support scheme for women entrepreneurs from SC and ST communities is a commendable initiative aimed at bridging the funding gap faced by marginalized groups. However, to maximize its impact, the government should also consider implementing mentorship programs and skill development initiatives
- India is home to over 10.45 crore Scheduled Tribe (ST) individuals, comprising 8.6 per cent of the total population.
- The Union Budget 2025-26 has introduced a historic boost to the welfare and development of India's tribal communities.
- The Budget 2025 signifies a paradigm shift in tribal development, emphasizing inclusive growth through integrated interventions.

- The government is focusing on tribal empowerment in various sectors, aiming to bring tribal communities into the mainstream of India's development narrative, enabling them to contribute to and benefit from the country's progress
- The World Economic Forum finds India slightly improving in gender parity ratio, though it still ranks low in the Global Gender Gap Report, with economic status widening the gap in women's equality across different spheres.
- According to an IFC report published in 2022, about 90% of female entrepreneurs in India had not borrowed from a formal financial institution. During the 2020 lockdown, 72% of female-led enterprises lacked financial reserves compared to 53% of male-owned businesses.
- Women in India receive credit equal to just 27% of the deposits they provide, while men receive credit equal to 52% of their deposits. This difference could be linked to financial institutions not granting credit evenly to women

Existing support options for women

- **Mudra Yojana**

- A government initiative to support micro and small enterprises, with a special focus on women entrepreneurs. Loans up to Rs 10 lakh are available with no collateral, and women receive lower interest rates.

Stand-Up India Scheme

- Provides bank loans between Rs 10 lakh and Rs 1 crore to at least one SC/ST borrower and one woman per bank branch for setting up a greenfield business. For non-individual firms, a SC/ST or woman entrepreneur must hold at least 51% ownership.
- **Prime Minister's Employment Generation Programme (PMEGP)**
- Offers financial assistance for new micro-enterprises and small businesses, promoting self-employment among women.

- **Udyam Shakti Portal**

- Launched by the Ministry of MSME, this initiative promotes social entrepreneurship by providing business planning assistance, incubation facilities, training programmes, mentorship, and market research. Projects costing up to Rs 25 lakh are eligible, with Rs 10 lakh allocated for service-based ventures.

- **Economic Empowerment of Women Enterprises and Start-ups by Women**

- A Ministry of Skill Development and Entrepreneurship scheme offering incubation and acceleration support for female micro-entrepreneurs. It is currently operational in Assam, Rajasthan, and Telangana.

Budget allocation for for tribal welfare:

1) Significant Budget Increase:

- The budget allocation for tribal welfare has surged by 45.79 per cent from Rs 10,237.33 crore in 2024-25 to Rs 14,925.81 crore in 2025-26.
- Over the years, the allocation has increased by an impressive 231.83 per cent from Rs 4,497.96 crore in 2014-15, underscoring the government's sustained focus on tribal development.

2) Flagship Initiatives:

- Eklavya Model Residential Schools (EMRS):** An allocation of Rs 7,088.60 crore to nearly double last year's funding, aimed at providing quality education to tribal students in remote regions.
- Pradhan Mantri Jan Jatiya Vikas Mission:** A 150 per cent increase to Rs 380.40 crore to create income-generating opportunities for tribal communities.
- PMAAGY (Pradhan Mantri Adi Adarsh Gram Yojana):** A 163 per cent increase in allocation to Rs 335.97 crore to improve infrastructure in tribal villages with a focus on education, healthcare, and employment. Under PMAAGY, funds are provided to states and Union Territories with Scheduled Tribe populations to improve education, healthcare, agriculture, skill development and employment opportunities.
- Multi-Purpose Centers (MPC) under PM-JANMAN:** Funding has doubled to Rs 300 crore to provide socio-economic support to Particularly Vulnerable Tribal Groups (PVTGs). This scheme focuses on improving the socio-economic conditions of particularly vulnerable tribal groups by ensuring access to safe housing, clean drinking water, sanitation, education, healthcare, nutrition, roads and telecom connectivity.
- Dharti Aaba Janjatiya Gram Utkarsh Abhiyan (DAJGUA):** It aims to saturate infrastructural gaps in 63,843 villages with a budgetary outlay of Rs 79,156 crore over five years (central share: Rs 56,333 crore, state share: Rs 22,823 crore). This initiative brings together 17 ministries through 25 targeted interventions, ensuring integrated tribal development in key areas such as health, education, livelihoods, and skill development. The funding for DAJGUA has quadrupled from Rs 500 crore to Rs 2,000 crore in 2025-26.
- The Budget emphasizes the importance of education, healthcare, livelihoods, and skill development for tribal communities, ensuring that they not only benefit from but actively contribute to India's inclusive growth.

OPEC+ Sticks to Supply Plan Even as Trump Seeks Oil Price Cut

- The Joint Ministerial Monitoring Committee (JMMC), the OPEC+ panel reviewing policy and markets and potentially recommending actions to the group's ministers.
- The JMMC, the panel that takes stock of oil market developments and proposes courses of action to the ministers of the OPEC+ group, doesn't take decisions on production levels—these are taken by the OPEC+ ministerial meetings.

- At the previous ministerial gathering in December, the alliance decided to delay the start of the easing of the 2.2 million bpd cuts to April 2025, from January 2025. The group also extended the period in which it would unwind all these cuts into the following year, until September 2026.
- OPEC+ reiterated the importance of compliance with the cuts and the timely compensation for those producers who haven't adhered to their assigned quotas.
- OPEC+ has agreed to stick to its policy of gradually raising oil output from April.
- The meeting coincided with a rise in oil prices after US President Donald Trump imposed tariffs on Mexico, Canada and China — America's top trading partners — raising concern about supply disruption.
- OPEC+ is cutting output by 5.85 million barrels per day (bpd), equal to about 5.7 per cent of global supply, agreed in a series of steps since 2022. In December, OPEC+ extended its latest layer of cuts through the first quarter of 2025, pushing back a plan to begin raising output to April.

What is OPEC?

- Crude oil production by the Organisation of the Petroleum Exporting Countries (OPEC) is an important factor that affects oil prices.
- This organisation seeks to actively manage oil production in its member countries by setting production targets. Historically, crude oil prices have seen increases in times when OPEC production targets are reduced.
- OPEC member countries produce about 40 per cent of the world's crude oil. Equally important to global prices, OPEC's oil exports represent about 60 per cent of the total petroleum traded internationally.
- Because of this market share, OPEC's actions can, and do, influence international oil prices. In particular, indications of changes in crude oil production from Saudi Arabia, OPEC's largest producer, frequently affect oil prices.

Origin of OPEC

- The OPEC is a permanent, inter-governmental organisation, created at the Baghdad Conference in September 1960 by Iran, Iraq, Kuwait, Saudi Arabia and Venezuela.
- OPEC's formation occurred at a time of transition in the international economic and political landscape, with extensive decolonisation and the birth of many new independent countries in the developing world.
- The international oil market was dominated by the "Seven Sisters" multinational companies and was largely separate from that of the former Soviet Union and other centrally planned economies.
- OPEC developed its collective vision, set up its objectives and established its Secretariat.

- It adopted a 'Declaratory Statement of Petroleum Policy in Member Countries' in 1968, which emphasised the inalienable right of all countries to exercise permanent sovereignty over their natural resources in the interest of their national development.
- The statute stipulates that "any country with a substantial net export of crude petroleum, which has fundamentally similar interests to those of the member countries, may become a full member, if accepted by a majority of three-fourths of full members, including the concurring votes of all founder members".
- Currently, the organisation has a total of 12 member countries. They are: Algeria, Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, UAE and Venezuela.
- OPEC had its headquarters in Geneva in the first five years of its existence. This was moved to Vienna in Austria on September 1, 1965.
- OPEC regularly meets to set oil production targets and coordinate output to help manage global oil prices for the entire group.
- OPEC's objectives are to coordinate and unify petroleum policies among member countries, in order to:
 - i) Secure fair and stable prices for petroleum producers.
 - ii) Ensure an efficient, economic and regular supply of petroleum to consuming nations.
 - iii) Secure a fair return on capital to those investing in the industry.

What is OPEC+?

- OPEC+ is a group of oil-producing nations, made up of the members of the OPEC, and 10 other non-OPEC members.
- The non-OPEC members are: Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, Sudan, South Sudan.
- The OPEC bloc is nominally led by Saudi Arabia, the group's largest oil producer, while Russia is the biggest player among the non-OPEC countries.
- The format was born in 2017 with a deal to coordinate oil production among the countries in a bid to stabilise prices. Since then, the group has reached deals for members to voluntarily cut and ramp-up production in response to changes in global oil prices.
- The OPEC and OPEC+ countries combined produce about 60 per cent of global oil production.

Government announces National Mission on High Yielding Seeds in Budget 2025

Finance Minister Nirmala Sitharaman on Saturday (February 1, 2025) announced the National Mission on High Yielding Seeds in her 8th Budget speech for the Modi government.

- The main objectives of the initiative, as announced, are:
- strengthening the research ecosystem,

- targeted development and propagation of seeds with high yield, pest resistance and climate resilience, and
- commercial availability of more than 100 seed varieties released since July 2024
- “High-yielding seeds are the first step to improve output,” Agriculture Minister Shivraj Singh Chouhan said at a press conference after the Budget presentation in Parliament.
- “Finance Minister has announced a National Mission on High Yielding Seeds. These seeds will have higher pest resistance, and will be able to maintain high crop output despite global warming. The Indian Council on Agricultural Research (ICAR) will research on these seeds and will try to make these available to farmers at the earliest.
- “This new initiative, along with the Cotton Productivity Mission, demonstrates India’s investment in cutting-edge agricultural research and the promotion of climate-resilient, high-yield seed varieties.
- Restoration of 200% income tax deduction on R&D expenditures would certainly help the industry contribute significantly to this mission and we are hopeful that the government will consider it positively,”

How do high-yielding seeds aid climate mitigation?

- Food systems are responsible for a considerable portion of emissions. A study published in *Nature Food* in March 2021 said that in 2015, food-system emissions amounted to 18 Gt CO₂ equivalent per year globally, representing 34% of total greenhouse gas emissions. The largest share of this was from agriculture and land use/land-use change activities, at 71%, the study said.
- As the climate crisis gets worse, there is a global push to explore high-yielding seeds.
- According to the World Bank, “the increase in food production has been linked to agricultural expansion, and unsustainable use of land and resources”, which makes the requirement for climate-resilience practices in agriculture like using high-yielding seeds even more crucial.
- “High-yielding seed varieties are crucial for building climate resilience as it offers multiple benefits that include reduced reliance on irrigation, tolerance to adverse weather conditions (drought, floods, salinity), higher nutrients uptake, lower crop losses, increased productivity and ultimately help in boosting farmers’ incomes.
- Recognising this importance, the government has taken a significant step to launch a dedicated mission to promote high-yielding varieties in Budget 2025 to ensure sustainable and climate resilient agriculture in India.”.
- High-yielding varieties of seeds produce more crop per unit of agricultural land, which can help reduce land-use change. Many farming practices, like shifting cultivation, rely on clearing forests to make space for crop cultivation.
- This disrupts natural carbon sinks which otherwise function as natural carbon sinks.

- Seed varieties with higher yield and efficiency can potentially help counter these concerns, while maintaining a high crop output to promote food security.

Challenges

- Producing high-yielding varieties of seeds needs extensive scientific research, which can possibly limit its availability for farmers to use freely.
- A 2023 report titled *Concentration and Competition in U.S. Agribusiness*, published by the United States Department of Agriculture, found that between 1990 and 2020, prices paid by farmers for crop seed increased by an average of 270%, while seed prices for crops grown predominantly with genetically modified (GM) traits rose by 463%, considerably more than commodity output prices.
- Another challenge related to high-yielding seed varieties is a rise in monoculture. Traditionally, cultivating some crops together has had proven mutual benefits, but if a certain high-yielding variety promises increased output, farmers can be tempted to only focus on those at the cost of soil health, biodiversity, and more.
- "To ensure accessibility for small and marginal farmers, dedicated seed banking centers must be established across India, making high-yielding varieties affordable and widely available.
- However, excessive promotion of select varieties should be balanced to prevent side-lining traditional crops,"
- "Careful consideration of the associated challenges related to cost and accessibility, and proactive policy measures such as strong regulatory and ethical oversight are essential to maximise their positive impact and ensure equitable access for all.

New mission for manuscripts announced in Union Budget

- The Union Budget 2025-26 announced a special mission for the survey, documentation, and conservation of India's manuscript heritage. Launched as the 'Gyan Bharatam Mission', it intends to cover more than one crore manuscripts.
- The 'Gyan Bharatam Mission' is for undertaking the "survey, documentation and conservation" of India's manuscript heritage lying with academic institutions, museums, libraries, and private collectors, Union Finance Minister Nirmala Sitharaman said in her budget speech.

National Manuscripts Mission

- To accommodate this new initiative, the budget allocation for the National Manuscripts Mission (NMM), whose aim is to identify and document manuscripts and make the manuscript heritage accessible across the country, has been hiked from ₹3.5 crore to ₹60 crore.
- Presently, NMM is a part of the Indira Gandhi National Centre for Arts. It was set up in 2003, but had not taken off as expected.
- Welcoming the move, Union Culture Minister Gajendra Singh Shekhawat said that the new mission "announced by Finance Minister Nirmala Sitharaman today will enable Bharat to preserve and

protect the invaluable wisdom and knowledge held by these manuscripts found across the country”.

Culture Ministry allocation

- The overall allocation for the Culture Ministry has been increased by approximately ₹100 crore with a total outlay of ₹3,360.96 crore as against the revised estimate of ₹3,260.93 crore in the current fiscal.
- Out of this, the Archaeological Survey of India (ASI) has been allocated ₹1,278.49 crore against ₹1273.91 crore allocated in 2024-25 which was revised to ₹1191.99 crore. A total of ₹156.55 crore has been allocated for national libraries and archives, ensuring the maintenance of historical records and documents, while museums such as the National Museum and the National Gallery of Modern Art will receive ₹126.63 crore to enhance cultural preservation efforts.
- Funds for organising events to mark centenaries and anniversaries and international cultural collaborations have seen a sharp decline.
- The Mission envisages documentation and conservation of the manuscript heritage with academic institutions, museums, libraries and private collectors.
- Additionally, a National Digital Repository inspired by Indian knowledge traditions will be created.
- This initiative is essential for safeguarding the diverse and valuable knowledge contained in India's traditional manuscripts.

What is a manuscript?

- A manuscript is a handwritten composition on paper, bark, cloth, metal, palm leaf or any other material dating back at least 75 years that has significant scientific, historical or aesthetic value.
- The term “manuscript” has its origins in the Latin term “manuscriptus”, which means written by hand.
- Lithographs and printed volumes are not manuscripts.
- Manuscripts are found in hundreds of different languages and scripts.
- Manuscripts are distinct from historical records such as epigraphs on rocks, firmans, revenue records which provide direct information on events or processes in history.
- Manuscripts can exist in multiple languages and scripts, with a single language often being represented in different scripts (for example, Sanskrit written in Odia, Grantha, Devanagari, etc).

Key components of the Gyan Bharatam Mission include:

- **i) Survey, Documentation, and Preservation:** The mission will focus on thoroughly surveying, documenting, and conserving manuscripts stored in academic institutions, museums, libraries, and private collections.

- **ii) National Digital Repository:** A central feature of the mission is the creation of a digital repository of India's knowledge system, which will store and share traditional knowledge. This platform will be accessible to researchers, students, and institutions across the world.
- **iii) Global Access:** The digital repository will promote global access to India's traditional knowledge, fostering knowledge sharing internationally.

India Broadens Crude Oil Import Sources Amid Rising Demand

- India diversifies its crude oil imports from 27 to 40 countries, with Argentina as the latest addition, amid growing energy demands. The government aims to reduce import dependency through increased domestic production and a shift towards alternative and renewable energy sources like natural gas, ethanol, and biodiesel.
- Union Petroleum Minister Hardeep Singh Puri said India has diversified its crude oil imports. The country now imports crude oil from 40 countries, with Argentina joining as the latest supplier.
- The United States, Russia, Saudi Arabia, UAE and Iraq are major suppliers.
- India imports 88 per cent of its total requirements of oil. The price of crude oil in international markets is based on the demand supply scenario, geopolitical issues and various other market conditions. It is difficult to make accurate predictions about crude oil prices, especially amid ongoing volatility.
- Public sector oil companies finalise their crude oil requirements annually based on techno-economic analysis of the petroleum products' demand and evaluation of various crude oil supply sources through annual term contracts as well as short term spot contracts.

Causes for rise in crude oil import

- India's energy consumption is increasing continuously due to sustained economic growth over the last few years resulting in industrialisation, urbanisation, transportation needs, infrastructure development, rising income, improved standard of living, increased access to modern energy coupled with increase in private consumption and gross fixed capital formation, etc resulting in increasing import of crude oil.
- To ensure uninterrupted supply of petroleum products in the country, Oil Public Sector Undertakings (OPSUs) import crude oil to bridge the supply demand gap in the domestic market.
- The rise in import dependency is primarily due to increase in quantity on account of demand growth, price increase in the international market and exchange rate variations.

Strategy to reduce import dependency on crude oil

- The government has adopted a multi-pronged strategy to reduce the import dependency on crude oil which.

These include:

- i) Demand substitution by promoting usage of natural gas as fuel/feedstock across the country towards increasing the share of natural gas in the economy and moving towards a gas based economy.
- ii) Promotion of renewable and alternative fuels like ethanol, second generation ethanol, compressed biogas and biodiesel.
- iii) Refinery process improvements.
- iv) Promoting energy efficiency and conservation.
- v) Efforts for increasing production of oil and natural gas through various policies, initiatives, etc.
- The government has been promoting blending of ethanol in petrol under the Ethanol Blended Petrol (EBP) Programme. Blending of petrol has reached approximately 14.6 per cent during Ethanol Supply Year (ESY) 2023-24 and resulted in approximately forex savings of Rs 1.09 lakh crore from ESY 2013-14 to ESY 2023-24.
- The ethanol produced from sugar-based feedstock has helped sugar factories to reduce their surplus sugar inventory and generate revenue early to clear the dues of cane farmers.
- During the last 10 years, EBP has helped in expeditious payment of approximately Rs 92,409 crore to the farmers as on September 30, 2024. It is anticipated that 20 per cent ethanol blending in petrol is likely to result in payment of more than Rs 35,000 crore annually to the farmers.
- To promote the use of Compressed BioGas (CBG) as automotive fuel, Sustainable Alternative Towards Affordable Transportation (SATAT) initiative has been launched.

SWAMIH 2.0: Why India's Booming Housing Market Still Needs Govt Support

- Indian property developers had another strong year in 2024, as robust housing demand drove record-high sales and new luxury project launches in many top-tier cities.
- At the same time, the number of stalled housing units in 44 Indian cities rose to over 5 lakh, according to data released by NSE-listed analytics firm PropEquity. Uttar Pradesh's Greater Noida recorded the highest number of unfinished housing units (76,256), followed by Thane and Gurugram, the data shows.
- The second installment of the Central government's Special Window for Affordable and Mid-Income Housing (SWAMIH) Fund, announced in Budget 2025, aims to help complete 1 lakh of these stalled units.

How SWAMIH Fund Helped Homebuyers

- The first SWAMIH Fund was launched in 2019 and dubbed "last-mile financing" as lakhs of unfinished housing units languished across India, leaving thousands of buyers in distress. The fund was set up by the Central government and is managed by SBI Ventures.
- the SWAMIH Fund, with a capital commitment of Rs 15,530 crore, has helped complete over 50,000 homes and aims to deliver 60,000 more in the next three years.

- On 1 February, Finance Minister Nirmala Sitharaman announced in her Budget speech that SWAMIH Fund 2 will be established as a blended finance facility with Rs 15,000 crore to expedite the completion of another 1 lakh units.

Why Govt Brought SWAMIH 2.0

- The second SWAMIH fund comes against the backdrop of a booming housing market in India, where sales in the top eight cities rose 7% year-on-year in 2024, reaching a 12-year high. Demand for premium homes has surged, prompting developers to increase launches of Rs 1 crore and above properties fivefold compared to 2019, according to Knight Frank India.
- "While market conditions are favourable, they mostly benefit new launches and projects backed by reliable developers with a clear path to completion. However, stalled projects are still languishing,

Suffering Homebuyers

- Finance Minister Nirmala Sitharaman, in her Budget speech, noted that SWAMIH has supported and will continue to support "middle-class families who are paying EMIs on loans taken for apartments while also paying rent for their current dwellings."
- Following liberalisation and other reforms, India's tier-1 cities saw a wave of real estate investment in the early 2000s, driven by rising salaries, low interest rates, and banking sector expansion. However, the 2008 financial crisis in the US served as a wake-up call, as excessive debt had built up across stakeholders—developers hoarding expensive land, small investors stretching loans, and banks and institutional investors heavily exposed.
- "The launch of SWAMIH 2.0 is a significant development, particularly as the affordable housing segment has underperformed in recent quarters due to stressed projects.
- SWAMIH 2.0 will help clear unsold inventory through a balanced approach of debt financing for developers and interest subvention schemes for homebuyers.

Union Minister Shivraj Singh Chouhan to inaugurate NAKSHA program for urban land survey

- Union Minister of Rural Development and Agriculture & Farmers' Welfare, Shivraj Singh Chouhan will inaugurate the National Geospatial Knowledge-based Land Survey of Urban Habitations **(NAKSHA) pilot program on Feb 18th**. The initiative will be launched across 152 Urban Local Bodies (ULBs) in 26 states and 3 Union Territories (UTs) at Raisen, Madhya Pradesh.
- The NAKSHA program, spearheaded by the Department of Land Resources under the Ministry of Rural Development, aims to modernize land survey processes in urban areas.
- The objective is to create and update land records, ensuring accurate documentation of land ownership, improving urban planning, and reducing land-related disputes. The program will leverage IT-based systems for property record administration to enhance transparency, efficiency, and support sustainable development.

- The inauguration ceremony will feature several key activities, including a drone demonstration, the release of a Standard Operating Procedure (SoP) booklet, and the launch of a video and flyer about the NAKSHA Program. Additionally, the flagging of the Watershed Development Component (WDC) Yatra and screening of a WDC video, along with the playing of the Watershed Anthem, will take place.
- The Survey of India has been designated as the technical partner for the NAKSHA initiative. It will conduct aerial surveys and provide orthorectified imagery through third-party vendors to the respective state and Union Territory governments. Madhya Pradesh State Electronic Development Corporation (MPSEDC) will develop an end-to-end web-GIS platform, with storage facilities managed by the National Informatics Centre Services Inc. (NICS).
- States and Union Territory governments will carry out field surveys and ground truthing using the orthorectified imagery. This will culminate in the final publication of urban and semi-urban land records.
- The NAKSHA pilot program is expected to cost ₹194 crore, with full funding provided by the central govt.

CONTRIBUTION OF PM E-DRIVE SCHEME IN GROWTH OF EV ECOSYSTEM

- The Government of India has notified 'PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) Scheme' on 29.09.2024 to provide impetus to the green mobility & development of EV manufacturing eco-system in the country.
- The scheme has an outlay of ₹10,900 crore over a period of two years from 01.04.2024 to 31.03.2026. **The Electric Mobility Promotion Scheme (EMPS) 2024** implemented for the period of six months from 01.04.2024 to 30.09.2024, is subsumed in PM E-DRIVE scheme.

Salient features of PM E-DRIVE scheme:

- i. Introduction of E- Vouchers: - The Ministry of Heavy Industry (MHI) has introduced E-vouchers for Electric vehicle buyer to avail the demand incentive under the scheme.
- ii. Introduction of new vehicle segments: - An allocation ₹500 crore each has been done for deployment of e-ambulances and e-trucks under the scheme. This is new initiative to promote the use of e-ambulances for a comfortable patient transport. Similarly, e-trucks have also been introduced under the scheme.
- iii. Upgradation of testing agencies: ₹780 Crore has been earmarked for upgradation of vehicles testing agencies.

The scheme has following three components:

- i. Subsidies: ₹3,679 crore as demand incentives for e-2W, e-3W, e-ambulances, e-trucks & other new emerging EV categories.

- ii. Grants: ₹7,171 crore for creation of capital assets i.e., e-buses, establishment of network of charging stations & upgradation of vehicle testing agencies identified under this scheme.
- iii. Administration of Scheme including IEC (Information, Education & Communication) activities and fee for project management agency (PMA).

The PM E-DRIVE scheme aims to boost demand for electric vehicles (EVs) through various incentives detailed below:

- i. Demand Incentives: These incentives directly reduce the upfront cost of EVs for consumers at the point of purchase. The government reimburses the incentive amount to the Original Equipment Manufacturers (OEMs).
- ii. Financial Support for Charging Infrastructure: The scheme allocates ₹2,000 crore for establishing public charging infrastructure for various vehicle categories.
- iii. Grants for Capital Assets: The scheme has provisions of ₹4,391 crore as grants to support deployment of 14,028 e-buses and ₹780 crore as grants for the upgradation of vehicle testing agencies identified under the scheme.
- Yes, there is mechanisms in place to monitor and assess the implementation of the PM E-DRIVE scheme. Project Implementation and Sanctioning Committee (PISC), an inter-ministerial empowered committee, headed by the Secretary of Heavy Industries, is constituted for overall monitoring, sanctioning, and implementation of the PM E-DRIVE scheme. This committee is also responsible for removing any obstacles or difficulties that may arise during implementation

Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PMMKSSY)

- The Department of Fisheries under the Ministry of Fisheries, Animal Husbandry and Dairying, is organizing a special nationwide campaign for **registrations on the National Fisheries Digital Platform (NFDP) along with expediting registration approvals and mobilizing applications from eligible stakeholders for availing various benefits provided under Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PMMKSSY) from 14th to 22nd February, 2025.**
- This nationwide effort, in collaboration with State/UT Fisheries Departments, National Fisheries Development Board (NFDB), and Common Service Centers (CSCs), will focus on organizing **camps in key fisheries hotspots and potential areas across the country** aimed at expediting the registration process, enhancing approval rates, and encouraging eligible stakeholders to avail themselves of the numerous benefits under PMMKSSY, such as credit facilitation, aquaculture insurance and performance grants.

Background

- The **Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PMMKSSY)**, a Central Sector Sub-scheme under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) with an outlay of ₹6,000 crore is under implementation since 2023-2024. **Its main aim is to formalize the fisheries**

sector, enhance access to institutional finance, promote aquaculture insurance, improve value chain efficiencies, and strengthen fish safety and quality assurance systems.

- By addressing key challenges such as fragmentation, lack of credit access, and low value chain efficiency, PMMKSSY seeks to create a more resilient and sustainable fisheries sector, ensuring enhanced livelihoods for fishers and fish farmers.
- A key component of this sub-scheme is to create a **National Fisheries Digital Platform (NFDP)** to **register** fishers, fish farmers, vendors, processors, and microenterprises, facilitating their integration into formal financial systems and government programs. **NFDP has specific modules for registration, credit facilitation, strengthening of Fisheries cooperatives, aquaculture insurance, performance grants, traceability and training & capacity building.** So far, more than 17 lakh registrations have been made on the portal.
- This digital initiative, combined with targeted interventions under PMMKSSY, is expected to enhance productivity, expand domestic and global markets, and ensure long-term sectoral growth.
- Eligible stakeholders mainly, fishers, fish farmers, vendors, processors, microenterprises, etc. can register themselves on the **National Fisheries Digital Platform** at these camps such that they can avail the benefits under PMMKSSY.

India expands battery manufacturing with new PLI ACC agreement

- The Ministry of Heavy Industries (MHI) signed a Programme Agreement on Tuesday with Reliance New Energy Battery Limited, a subsidiary of Reliance Industries Limited, under the Production Linked Incentive (PLI) Scheme for Advanced Chemistry Cell (ACC).
- The agreement grants Reliance New Energy Battery Limited a 10 GWh ACC manufacturing capacity, making it eligible for incentives under India's ₹18,100 crore PLI ACC scheme.
- The PLI ACC scheme was approved by the Cabinet in May 2021 with an outlay of ₹18,100 crore to establish a total manufacturing capacity of 50 GWh. With this latest agreement, a cumulative capacity of 40 GWh has now been allocated to four companies.
- In the first round of bidding conducted in March 2022, three firms were awarded a total capacity of 30 GWh, with Programme Agreements signed in July 2022.
- According to MHI officials, the PLI ACC scheme aims to enhance local value addition and ensure competitive battery manufacturing costs in India.
- The scheme allows participating firms to choose suitable technologies and inputs for setting up advanced ACC manufacturing facilities, catering primarily to the electric vehicle and renewable energy storage sectors.

- The Union Budget for FY2025-26 introduced measures to support domestic battery manufacturing, including exemptions on Basic Customs Duty (BCD) for 35 additional capital goods used in EV battery production.
- These initiatives are expected to boost lithium-ion battery production and strengthen the domestic supply chain.
- The Ministry of Heavy Industries remains focused on fostering innovation, attracting foreign investment, and supporting the establishment of a self-sufficient advanced battery ecosystem. Beyond the PLI beneficiaries, more than ten companies are setting up additional battery manufacturing facilities, contributing to the sector's expansion.

ANRF Launches Call for Proposals Under J. C. Bose Grant (JBG)

- The Anusandhan National Research Foundation (ANRF) has announced the launch of the J. C. Bose Grant (JBG), a new scheme, to recognize the outstanding performance and contributions of senior Indian scientists and engineers through this extra-mural funding opportunities to enhance their research in cutting-edge scientific and technological areas.
- The ANRF, an apex body to provide high-level strategic direction of scientific research in the country as per recommendations of the National Education Policy (NEP) aims to seed, grow and promote research and development (R&D) and foster a culture of research and innovation. It will support capacity building at all levels to strengthen the research ecosystem of the country.
- **The J. C. Bose Grant is designed to support senior-level researchers** who have demonstrated exceptional achievements, with evidence of excellence such as publications records and research outcomes, patents, technology transfers, awards, and grants etc. across various domains of science and technology (S&T) including agriculture, medicine, as well as humanities and social sciences at the interfaces of S&T.
- Participants must be active, senior Indian scientists or researchers with a proven track record of excellence, holding at least a Professor-level position or equivalent at an Indian institution/university.
- This grant provides an annual research funding of Rs. 25 lakhs for a duration of five years. Additionally, an annual overhead of Rs. 1.0 lakh will be provided to the implementing institution. If the Principal Investigator (PI) superannuates, during the term of the grants, it can be continued subject to the host institutions willingness to host

Anusandhan National Research Foundation (ANRF)

- The Parliament passed the Anusandhan National Research Foundation Bill, 2023 in August 2023 to set up Anusandhan National Research Foundation (ANRF).
- The Science and Engineering Research Board (SERB), established by an act of Parliament in 2008, has been subsumed into ANRF.

- ANRF acts as an apex body to provide high-level strategic direction of scientific research in the country as per recommendations of the National Education Policy.
- The ANRF aims to seed, grow and promote research and development (R&D) and foster a culture of research and innovation throughout India's universities, colleges, research institutions, and R&D laboratories.
- Its mandate is to promote R&D activities through appropriate policy interventions and to provide extramural funding to the researchers associated with various academic institutions, research laboratories and other R&D organisations for carrying out competitive basic or fundamental research in all frontier areas of science and engineering.
- ANRF strives to serve the needs of the researchers by making timely funding decisions and responding to their queries.
- It forges collaborations among the industry, academia, research institutions and government departments.

Funding for ANRF

- ANRF has been operationalised with a budgetary allocation of Rs 2,000 crore for the financial year 2024-25.
- It has provisions to receive monies from the central government through grants and loans; donations from public sector enterprises, the private sector, philanthropist organisations, foundations or international bodies for R&D; recoveries made of the amounts granted to ANRF; any income from investment of the amounts received by ANRF and all amounts with the Fund for Science and Engineering Research under the repealed Science and Engineering Research Board Act, 2008.
- ANRF and its funding systems are operated through a Governing Board and an Executive Council.
- The Governing Board provides high-level strategic direction and monitors the implementation of the objectives of the ANRF and Executive Council is entrusted to implement the provisions of this Act.

Fraud at Mumbai's New India Cooperative Bank, why depositors can't get their money

- The Economic Offence Wing (EOW) of the **Mumbai Police last week arrested Hitesh Mehta, former general manager** and head of accounts at the city-based New India Cooperative Bank, for allegedly siphoning Rs 122 crore from the bank's safe. A developer, Dharmesh Paun, has also been arrested for allegedly assisting Mehta in routing the embezzled money.
- The Reserve Bank of India (RBI) then restricted withdrawals from the bank, leading to depositors queueing up for their money.

What is the fraud at the New India Cooperative Bank?

- The fraud involved the disappearance of a significant amount of cash from the bank. During an RBI inspection on February 12, officials discovered discrepancies in the bank's cash records. Specifically, Rs 112 crore was found missing from the Prabhadevi branch safe, and an additional Rs 10 crore was missing from the Goregaon branch's safe.
- Upon investigation, Hitesh Mehta came under the scanner for allegedly stealing the money over six years, between 2019 and 2025.

What action has the RBI taken?

- The RBI has imposed restrictions on the bank due to concerns over its financial stability. These restrictions include prohibiting the bank from issuing new loans, making investments, borrowing funds, or allowing withdrawals for a period of six months, starting from the close of business on February 13.
- Additionally, the RBI has superseded the bank's board of directors for a 12-month period due to "poor governance standards."
- The RBI has appointed Shreekant, a former chief general manager of the State Bank of India, as the administrator to manage the bank's affairs, assisted by a committee of advisors. The restrictions also prevent the bank from granting or renewing loans, making investments, incurring liabilities, accepting fresh deposits, or disbursing payments without written approval from the RBI.

What is the record of the bank?

- New India Cooperative Bank had a network of 30 branches and a deposit base of Rs 2,436 crore as of March 2024. The bank had posted losses of Rs 22.78 crore in 2023-24 and Rs 30.74 crore in 2022-23.

Is this the first time that the RBI has imposed restrictions on a cooperative bank in Maharashtra?

- No. A similar thing happened with the Punjab and Maharashtra Co-operative (PMC) Bank, which faced action due to large-scale fraudulent loans.
- On September 23, 2019, the RBI imposed restrictions on PMC Bank, preventing around 17 lakh depositors from withdrawing money from its 137 branches across six states.

What are sovereign green bonds? Why is demand for such bonds weak in India?

- **Green bonds help governments raise capital for clean energy and infrastructure.** But India's issues have struggled to secure lower borrowing costs typically associated with such bonds
- Like several emerging markets, India also turned to sovereign green bonds to help fund its transition to a low-carbon economy, but **investor demand remains weak.**

- While green bonds help governments raise capital for clean energy and infrastructure, India's issues have struggled to secure a meaningful 'greenium'— lower borrowing costs typically associated with such bonds. As a result, planned allocations for key schemes, including grid-scale solar, have been slashed.
- With muted investor interest, India is relying on general revenue to bridge funding gaps. Addressing liquidity issues, improving reporting transparency, and exploring sustainability bonds could help boost demand and expand green finance in the country

What are green bonds?

- Green **bonds are debt instruments issued by governments**, corporations, and multilateral banks to raise funds for projects that reduce emissions or enhance climate resilience.
- Issuers typically offer green bonds at lower yields than conventional bonds, assuring investors that the proceeds will be used exclusively for green investments. The difference in yield — known as the **green premium, or greenium** — determines the cost advantage of green bonds. A higher greenium allows issuers to raise funds at lower costs, making green investments more attractive.
- Investors in green bonds often seek stable, long-term returns, and may also have internal or external mandates to allocate a portion of their funds to green financing. Despite their potential, green bonds constitute a small part of the debt market and overall climate financing, as governments strengthen reporting practices and introduce incentives to attract investors.

Why green bonds?

- **Sovereign green bonds (SGrBs) are those that are issued by sovereign entities, like the Government of India**, which formulated a framework for issuing such bonds in 2022. The framework defines "green projects" as those that encourage energy efficiency in resource utilisation, reduce carbon emissions, promote climate resilience, and improve natural ecosystems.
- Since 2022-23, India has issued SGrBs eight times, and raised almost Rs 53,000 crore. Each year, the government uses roughly 50% of proceeds from SGrBs to fund production of energy efficient three-phase electric locomotives through the Ministry of Railways.
- For 2024-25, the revised estimates for allocations to schemes eligible under SGrBs include Rs 12,600 crore for electric locomotive manufacturing, roughly Rs 8,000 crore for metro projects, Rs 4,607 crore for renewable energy projects, including the National Green Hydrogen Mission, and Rs 124 crore for afforestation under the National Mission for a Green India.

Why are investors not excited?

- **India's SGrB issues have struggled to gain traction** due to muted investor demand, making it difficult for the government to secure a greenium. Despite efforts, including easing rules for foreign investors, auctions have seen limited participation, with bonds often devolving to primary dealers.

- While globally greeniums have reached 7-8 basis points, in India it is often at just 2–3 basis points. This limits the expansion of SGrBs as a viable funding source.
- A key challenge is liquidity. Small issue sizes and investors holding bonds until maturity have stifled secondary market trading, reducing their appeal. Additionally, India lacks a strong ecosystem of social impact funds and responsible investing mandates, which in other markets drive green bond demand.

Why does this matter?

- The government's inability to raise adequate proceeds from SGrBs impacts funding for schemes eligible under it and increases pressure on general revenue to meet the shortfall.
- Initially, the estimated funding requirement from SGrB proceeds for 2024-25 stood at Rs 32,061 crore. However, after unsuccessful attempts to sell SGrBs due to higher yields cited by investors, the revised estimate has been lowered to Rs 25,298 crore.
- As a result, allocation for a scheme promoting grid-scale solar projects has been slashed from Rs 10,000 crore to Rs 1,300 crore.
- The total expenditure in the current financial year will be made against expected proceeds amounting to Rs 21,697 crore, and to bridge the shortfall, roughly Rs 3,600 crore will be drawn from the government's general revenue.

What can be the way forward?

- According to a recent World Bank report, emerging market sovereign issuers tend to issue more bonds that finance a combination of green and social projects compared to advanced market sovereign issuers, which overwhelmingly issue green bonds.
- In other words, bonds for projects that combine green and social projects, also known as sustainability bonds, could boost investor interest and increase proceeds from issues.
- The report also noted that sovereigns take considerable time to prepare the post-issuance allocation and impact report, which impacts investor interest.
- "Most [investors] highlighted that the information provided in the allocation and impact report is used to assess the use of proceeds, screen the issuer's bonds for inclusion in their portfolio, and use the quantitative data to further refine their internal data models and methodology," it said.
- The Department of Economic Affairs, which oversees allocation of proceeds, hasn't yet published the allocation report for 2023-24.

Union Carbide waste disposal: Supreme Court issues notice to Centre, MP

- The Supreme Court issued notice to the Centre and Madhya Pradesh government on a plea challenging a High Court order to shift "hazardous" chemical waste from the defunct Union Carbide factory, the site of the 1984 Bhopal Gas tragedy, to Pithampur in the state.

- A bench of Justices B R Gavai and A G Masih agreed to hear next week the plea which claimed the direction to dispose of the waste in Pithampur involves “significant public health and environmental risks”.
- Locals in Pithampur are fiercely opposed to the planned disposal, near their town, of the waste linked to the 1984 Bhopal Gas Tragedy which killed more than 5,000 people. It has carried out an awareness campaign and now a trial run of the disposal should be allowed, the government requested the court.
- Methyl isocyanate, a highly toxic gas, leaked from Union Carbide's pesticide factory in Bhopal on the intervening night of December 2-3, 1984, killing as many as 5,479 people within a few days and leaving thousands with serious health problems and long-term disabilities.
- The disposal of hazardous waste of 1984 Bhopal gas tragedy near Indore came under the Supreme Court's scanner, which sought responses from the Centre, Madhya Pradesh and its pollution control board.
- The Supreme Court agreed to hear a plea challenging the December 3, 2024 and January 6 this year orders of the Madhya Pradesh High Court.
- The top court took note of a plea raising the issue of right to health and the risk to the inhabitants of nearby areas, including the city of Indore.
- Locals in Pithampur are fiercely opposed to the planned disposal in their region.

1984 Bhopal gas tragedy

- It is considered the world's worst industrial disaster.
- Even after 40 years, a sense of closure eludes some survivors who are afflicted by congenital disorders.

Transport of toxic waste

- On December 3, 2024, the Madhya Pradesh High Court rebuked authorities for not clearing the Union Carbide site in Bhopal despite directions from even the Supreme Court.
- The High Court set a four-week deadline to shift the waste, observing that even 40 years after the gas tragedy, authorities were in a “state of inertia”.
- The HC bench had warned the government of contempt proceedings if its directive was not followed.
- The hazardous waste of around 377 tonnes was transported in 12 sealed container trucks from Madhya Pradesh capital Bhopal to Pithampur industrial area in Dhar district, located 250 km away.
- A green corridor was created for the nearly seven-hour journey of the vehicles to the Pithampur industrial area in Dhar district.
- Amid tight security, the vehicles reached a factory in Pithampur where the waste will be disposed of.

Disposal of the waste

- The waste included remnants of Sevin, a pesticide produced at the Union Carbide factory, methyl isocyanate (MIC), the gas that caused thousands of deaths during the disaster, reactor residues, contaminated soil and other chemicals used at the plant.
- The incineration of the waste will happen at the Pithampur unit over a period of 180 days.
- If everything is found to be fine, the waste will be incinerated within three months. Otherwise, it might take up to nine months, officials said.
- Initially, some of the waste will be burnt at the disposal unit in Pithampur and the residue (ash) will be examined to find whether any harmful elements are left.
- The smoke from the incinerator will pass through special four-layer filters so that the surrounding air is not polluted.
- Once it is confirmed that no traces of toxic elements are left, the ash will be covered by a two-layer membrane and buried to ensure it does not come in contact with soil and water in any way.
- A team of experts under the supervision of officials of the Central Pollution Control Board and State Pollution Control Board will carry out the process.

India set to remain world's fastest-growing economy in 2025-26: RBI bulletin

- India's economy is expected to maintain its status as the fastest-growing major economy in 2025-26, supported by sustained growth momentum and strategic fiscal measures, according to the Reserve Bank of India's (RBI) latest monthly bulletin.
- Citing estimates from the International Monetary Fund (IMF) and the World Bank, the bulletin projects India's GDP growth at 6.5% and 6.7%, respectively, for 2025-26. Despite global uncertainties, high-frequency indicators point to a sequential pick-up in economic activity during the second half of 2024-25, which is expected to continue moving forward.
- **Balanced Fiscal Approach and Capex Growth**
- The RBI report notes that the Union Budget 2025-26 has prudently balanced fiscal consolidation with growth objectives. It continues to focus on capital expenditure while implementing measures to boost household incomes and consumption. The effective capital expenditure-to-GDP ratio is projected to rise to 4.3% in 2025-26, up from 4.1% in the revised estimates for 2024-25.
- **Inflation Moderates, Industrial Activity Picks Up**
- Retail inflation eased to a five-month low of 4.3% in January, primarily due to a sharp decline in vegetable prices following the arrival of winter crops. Industrial activity also showed improvement, as reflected in the Purchasing Managers' Index (PMI) for January.
- Key indicators such as higher tractor sales, increased fuel consumption, and sustained growth in air passenger traffic suggest a recovery in economic momentum. The bulletin highlights that rural demand remains resilient, driven by rising farm incomes. Fast-Moving Consumer Goods (FMCG)

sales in rural areas grew by 9.9% in Q3 of 2024-25, up from 5.7% in Q2. Urban demand also improved, with sales growth rising to 5% from 2.6% in the previous quarter.

- **Corporate Performance and Investment Outlook**

- Enterprise surveys conducted by the RBI indicate improved corporate performance. Listed non-government, non-financial companies reported accelerated sales growth in Q3, with higher operating profit margins reflecting this trend. Private sector investment intentions remained stable, with banks and financial institutions sanctioning projects worth nearly ₹1 lakh crore during the quarter. External Commercial Borrowings (ECBs) and Initial Public Offerings (IPOs) for capital expenditure also recorded an uptick.

- **External Challenges and Currency Depreciation**

- Global trade uncertainties and geopolitical tensions have impacted domestic equity markets. Selling pressure from Foreign Portfolio Investors (FPIs) has led to declines in benchmark and broader markets. The Indian rupee has depreciated in line with other emerging market currencies, influenced by the strength of the US dollar.
- Despite these challenges, India's strong macroeconomic fundamentals and improvements in external sector indicators have helped it navigate global uncertainties, according to the bulletin. However, the report warns that increased trade policy uncertainty in the United States, comparable to levels seen during the 2019 US-China trade war, could lead to long-term shifts in global trade patterns and upward pressure on consumer and business costs.

- **Global Economic Outlook**

- The global economy continues to grow at a moderate pace, though growth prospects vary across countries amid rapidly evolving political and technological landscapes. Financial markets remain cautious due to the slowing pace of disinflation and potential impacts of tariffs. Emerging market economies, including India, face selling pressure from FPIs and currency depreciation driven by a strong US dollar,

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What is new Mutual Credit Guarantee Scheme for MSMEs?

- Union Finance Minister Nirmala Sitharaman launched the Mutual Credit Guarantee Scheme for MSMEs (MCGS-MSMEs) for facilitating loans up to Rs 100 crore to MSMEs for purchase of machinery or equipment without collateral.
- The Centre on Monday launched the 'Mutual Credit Guarantee Scheme for MSMEs', which was announced in the Union Budget 2025-26 to boost the micro, small, and medium enterprises.
- The scheme facilitates collateral-free loans to MSMEs by providing loans up to Rs 100 crore for the purchase of plant, machinery, or equipment.

- The scheme would provide 60 per cent guarantee coverage by the National Credit Guarantee Trustee Company Ltd (NCGTC) to member lending institutions (MLIs) for a credit facility up to Rs 100 crore, sanctioned to eligible MSMEs under MCGS-MSME for the purchase of equipment/machinery.
- Launching the scheme here, Union Finance Minister Nirmala Sitharaman also distributed sanction letters to MSMEs eligible under the scheme in Mumbai.
- The scheme is expected to facilitate easy availability of credit for MSMEs and give a major boost to the manufacturing sector in India.
- Under the scheme, the borrower must be an MSME with a valid Udyam Registration Number. The guaranteed loan amount will not exceed Rs 100 crore, although the total project cost can be higher. Additionally, at least 75% of the project cost must be for purchasing equipment or machinery.

Who are eligible borrowers for the scheme?

MSMEs looking to get loans under the scheme; first should have an Udyam registration number; second, should not be an NPA (non-performing asset) with any lender; and third, the minimum cost of equipment or machinery should be 75 per cent of the project cost.

Can MSMEs raise loans for existing units?

MSMEs can raise loans under the scheme for their existing as well as new projects or units, subject to meeting of eligibility parameters. While the loan amount can be over Rs 100 crore, the guarantee cover would be limited to Rs 100 crore only.

What kind of business activities are covered under the scheme?

All business activities can be covered under the scheme. There is no specific list of activities not covered under the scheme.

Will banks or other lenders charge processing fees to sanction loans under the scheme?

While there is no stipulation under the scheme for lender to charge processing fees, they can decide on the same as per their internal guidelines.

Is there any upfront contribution to the loan?

5 per cent of the loan amount up to Rs 5 crore has to be deposited with the NCGTC as an upfront contribution at the time of application of guarantee cover. For loans exceeding Rs 100 crore, there would be two different repayment schedules: one for Rs 100 crore loan and two, for balance loan amount.

What is the repayment structure?

- Repayment schedule will be pro-rata and repayments have to be distributed proportionately. The repayment period for loans up to Rs 50 crore loan will be up to eight years with up to two years moratorium on principal instalments. For loans above Rs 50 crore, higher repayment schedule and moratorium period on principal instalments will be considered.

- **What is the scheme's tenure?**
The scheme is for four years or till cumulative guarantees of Rs 7 lakh crore are issued.
- **What is the guarantee cover?**
Guarantee cover refers to the maximum cover available per loan borrower of the amount with respect to the loan given by the bank. Under the MCGS scheme, the guarantee cover is 60 per cent of the loan and start from the date of payment of the guarantee fee or the date of the first disbursement of loan under the scheme, whichever is later.
- **Purpose of the Scheme:** To provide guarantee coverage for term loan assistance of up to Rs 100 crore to eligible Micro, Small and Medium Enterprises (MSMEs) for their projects involving purchase of equipment/machinery. The scheme would be available for a period of four years or till cumulative guarantees of Rs 7 lakh crore are issued, whichever is earlier.
- **Role of NCGTC:** National Credit Guarantee Trustee Company Limited (NCGTC), a wholly owned company of Department of Financial Services, shall also be responsible for the operations of the scheme. NCGTC was set up on March 28, 2014 by the government of India under the Companies Act, 1956 to act as the trustee to operate various credit guarantee funds/trusts set up/to be set up by the government of India from time to time.

Eligibility for credit guarantee:

- i) It should be an MSME with a valid Udyam Registration Number (URN).
- ii) It should not be an NPA with any lender.
- iii) Minimum cost of equipment/machinery is 75 per cent of project cost.

Other key points:

- Loan amount guaranteed shall not exceed Rs 100 crore.
- Project cost could be of higher amounts also.
- Loan up to Rs 50 crore shall have repayment period of up to eight years with up to two years moratorium period on principal instalments.
- For loans above Rs 50 crore, higher repayment schedule and moratorium period on principal instalments can be considered.
- Upfront (initial) contribution of 5 per cent of the loan amount shall be deposited at the time of application of guarantee cover

Significance of this scheme

- Global supply chains are realigning. India is emerging as an alternative supply source given its raw materials, low labour costs, growing manufacturing knowhow, and entrepreneurial ability.
- One of the major costs involved in manufacturing is the fixed cost of plant and machinery/equipment.

- With availability of credit to expand the installed capacity of manufacturing units, it can be expected that the manufacturing will grow at a faster pace.
- Also, the need for a credit guarantee scheme for the manufacturing units, particularly for the enterprises in the medium category has been raised by industry associations from time to time.
- So, to give a boost to manufacturing by facilitating the availability of credit for purchase of equipment MCGS-MSME is introduced.
- The scheme will facilitate collateral free loans by banks and financial institutions to MSMEs who are in need of debt capital for their expansion and growth.
- Manufacturing sector currently comprises 17 per cent of the nation's GDP and over 27.3 million workers.
- Prime Minister Narendra Modi has given a call for 'Make in India, Make for the World' and signalled that India is ready and keen to increase the share of manufacturing to 25 per cent of GDP.
- MCGS-MSME is expected to give a major boost to manufacturing and thereby to 'Make in India'.

India's fruit exports expand into western markets with GI tags driving growth

- India's agricultural exports have reached new markets, with shipments of fruits entering Western countries for the first time and rice exports recording substantial growth, boosting farmers' incomes.
- A senior agriculture ministry official stated that these exports, ranging from exotic fruits to traditional staples, align with the government's Aatmanirbhar Bharat initiative, which aims to create new opportunities for Indian farmers.
- In a recent milestone, India shipped its first consignments of premium Sangola and Bhagwa pomegranates to Australia via sea. This development is expected to enable bulk exports at lower transport costs, expanding India's fresh fruit market in Australia and strengthening its presence in global supply chains.
- Indian pomegranates have already gained popularity in Western markets following the trial shipment of Bhagwa pomegranates to the United States in 2023. Maharashtra's Solapur district accounts for nearly 50% of the country's pomegranate exports.
- The official noted that the government's Geographical Indication (GI) tagging has played a key role in promoting India's distinctive fruits.
- For instance, Purandar figs, known for their unique taste and texture, are gaining traction in Europe. In 2024, India exported its first ready-to-drink fig juice made from Purandar figs to Poland, following an earlier shipment to Germany in 2022.
- In 2022, India also exported the first consignment of **GI-tagged "Vazhakulam Pineapple" from Kerala's Ernakulam** district to Dubai and Sharjah, opening up new opportunities for pineapple farmers.

- As part of efforts to diversify fruit exports, India shipped its fibre- and mineral-rich dragon fruit, locally known as 'Kamalam,' to London and Bahrain in 2021. The consignment to London was sourced from Gujarat's Kutch region, while the shipment to Bahrain came from West Midnapore, West Bengal.
- The northeastern region has also gained from this export drive. In 2021, India exported its first shipment of Burmese grapes, known as 'leteku' in Assamese, from Guwahati to Dubai.
- The same year, fresh jackfruit from Tripura was shipped to Germany, marking the first export of its kind. Additionally, a consignment of 'Raja Mircha,' also known as king chilli, from Nagaland was exported to London via Guwahati despite the challenges posed by its perishable nature.
- India's rice exports have also seen robust growth. In 2021, the first consignment of iron-rich 'red rice,' grown without chemical fertilizers in Assam's Brahmaputra Valley, was exported to the United States. Known locally as 'Bao-dhaan,' red rice is a staple in Assamese cuisine.
- The latest data shows that India's total rice exports rose by 44.61% to \$1.37 billion in January 2025, compared to \$0.95 billion in January 2024. This growth has made rice one of the leading contributors to India's merchandise exports, reflecting the strength of the country's agricultural sector.

What is GI tag?

- A Geographical Indication (GI) tag is used for an agricultural, natural, or a manufactured product (handicraft and industrial goods) originating from a definite geographical territory. Typically, such a name conveys an assurance of quality and distinctiveness, which is essentially attributable to the place of its origin.
- The GI tag helps producers get the premium price of the product as no other producer can misuse the name to market similar goods.
- Any association of persons, producers, organisation or authority established by or under the law can apply. The applicant must represent the interests of the producers.
- Once a product gets this tag, any person or company cannot sell a similar item under that name. This tag is valid for a period of 10 years following which it can be renewed.
- Basmati rice, Darjeeling Tea, Chanderi Fabric, Mysore Silk, Kullu Shawl, Kangra Tea, Thanjavur Paintings, Allahabad Surkha, Farrukhabad Prints, Lucknow Zardozi, and Kashmir Walnut Wood Carving are among the registered GIs in India.
- The other benefits of GI registration include legal protection to that item, prevention against unauthorised use by others, and promoting exports.
- There is a proper process of registration of GI products which includes filing of application, preliminary scrutiny and examination, show cause notice, publication in the geographical indications journal, opposition to registration, and registration.

- It is a legal right under which the GI holder can prohibit others from using the same name.
- Geographical Indications Registry is a statutory organisation setup for the administration of the Geographical Indications of Goods (Registration & Protection) Act, 1999 which came into force on September 15, 2003.
- Under Articles 1(2) and 10 of the Paris Convention for the Protection of Industrial Property, geographical indications are covered as an element of Intellectual Property Rights.
- They are also covered under Articles 22 to 24 of the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement, which was part of the agreements concluding the Uruguay Round of GATT negotiations.

Impact of export of GI-tagged products

- Higher Global Recognition: GI tags provide authenticity and premium value to India's agricultural products.
- Boosting Farmer Incomes: Expanded exports lead to higher earnings and better global market access.
- Strengthening India's Agri-Diplomacy: The success of fruit exports aligns with Aatmanirbhar Bharat, making India a key player in global food security.

How was it done?

- After getting the market access for export of Indian pomegranates to Australia, a work plan and Standard Operating Procedures (SOP) for the export of pomegranates to Australia were signed in February 2024.
- The first air shipment took place in July 2024, following the successful market access facilitation by APEDA and National Plant Protection Organisation (NPPO).
- The air shipment helped assess market demand, which led to follow-up sea shipments to optimise cost efficiency.
- The first-ever sea-freight shipment departed from India on December 6, 2024 and reached Sydney on January 13, 2025 with 5.7 metric tonnes (MT) of pomegranates sourced from the Solapur region of Maharashtra, packed into 1,900 boxes, each containing 3 kg of premium fruit.
- Another commercial sea shipment carrying 1,872 boxes (6.56 tonnes) of Bhagwa variety arrived in Brisbane, Australia, on January 6, 2025.
- The use of bulk sea shipment ensured competitive pricing, benefiting farmers and creating sustainable trade opportunities.
- Both shipments were integrated into ANARNET, India's traceability system, ensuring transparency and building consumer confidence in international markets.

- This successful export not only underscores India's capabilities in meeting global quality standards but also provides a significant boost to Indian farmers by opening up new revenue streams.

What is APEDA?

- The Agricultural and Processed Food Products Export Development Authority (APEDA) was established by the government under the Agricultural and Processed Food Products Export Development Authority Act passed by Parliament in December 1985. The Act came into effect on February 13, 1986.
- APEDA, which replaced the Processed Food Export Promotion Council (PFEPCC), has its headquarters in New Delhi.
- Its headquarters is situated in New Delhi. It has 16 regional offices across India.
- **APEDA has been entrusted with the responsibility of export promotion and development of following scheduled products:**
 - i) Fruits, Vegetables and their Products
 - ii) Meat and Meat Products
 - iii) Poultry and Poultry Products
 - iv) Dairy Products
 - v) Confectionery, Biscuits and Bakery Products
 - vi) Honey, Jaggery and Sugar Products
 - vii) Cocoa and its products, chocolates of all kinds
 - viii) Alcoholic and Non-Alcoholic Beverages
 - ix) Cereal and Cereal Products
 - x) Groundnuts, Peanuts and Walnuts
 - xi) Pickles, Papads and Chutneys
 - xii) Guar Gum
 - xiii) Floriculture and Floriculture Products
 - xiv) Herbal and Medicinal Plants
 - xv) De-oiled rice bran
 - xvi) Green pepper in brine
 - xvii) Cashew Nuts and its Products.
- In addition to this, APEDA has been entrusted with the responsibility to monitor the import of sugar as well.
- APEDA also functions as the Secretariat to the National Accreditation Board (NAB) for the implementation of accreditation of the Certification Bodies under National Programme for Organic Production (NPOP) for organic exports

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Three approaches to measuring GDP and why they matter

- Inflation plays a crucial role in GDP measurement by influencing consumer spending, production costs, and overall economic growth.
- Retail inflation, based on the Consumer Price Index (CPI), fell to a five-month low of 4.31 per cent in January, mainly due to a decline in prices of key food items such as vegetables. Since inflation influences consumer spending, production costs, and overall economic growth, it plays a crucial role in Gross domestic product (GDP) calculations. But what are the possible ways of measuring GDP?

Three ways of measuring GDP

- GDP is the sum of the market value of all the final goods and services produced within the geographical boundaries of a country each year. The value of GDP measured in current prices is called Nominal GDP but it might not be a good measure of production because the increase in value may result from an increase in prices and not output. Nominal GDP, adjusted for price changes, is called Real GDP.
- Nominal GDP per capita = Nominal GDP/total population
- Real GDP per capita = Real GDP/total population

Furthermore, economists rely on three approaches to accurately measure GDP: Expenditure, Income, and Product. GDP calculated from all these approaches should give the same value.

- However, GDP measurement also depends on the structure of the economy. In a four-sector open economy, economic activities involve interactions among four key sectors:
 1. The consumers
 2. The producers
 3. The government sector
 4. The rest of the world sector (ROW)
- Each sector has a significant role in determining GDP, and their combined contributions are reflected in the three GDP measurement approaches

Expenditure approach

- The expenditure approach is a sum of four key components – personal consumption expenditure (C), investment expenditure (I), government expenditure (G), and net exports (X-M) by the ROW sector.
- Personal consumption expenditure is the sum of expenditure on consumer durables, non-durable goods, and services. Gross private domestic investment is the total of business fixed investment

(non-residential structure, equipment, and software), residential investment and inventory investment.

- Government purchases are calculated both at the federal level and state and local levels and consist of both defense and non-defense expenditures. Net exports are calculated as the value of exports to the ROW minus the value of imports from the ROW. Thus, this approach captures the total spending within an economy.

Income approach

- The income approach is very simply calculated as income earned from all sources and includes wages and salaries, proprietors' income (earnings from self-employment and unincorporated businesses), rental income, corporate profits, and net interest earned (interest earned minus interest paid). Additionally, the concept of GDP also includes net indirect taxes, statistical discrepancy, depreciation, and net payments made to the ROW.

Product approach

- The product approach, also known as the output method or value-added method, adds up the market value of all goods and services produced, excluding the goods used in the intermediate stages of production.
- The three GDP measurement approaches must always give the same total due to the following relationships:

Equivalence of production and expenditure: The market value of goods and services produced in each period is, by definition, equal to the amount that buyers must spend to purchase them.

- Thus, Value of Product Approach = Total Obtained by Expenditure Approach (Equation 1).

Equivalence of expenditure and income: What sellers receive must be equal to what buyers spend. In other words, sellers' receipts represent the income generated from economic activity, including income paid to workers and suppliers, and taxes paid to the government, and profits.

- Therefore, Total Expenditure = Total Income (Equation 2)
- Because of (1) and (2), Total product = Total income
- The Total Product = Total Income = Total Expenditure is called the fundamental identity of national income accounting.

GDP calculation: Factor cost vs. market price approaches

- India's GDP is estimated by the Central Statistical Office (CSO) using two methods. One is based on economic activity (at factor cost, this does not include taxes), and the second is on expenditure (at market prices, this includes taxes).
- **Economic activity-based method (at factor cost):** This measures GDP based on the cost of production, excluding taxes but including subsidies.

- **Expenditure-based method (at market prices):** This calculates GDP based on total spending in the economy, including taxes but excluding subsidies.

Sectors using factor cost method

- The factor cost method is calculated by collecting data for each sector during a particular time-period. Due to the lack of reliable data for the other two methods, GDP is primarily measured using the factor cost method across the following sectors:
- 1. Agriculture, forestry, and fishing
- 2. Mining and quarrying
- 3. Manufacturing
- 4. Electricity, gas, water supply, and other utility services
- 5. Construction
- 6. Trade, hotels, transport, communication, and broadcasting
- 7. Financial, real estate, and professional services
- 8. Public administration, defense, and other services.

Sectors using expenditure method

- The expenditure method involves summing the domestic expenditure on final goods and services across various streams during a particular time-period. It includes consideration of expenses towards household consumption, net investments (capital formation), government costs, and net trade (exports minus imports).

Limitations of GDP

- The GDP figures derived from the two methods may not match precisely due to differences in the database and methods of data collection. This difference is termed statistical discrepancy.
- The expenditure approach offers good insights into the most important contributors to India's GDP. For example, domestic household consumption forms 60.34% of the economy's GDP, which is why India remains unaffected to a good extent by economic slowdowns in other parts of the world.
- In comparison, an economy with a high concentration on exports will be more susceptible to the effects of global recessions.
- The largest contributor to India's GDP is the services sector, which accounts for 61.5% of GDP. The next largest contributor is the industrial sector at 23%, followed by the agricultural sector at 15.4%.
- GDP is a statistical indicator that defines the economic progress and development of a country. The percentage growth in GDP during a quarter is considered the standard measure of economic growth. However, there are limitations of GDP as a measure of economic growth, which are:

- It excludes non-market transactions. It doesn't account for the standard of living (Per capita income is a better measure of that)
- It doesn't account for externalities
- It doesn't account for income inequalities or the distribution of income
- Therefore, while GDP growth is an important metric, it should be analysed alongside other welfare indicators for a more comprehensive assessment of economic development.

What is deposit insurance, and how will raising it help you?

- The government is considering increasing the insurance cover for bank deposits from the current limit of Rs 5 lakh, Financial Services Secretary M Nagaraju said on Monday (February 17).
- The deposit insurance cover is offered by the Deposit Insurance and Credit Guarantee Corporation (DICGC), a specialised division of the Reserve Bank of India (RBI).

What has the government said on deposit insurance?

- Asked what the government was doing in **the matter of the New India Co-operative Bank** against which the RBI took action last week, Nagaraju said that a proposal on "increasing (deposit) insurance" was "under active consideration", and "as and when the government approves, we will notify it".

What actions has RBI taken in the New India Co-operative Bank case?

- RBI has imposed several restrictions on the Mumbai-based bank, including superseding its Board of Directors for 12 months, citing supervisory concerns and "poor governance standards".
- The RBI directed the loss-making bank to not grant or renew any loans and advances; make any investment; incur any liability including borrowing funds and accepting fresh deposits; or disburse or agree to disburse any payment without prior written approval. The restrictions came into effect after the close of business on February 13, and will be in force for six months.
- New India Co-operative Bank has 30 branches in Mumbai, Thane, Navi Mumbai, and Pune, and in Surat in Gujarat.
- At the end of March 2024, the bank had a deposit base of Rs 2,436 crore, and it had posted losses of Rs 22.78 crore in 2023-24 and Rs 30.74 crore in 2022-23.

How are the deposits of customers insured against failure of the bank?

- The objective of the DICGC is to protect "small depositors" from the risk of losing their savings in case of a bank failure. The insurance cover of Rs 5 lakh per depositor is for all accounts held by the depositor in all branches of the insured bank.
- **DICGC insures all commercial banks**, including branches of foreign banks functioning in India, local area banks, regional rural banks, and cooperative banks. However, **primary co-operative societies are not insured by the DICGC**.

- Savings, fixed, current, and recurring deposits are insured. The DICGC does not provide insurance for deposits by foreign, central, and state governments, and for inter-bank deposits.
- **The premium for deposit insurance is borne by the insured bank.** DICGC collects premiums from member financial institutions at a flat or differentiated rate based on the bank's risk profile.

How can depositors of New India Co-operative Bank apply for the DICGC insurance?

- DICGC has said it will make payments to eligible depositors of the bank as per Section 18A of the DICGC Act, 1961, subject to the submission of a claim list by the bank within the statutory timeline of 45 days
- Depositors have been asked to submit deposit insurance claims to the bank, along with an official proof of identity, a "willingness declaration" to receive the amount lying in their accounts up to a limit of Rs 5 lakh, and details of a second account where this amount can be credited. The money can also be credited to their Aadhaar-linked bank account.
- The last date for submission of a claim or willingness declaration to New India Co-operative Bank is March 30. DICGC will make the payment to all eligible depositors by May 14.

How does the limit for DICGC's insurance coverage work?

- In 2021, a new Section 18A was inserted in the DICGC Act, 1961, which enabled depositors to get interim payment and time-bound access to their deposits to the extent of the deposit insurance cover through interim payments by DICGC, in case of imposition of restrictions on banks by the RBI.
- At present, the DICGC offers insurance cover on bank deposits up to Rs 5 lakh within 90 days of imposition of such restrictions. Since the DICGC insures both the principal and interest amount held by a depositor in a bank, this is how the cover works:

What is the case for revising the deposit insurance upwards?

- RBI Deputy Governor M Rajeshwar Rao had noted last year that as of March 31, 2024, fully protected accounts were 97.8% of the total, higher than the international benchmark of 80%.
- However, challenges were likely going forward, Rao cautioned, given that a growing and formalising economy can be expected to see a sharp increase in both primary and secondary bank deposits.
- "Considering multiple factors like growth in the value of bank deposits, economic growth rate, inflation, increase in income levels etc., a periodical upward revision of this limit may be warranted," he said.
- An increase in cover will not only protect to a greater extent the interest of depositors in case of a bank failure such as that of New India Co-operative Bank, it will likely also strengthen their trust and confidence in the banking system.

How big The digital transformation and efficiency of India's direct benefit transfer model

- India's welfare system has undergone a profound transformation in recent years as technology has been channeled to manage long-standing challenges such as bureaucratic inefficiencies, administrative leakages, and corruption. For decades, social assistance programs—whether in the form of cash or in-kind transfers—suffered from complex processes and significant fund losses, with studies revealing that out of every 1 rupee allocated, only about 15 paise reached the intended beneficiary.
- This inefficiency was particularly striking given that India dedicates nearly 3%-4% of its GDP to subsidies (Economic Survey, 2017-18) and social support programs aimed at uplifting its citizens. However, systemic challenges in effectively identifying the true beneficiaries, coupled with delays in delivery, result in a significant loss of resources—equivalent to nearly half (Policy Paper, National Institute of Public Finance and Policy) of these allocated funds each year.
- In response, the government introduced the Direct Benefit Transfer (DBT) system in 2013, a transformative initiative aimed at delivering benefits directly to citizens' bank accounts while minimizing human intervention (Table 1: An estimated gain of about ₹3,48,564.66 crore as per the data available on <https://dbtbharat.gov.in/>; as accessed on 08-02-2025). The DBT framework is built on the robust 'JAM' trinity of Jan Dhan Yojana, Aadhaar, and mobile connectivity.
- This integrated system has enabled the direct crediting of subsidies and benefits into beneficiaries' bank accounts, dramatically reducing the scope for corruption and administrative mismanagement. With the digitalization of beneficiary databases, the government has effectively weeded out ghost accounts and reduced duplications, ensuring proper resource allocation (Table 1).
- Financial inclusion received a significant boost with the launch of the Jan Dhan Yojana in 2014, which, coupled with the exponential increase in mobile connectivity, laid the groundwork for the rapid expansion of the DBT system. Central to this digital revolution is the Aadhaar system, launched in 2009 and now recognized as the largest biometric identity program in the world. By streamlining the verification process and eliminating duplicate records, Aadhaar has been instrumental in ensuring that social assistance reaches the correct beneficiaries.
- Previously, complex documentation requirements and multiple forms of identification for various schemes created obstacles for efficient service delivery. With Aadhaar now linked to programs such as the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), ration cards, and other social welfare initiatives, the process has become far more coherent and targeted. As of 14th August 2024, over 53 crore Jan Dhan accounts had been opened

(<https://pib.gov.in/PressReleasePage.aspx?PRID=2049231>), addressing the critical issue of an unbanked population.

- The surge in mobile phone usage, evidenced by an increase in teledensity from 68.64% in 2013 to approximately 85.4% on 31st August 2024 (<https://pib.gov.in/PressReleaselframePage.aspx?PRID=2068372>), further highlights the effectiveness of the 'JAM' approach. By linking Aadhaar with bank accounts and mobile phones, the government has created a seamless infrastructure that underpins the DBT mechanism.
- The technical process of DBT involves Aadhaar-based authentication—using demographic data, one-time passwords, or biometric verification—to map beneficiaries' details to their bank accounts via the Aadhaar Payment Bridge of the National Payments Corporation of India (NPCI). Since its initial rollout covering 28 schemes in 2013-14, the DBT mission has expanded dramatically, now encompassing over 320 schemes (Table 2).
- The total funds transferred have surged from approximately ₹7,300 crore to ₹6,91,300 crore in 2023-24, and the number of beneficiaries has grown from 11 crore to nearly 176 crore over the same period (Table 2). During the COVID-19 pandemic, the system's scalability was particularly evident, as beneficiary coverage increased from 145 crore in FY2019-20 to 180 crore in FY2020-21, emphasizing the infrastructure's capacity to adapt rapidly to emergent needs.
- The evolution of DBT has been marked by its expanding scope, beginning with student scholarships and support for women, children, and workers, and gradually incorporating a diverse array of welfare schemes. MGNREGS, which guarantees at least 100 days of manual labor at notified wages, generally suffered from significant wage payment delays due to cumbersome processes.
- The introduction of the Aadhaar-Based Payment System (ABPS) under DBT has dramatically improved payment timelines, with timely payment disbursements rising from 50.09% in 2012-13 to over 98% by 2024-25 (<https://nreganarep.nic.in/netnrega/MISreport4.aspx>).
- Beyond direct cash transfers, Aadhaar has enabled access to a range of critical services. In the healthcare sector, for instance, the Ayushman Bharat-Pradhan Mantri Jan Aarogya Yojana (PMJAY) employs Aadhaar-based eKYC to facilitate a paperless process for cashless hospitalization benefits, while the 'One Nation One Ration Card' initiative has leveraged electronic point-of-sale devices and biometric scanners to ensure that subsidized food grains are accessible nationwide.
- Moreover, Aadhaar serves as a universal identifier that integrates various government databases, such as those for unorganized workers—via the e-Shram portal—and for senior citizens, who can now generate a digital life certificate through Aadhaar-based biometric authentication using applications like Jeevan Praman.

- The far-reaching impact of these technological advancements is evident in the diverse range of beneficiaries served. Women have gained enhanced support through schemes such as the Pradhan Mantri Matru Vandana Yojana (PMMVY) and LPG gas subsidies, while educational initiatives have provided scholarships worth ₹8,584 crore to around 50 lakh students in FY2023.
- Similarly, social assistance programs like the National Social Assistance Programme (NSAP) have extended benefits amounting to ₹3,546 crore to over 3.81 crore citizens, including the elderly, widowed, and persons with disabilities. The creation of more than 30 crore e-Shram cards as on date has enriched the understanding of the unorganized workforce (<https://eshram.gov.in/indexmain>), and initiatives like the Digital Health ID under the Ayushman Bharat Digital Health Mission empower every citizen to build a comprehensive digital health footprint through secure Aadhaar-based authentication.
- **Conclusion**
- Since 2014, India's welfare system has seen notable changes, a true testament to the government's committed efforts to improve governance and ensure financial inclusion. By integrating technology, including the mass adoption of Aadhaar, an expansion in mobile services, and the community-driven Jan Dhan Yojana, the government has redesigned how social benefits are distributed.
- Central to this transformation is the Direct Benefit Transfer (DBT) system, supported by the powerful JAM trinity. This approach has drastically minimized the loss of funds due to leakage and mismanagement, guaranteeing that more resources reach the people they are meant to benefit.
- The move towards a digital-first welfare system demonstrates a forward-thinking strategy where technology and evidence-based policies work together to enhance transparency, inclusivity, and timeliness in public services.
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How can Indian farmers be weaned away from urea, DAP and potash?

- Capping or even reducing the consumption of urea, di-ammonium phosphate (DAP) and muriate of potash (MOP) has become a strategic imperative of sorts for India.
- The primary reason: All these fertilisers are imported, whether directly or as inputs for domestic manufacturing.
- **MOP is wholly imported** from countries such as Canada, Russia, Jordan, Israel, Turkmenistan and Belarus, as India has no mineable potash reserves. In urea, India's production meets over 85% of its consumption demand, but the plants mostly run on liquefied natural gas imported from Qatar, US, UAE or Angola.
- DAP is imported in the form of finished fertiliser (mainly from Saudi Arabia, China, Morocco, Russia and Jordan) as well as raw material (rock phosphate from Jordan, Morocco, Togo, Egypt and

- Algeria; sulphur from UAE, Qatar and Oman) and intermediate chemicals (phosphoric acid from Jordan, Morocco, Senegal and Tunisia; ammonia from Saudi Arabia, Qatar, Oman and Indonesia)
- Import dependence – made worse by the rupee's depreciation – apart, a second reason for limiting urea, DAP and MOP usage is that they are high-analysis fertilisers: Urea and MOP contain 46% nitrogen (N) and 60% potash (P) respectively. DAP has 46% phosphorous (P) plus 18% N.
 - Most crops don't require fertilisers with such high percentage of individual nutrients. They need balanced fertilisation – products with nutrients in the right quantities and ratios for effective absorption through the plant roots and leaves.
 - These include not only N, P and K, but also secondary nutrients (sulphur, calcium and magnesium) and micronutrients (zinc, iron, copper, boron, manganese and molybdenum). Weaning away farmers from high-analysis fertilisers also translates into more efficient use of imported material and scarce foreign exchange.
 - **An effective DAP replacement**
 - A good example is 20:20:0:13 or ammonium phosphate sulphate (APS). A complex fertiliser with 20% N, 20% P, 0% K and 13% sulphur (S), it has emerged as an effective substitute for DAP, despite having less than half of the latter's P content.
 - DAP is manufactured by importing merchant-grade phosphoric acid with 52-54% P content and reacting it with ammonia (the source of N). The end-product has 18% N and 46% P.
 - But companies can, instead, import rock phosphate with 28-36% P and react it with sulphuric acid. The resultant "weak" phosphoric acid, with only 27-29% P, is further reacted with ammonia and sulphuric acid to produce 20:20:0:13. Alternatively, they can import normal "strong" phosphoric acid, while using less of it for simultaneously reacting with sulphuric acid (the source of S) and ammonia to make APS.
 - "The idea is not to waste expensive phosphoric acid. Making one tonne of DAP requires about 460 kg of phosphoric acid and 220 kg of ammonia. Here, you use only 220-230 kg of phosphoric acid, 220 kg of ammonia and 1,200 kg of sulphuric acid to get one tonne of 20:20:0:13," explained G. Ravi Prasad, a fertiliser industry veteran.
 - **Substitution drivers**
 - APS, according to Prasad, is good enough for oilseeds, pulses, maize, cotton, onion, chilly and all such "sulphur-hungry" crops. Even the P and K nutrient requirement of potato can be effectively met through 10:26:26:0 or 12:32:16:0 complex fertilisers: "We should reserve DAP use only for wheat, rice and sugarcane".
 - Sales of 20:20:0:13 recorded a 32.4% jump, from 4.9 million tonnes (mt) in April-January 2024-25 to 6.5 mt in April-January 2023-24, while dipping by 14.1% for DAP (*see table*). The current fiscal

(April-March) could end with all-time-high APS sales of 7 mt and DAP at 9 mt, the lowest since 2016-17.

- APS has become India's third largest-consumed fertiliser after urea and DAP. It has overtaken single super phosphate (SSP), previously the most popular alternative to DAP. SSP, which contains 16% P and 11% S, is manufactured by reacting rock phosphate directly with sulphuric acid.
- APS was traditionally consumed in the South (60% share) and West (Maharashtra, Madhya Pradesh and Gujarat). But in the last 4-5 years, its acceptability has increased in the East and even North, and across crops. It is a stable product with P in water-soluble form, besides having N (not present in SSP) and S (absent in DAP)," said N. Suresh Krishnan, chairman of the Fertiliser Association of India.

The road ahead

- This fiscal (2024-25) should see sales of NPKS complex fertilisers touch 14 mt, almost double the 7.3 mt of 2013-14. Much of it is courtesy of 20:20:0:13, which is steadily replacing DAP.
- A similar marketing push is necessary for 10:26:26:0, 12:32:16:0, 15:15:15:0 and 14:35:14:0, so as to minimise direct application of MOP and selling only after incorporating into these complexes.
- The ultimate goal, to repeat, must be to cap, if not reduce, consumption of all high-analysis fertilisers. That includes urea; farmers need to be nudged towards nutrient use efficiency with a view to maximise the bang for the buck (read foreign exchange).

RBI \$10 bn buy-sell swap: how it could boost liquidity, curb volatility, beef up dollar reserves

- After conducting a \$5 billion dollar-rupee swap less than a month ago, the Reserve Bank of India (RBI) on Friday (February 21) decided to inject rupee liquidity for longer duration through another \$10 billion dollar-rupee buy-sell swap arrangement.
- The central bank's initiative is designed to provide a durable solution to the system's liquidity requirements, while also stabilising the value of the rupee and bolstering the nation's foreign exchange kitty.

Why is it being done?

- Dilip Parmar, Research Analyst, HDFC Securities, said the **swap mechanism can help stabilize the currency by providing immediate liquidity** support, thereby mitigating the pressure on the rupee during periods of foreign fund outflows.
- This temporary relief can bolster market confidence and prevent excessive volatility in the exchange rate. It will also beef up the dollar reserves of the RBI at a time when it's intervening in the forex market to prevent a slide in the rupee.
- The central bank will be conducting the \$10 billion swap auction for a tenor of 3 years next week.

How serious is the liquidity problem?

- The Indian banking system encountered its worst liquidity crunch in more than a decade in January 2025. The liquidity deficit peaked at Rs 3.15 lakh crore on January 23, its lowest level in nearly 15 years.
- As was the case in the preceding month, tax outflows, GST payments and the RBI's forex interventions to stabilize the rupee and currency in circulation (CIC) outflows significantly impacted cash flows in the banking system.
- The deficit led to increased dependence by banks on market borrowing, thereby keeping interbank call money rates — rate at which banks lend to each other — consistently above the policy repo rate of 6.50 per cent, according to Crisil.
- The RBI has been selling dollars to stabilise the rupee, thereby sucking out an equivalent amount in rupee from the system. RBI's outstanding **net forward sales of the dollar surged to \$67.93 billion** as of December 31, 2024, as the central bank intensified its efforts to stabilize the rupee. In the spot market, the RBI's dollar sales stood at \$45 billion in the third quarter — \$15.15 billion in December 2024, \$20.22 billion in November and \$ 9.27 billion in October

How does swap work?

- The swap is in the nature of a simple buy-sell foreign exchange swap from the Reserve Bank side. A bank will sell US dollars to the Reserve Bank and simultaneously agrees to buy the same amount of US dollars at the end of the swap period.
- In the first leg of the transaction, the bank will sell dollars to the Reserve Bank at **FBIL Reference Rate of the auction date**.
- The settlement of the first leg of the swap will take place on spot basis from the date of transaction and the Reserve Bank will credit the rupee funds to the current account of the successful bidder and the bidder needs to deliver dollars into the RBI's nostro account.
- In the reverse leg of the swap transaction, rupee funds will have to be returned to the Reserve Bank along with the swap premium to get the dollars back.

What were the RBI measures to meet liquidity so far?

- The RBI had infused over Rs 3.6 lakh crore of durable liquidity into the banking system in the last five weeks through debt purchases, forex swaps and longer-duration repos.
- The central bank resorted to several measures during the course of January to inject liquidity into the system, including several variable rate repo (VRR) auctions of varying tenors and a series of daily VRR auctions conducted between January 16 and January 23.
- The RBI also announced additional measures, such as a \$5 billion dollar-rupee swap on January 31, as well as open market operations (OMO) purchase auctions of government securities aggregating Rs 60,000 crore and a 56-day VRR auction scheduled in February, to help overcome the tightness in liquidity.

Compendium of Datasets and Registries in India, 2024

- The Ministry of Statistics and Programme Implementation (MoSPI) has published the latest edition of the **Compendium of Datasets and Registries in India, 2024**, a key initiative aimed at strengthening data accessibility and informed decision-making.
- As part of the ongoing modernization of the **National Statistical System**, this compendium ensures that government data is easily accessible for policymakers, researchers, academicians, students, analysts, businesses, and the general public.
- This comprehensive resource consolidates metadata for approximately **270 datasets and registries** sourced from **40 Ministries and Departments** of the Government of India, covering sectors such as agriculture, health, education, labor, rural development, tourism, social justice, banking, and more. By serving as a **one-stop reference**, the compendium enables users to explore the availability, scope, and accessibility of government datasets effortlessly.
- It features **standardized metadata**, detailing data collection methodologies, periodicity of updates, and data-sharing policies across ministries. Additionally, it outlines the **legal and regulatory framework** governing the collection and dissemination of each dataset while offering insights into the **level of disaggregation** to support deeper analysis and evidence-based policymaking.
- Users can also benefit from **direct access to data sources** through links to the respective Ministry/Department portals, ensuring seamless accessibility.
- Recognizing the increasing need for reliable and well-structured government data, this initiative aligns with broader efforts of MoSPI to **modernize and streamline the National Statistical System**. By consolidating crucial information in one place, the compendium plays a vital role in advancing **data-driven governance, fostering research, and promoting evidence-based policymaking**.
- Designed as a **dynamic document**, the **Compendium of Datasets and Registries in India** is periodically updated to incorporate new datasets, evolving methodologies, and revised policies, ensuring stakeholders always have access to the most current and relevant information.
- All stakeholders, including policymakers, researchers, businesses, and civil society organizations, can leverage this compendium to gain valuable insights and contribute to the effective utilization of government data for national development.

India's wind power capacity poised to surge to 63 GW by 2026-27

- India's annual wind power capacity addition is projected to more than double to an average of 7.1 gigawatts (GW) over the next two financial years, compared with 3.4 GW in fiscal year 2023-25.

- This growth, driven by government measures to accelerate the sector, is expected to increase the country's total installed wind capacity to approximately 63 GW by 2026-27, according to a report released on Monday.
- Capacity additions in financial years 2023-24 and 2024-25 remained tepid, ranging between 6-7 GW, due to fewer successful auctions of wind capacities—5.9 GW in FY21-23 and 5.2 GW in FY23-25—according to a Crisil report.
- The slow progress was largely attributed to weak developer interest caused by low tariffs that dampened returns, as well as challenges related to land availability and transmission infrastructure in high wind potential areas, the report noted.
- However, emerging tailwinds are expected to double the pace of capacity additions over the next two years.
- The government's push for hybrid renewable projects—combining solar, wind, and/or storage—along with a more favorable cost structure for wind projects, is expected to drive capacity growth, the report stated.
- In addition to steady standalone wind project auctions, hybrid renewable energy project auctions—requiring developers to supply electricity during high-demand hours (evening and early morning)—have gained momentum.
- **Wind power is expected to account for 30-50% of these hybrid projects**, as it generates electricity during peak demand periods, unlike solar power, which is mostly active during daytime hours.
- Moreover, since hybrid projects help distribution companies (discoms) address scheduling challenges during critical times, they are expected to gain traction in offtake and grow rapidly, the report added.
- India has over 30 GW of hybrid projects in the pipeline, expected to be commissioned within the next 2-4 years, contributing significantly to the projected increase in wind capacity additions.
- "Traction in signing power purchase agreements (PPAs) is also visible, with more than 60% of such projects auctioned by March 2024 having their PPAs signed by January 2025,".

TIME USE SURVEY (TUS) (JANUARY - DECEMBER, 2024)

- Time Use Survey (TUS) provides a framework for measuring time dispositions by the population on different activities. It is an important source of information about the activities that are performed by the population and the time duration for which such activities are performed.
- One distinguishing feature of the Time Use Survey from other household surveys is that it can capture time disposition on different aspects of human activities, be it paid, unpaid or other activities with such details which is not possible in other surveys.

- **India is among the few countries, including** Australia, Japan, the Republic of Korea, New Zealand, USA and China that conduct the National Time Use Survey to analyze how people allocate their time to various daily activities.
- The primary objective of the Survey is to measure the participation of men and women in paid and unpaid activities. TUS is an important source of information on the time spent in unpaid caregiving activities, volunteer work, and unpaid domestic service-producing activities of the household members.
- It also provides information on time spent on learning, socializing, leisure activities, self-care activities, etc., by the household members.
- The **National Statistics Office (NSO), MoSPI** conducted the first all-India Time Use Survey during January – December 2019. The present TUS conducted during January – December 2024 is the second such All-India Survey.

Key Highlights of the Results of Time Use Survey, 2024 (TUS, 2024):

- During 2024, 75 percent of the males and 25 per cent of the females in the age group 15-59 years, participated in employment and related activities during the reference period of 24 hours.
- Such participation was 70.9 percent for males and 21.8 percent for females in the age group 15-59 years during 2019.
- Female participants aged 15-59 years in unpaid domestic services spent about 315 minutes during 2019 in those activities, which has come down to 305 minutes during 2024 signifying the shift from unpaid to paid activities.
- 41 per cent of females aged 15-59 years participated in caregiving for their household members, male participation in this age group in such caregiving was 21.4 per cent. Also, female participants in caregiving activities spent about 140 minutes in a day, compared to 74 minutes spent by male participants aged 15-59 years.
- This corroborates the Indian social fabric wherein most of the caregiving responsibilities for household members are borne by the females of the household.
- 24.6 per cent of the rural population aged 15-59 years participated in producing goods for own final use and they spent 121 minutes a day doing such activities.
- 89.3 per cent of children aged 6-14 years participated in learning activities and they spent around 413 minutes in a day for such activities.
- People aged 6 years and above spent 11 per cent of their days' time in culture, leisure, mass media and sports practices during 2024, compared to 9.9 per cent of the days' time spent during 2019.
- 708 minutes in a day was spent on self-care and maintenance activities by persons aged 6 years and above. Females of this age group spent 706 minutes while males spent 710 minutes in such activities.

Features of the Survey

- In **TUS, 2024, respondents** were asked about their activities performed in the designated time slots of 30 minutes and the same was recorded against the corresponding slot.
- In case of multiple activities in a time slot, a maximum of three activities which were performed for 10 minutes or more, were recorded. Information on time use was collected for persons aged 6 years and above with a reference period of 24 hours.
- **Coverage:** This survey covered 1,39,487 households (rural: 83,247 and urban: 56,240). Information on time use was collected from each member of age 6 years and above of the selected households. This survey enumerated 4,54,192 persons aged 6 years and above (rural: 2,85,389 and urban: 1,68,803).
- **Data Collection:** In this survey data on time use was collected through CAPI (Computer-Assisted Personal Interviews). Information on time use was collected with a reference period of 24 hours starting from 4:00 AM on the day before the date of the interview to 4:00 AM on the day of the interview
- **Presentation of the estimates:** All-India level estimates for persons of age 6 years and above, obtained from the Time Use Survey, 2024, have been presented in the Fact Sheet.

Major Indicators: The major indicators generated from TUS, 2024 are described here.

- **PARTICIPATION RATE:** Participation rate in a day in any activity is calculated as the percentage of persons performing that activity during the day.
- **AVERAGE TIME SPENT IN A DAY PER PARTICIPANT:** The average time spent in a day per participant for any activity is calculated by considering those who participated in the activity. Estimates of average time in a day in different activities derived by considering only the participants in the activities are referred to as average time spent in a day per participant.
- **AVERAGE TIME SPENT IN A DAY PER PERSON:** The average time spent in a day per person for any activity is calculated by considering all the persons irrespective of whether they participated in the activity or not. By this approach, the distribution of the total time of 1440 minutes of a day per person in different activities is derived.

Operative Kisan Credit Card (KCC) amount crosses ₹10 Lakh Crore benefiting 7.72 Crore Farmers

- Kisan Credit Card (KCC) is a banking product that provides farmers with timely and affordable credit for purchasing agricultural inputs such as seeds, fertilizers, and pesticides, as well as for meeting cash requirements related to crop production and allied activities.
- In 2019, **the KCC scheme was extended to cover the working capital** requirements of allied activities, viz. Animal Husbandry, Dairy and Fisheries.

- Government of India, under Modified Interest Subvention Scheme (MISS), provides interest subvention of 1.5% to banks for providing short-term agri loans through KCC up to Rs 3 lakh at a concessional interest rate of 7% per annum.
- An additional Prompt Repayment Incentive of 3% is provided to farmers on timely repayment of loans, which effectively reduces the rate of interest to 4% for farmers. Loans up to ₹2 lakh are extended on a collateral-free basis, ensuring hassle-free access to credit for small and marginal farmers.
- The Finance Minister in Budget Speech 2025-26 has announced to increase the loan limit **under the Modified Interest Subvention Scheme** from ₹3 lakh to ₹5 lakh which would further benefit the farmers.
- The amount under operative Kisan Credit Card (KCC) accounts has more than doubled from ₹4.26 lakh crore in March 2014 to ₹10.05 lakh crore in December 2024.
- This indicates significant increase in quantum of affordable working capital loans provided to the farmers for agriculture and allied activities. This is reflection of credit deepening in agriculture and reduced dependency on non-institutional credit.

Kisan Credit Card

- The government of India introduced the Kisan Credit Card (KCC) to enable farmers to **meet their short-term working capital requirements promptly and hasslefree**. This has helped enhance the working capital flow to agriculture and allied sectors.
- The **KCC scheme was launched in 1998 for issuing Kisan Credit Cards to farmers on the basis of their land holdings for uniform adoption by the banks so that farmers may use them to readily purchase agriculture inputs such as seeds, fertilizers, pesticides, etc and draw cash for their production needs**.
- In 2019, the KCC scheme was extended to cover the working capital requirements of allied activities like animal husbandry, dairy and fisheries.
- Loans up to Rs 2 lakh are extended on a collateral-free basis, ensuring hassle-free access to credit for small and marginal farmers.
- The government, under the Modified Interest Subvention Scheme (MISS), provides interest subvention of 1.5 per cent to banks for providing short-term agri loans through KCC up to Rs 3 lakh at a concessional interest rate of 7 per cent per annum.
- An additional Prompt Repayment Incentive of 3 per cent is provided to farmers on timely repayment of loans, which effectively reduces the interest rate to 4 per cent for farmers.
- Finance Minister Nirmala Sitharaman, in Budget Speech 2025-26, announced an increase in the loan limit under the Modified Interest Subvention Scheme from Rs 3 lakh to Rs 5 lakh, which would further benefit the farmers.

Why are wholesale soyabean prices so low, and why hasn't procurement by the government helped?

- The central government has so far procured 20 lakh tonnes (lt) of soyabean, but this has not had a significant impact on wholesale prices across markets.
- The bulk of the crop, grown over 129.35 lakh hectares, remains to be marketed. Why have prices not risen despite intervention by the government?

What is the big picture on the soyabean crop currently?

- **Soyabean is a major kharif crop that is harvested in September.** The oilseed marketing year runs from September to October.
- **In** the current season, even before farmers had harvested their produce (in September 2024), soyabean was trading below the government's Minimum Support Price (MSP) of Rs 4,892/quintal.
- The National Cooperative Agricultural Marketing Federation (NAFED) and the National Cooperative Consumers Federation (NCCF) had set a target of procuring 30 lt across the country. However, NAFED has so far procured only 14.71 lt – and as of February 24, operations in six of the seven states, (barring Chhattisgarh) have ended.
- Union Agriculture Minister Shivraj Singh Chouhan has put the total procurement of the oilseed up to February 9 at 19.91 lt, benefitting 8.46 lakh farmers.
- A Government procurement of the crop was done through sub-agents who procured from farmers, and payments were made directly into the accounts of farmers.
- A It was expected that once the government weighed in to start procurement, wholesale markets would respond, and there would be an upward correction in prices.

So did the markets respond in the anticipated way?

- On the contrary, wholesale prices at the soyabean market in Latur, Maharashtra, one of the largest wholesale markets for the crop in the country, went in the opposite direction.
- For most of November and December, the price of soybean per quintal remained around Rs 4,200, lower than the average price of Rs 4,380/ quintal earlier. Prices are currently in the range of Rs 4,100-4,150/ quintal.
- At the national level, the average price that farmers got for their produce fell from Rs 5,220 in September to Rs 4,706 in October, and to Rs 4,511 in November
- A Average prices per quintal recovered to Rs 4,872, very close to the MSP, in December, but fell to Rs 4,867 in January, according to Agmarknet data.
- The Indore-based Soyabean Processors Association (SOPA) has estimated that as of February 1, about 57.40 lt of the total 134.76 lt of produce still remained with farmers or traders.

- The window for procurement is now closed, and traders are not hopeful of any appreciation of prices in the days ahead. According to SOPA, about 20 lt of soyabean stocks are lying with the government.

Why are prices low, and when can the situation improve?

- For Indian traders, exports of soyameal, the protein-rich solid left after oil has been extracted from the seeds, is important. Soyameal is used as feed for poultry and other animals.
- A Indian exports are currently commanding a price of \$ 380/tonne (ex Kandla port), while those from Argentina, the world's largest exporter of soyameal, are shipping at \$360/ tonne.
- Traders say prices may not rise significantly even if exports increase. A section of traders have asked for subsidy support to push exports, but others say prices could move southward again once the government begins to offload its stocks.
- Pune-based agri commodities analyst Dipak Chavan said a sharp correction in prices in the wholesale market would not be possible until the government's stock of 20 lt is exhausted. According to Chavan, the government should try to offload some of this stock as a protein additive in the public distribution system (PDS) along with rice and wheat.

ENVIRONMENT

Charting a Green Course: Hydrogen-Fuelled Trains in India

- India's pursuit of green hydrogen-powered trains will become a defining landmark in sustainable transport. The government's emphasis on renewable energy solutions, combined with the proactive efforts of the Indian Railways, is preparing the nation for a transformative shift in its rail network. This shift reflects India's indigenous technology to excel, from the powerful home-grown

hydrogen engine, infrastructure requirements, and green hydrogen production and refuelling – the decisive steps towards a cleaner and more self-reliant future.

India's Hydrogen Engine: World's Most Powerful

- India's hydrogen-powered engine, developed with indigenous technology, can deliver an impressive 1200 horsepower, surpassing other hydrogen engines across the world that generally operate at around 500 to 600 horsepower. This locomotive, designed by the Research, Design, and Standard Organisation (RDSO) in Lucknow, underscores India's innovative approach to addressing the complexities of rail travel across varied terrains. RDSO, a principal research arm of the Indian Railways, ensures that the engine's enhanced power translates into reliable performance and paves the way for further advancements in green rail technologies.

The Pilot Project and "Hydrogen for Heritage"

- The Ministry of Railways, Government of India, announced the "Hydrogen for Heritage" project in 2023. In the 2023–24 Union Budget, around ₹2,800 crore has been earmarked for developing 35 hydrogen fuel cell trains, with an additional ₹600 crore for related hydrogen energy infrastructure to be run on various heritage and hill routes.
- The estimated cost of each hydrogen-powered train is Rs 80 crore, while the cost to develop ground infrastructure per route is expected to be Rs 60 crore. A pilot project is being implemented for the first trial run in the initial phase.
- As part of this venture, existing Diesel-Electric Multiple Unit (DEMU) rakes will be retrofitted with green hydrogen fuel cells. A sum of ₹111.83 crore has been sanctioned to create the ground infrastructure necessary for this modification.
- The first such DEMU-turned-hydrogen train is anticipated to commence its trial run in March 2025 along the Jind–Sonipat section of the Northern Railway in Haryana, as confirmed by U Subba Rao, General Manager, Chennai-based Integral Coach Factory (ICF). The ICF is currently manufacturing coaches for the pilot train.
- Firms contracted to develop ground-level infrastructure are putting in the support system for the successful pilot run after system integration, revealed by an explanatory release by the Ministry of New & Renewable Energy and Ernst & Young Consulting. Jhajjar district of Haryana has an electrolyser plant to produce green hydrogen. With a 1 MW electrolyser operating round the clock, the plant can produce around 420 kilograms of hydrogen per day. A dedicated refuelling system, capable of storing up to 3000 kilograms of hydrogen, will support daily train operations.

Financial Dimensions and the Promise of Long-Term Savings

- Although the initial investment for hydrogen-powered trains may appear high, chiefly due to the costs of green hydrogen production, advanced technology, and new infrastructure, experts anticipate these expenditures will drop once large-scale operations become a reality.

- In the long run, hydrogen as a fuel stands out for its environmental benefits and potential cost savings. By reducing reliance on fossil fuels and minimising the carbon footprint, the Indian Railways will ultimately see higher returns and greater efficiency. Furthermore, hydrogen trains do not depend on electrified routes, making them a particularly appealing choice for non-electrified sections where installing overhead cables would otherwise involve substantial expense and time.

A Key Milestone in India's National Green Hydrogen Mission

- India's focus on hydrogen-powered trains resonates with the country's broader strategy to achieve energy independence by 2047 and net-zero goals by 2070. On 4 January 2023, the government approved the National Green Hydrogen Mission, aimed at reducing import dependence on crude oil, natural gas, and coal.
- The mission is expected to play a significant role for the country with its economy based on clean energy.
- This mission comes with an initial outlay of ₹19,744 crore, covering areas such as the increased domestic production of green hydrogen, related pilot projects, research and development, and related components.
- A large amount of money under it, Rs 17,490 crore has been earmarked for the Strategic Interventions for Green Hydrogen Transition (SIGHT) programme. Under the programme, there are two financial incentive mechanisms to promote domestic manufacturing of electrolyzers to push green hydrogen production in India.
- India's green hydrogen mission aims to produce five million metric tonnes of green hydrogen annually by 2030, supported by the development of green hydrogen hubs and an expanded renewable energy ecosystem. Such strategic efforts align seamlessly with India's pressing need to address climate change and set more ambitious targets for emissions reduction.

International Developments on Hydrogen Trains

- Germany's Alstom Coradia iLint green hydrogen-powered train is already in commercial service, with 14 hydrogen trains operating in Lower Saxony and 27 for the Frankfurt Metropolitan Area. Its trial run in Germany began in 2018. Coradia iLint green hydrogen-powered train sets have operational range of 1,000 Kms with a top speed of 140 Km/h.
- Successful trial runs of Alstom's hydrogen trains have taken place in other countries like Canada, Italy, Saudi Arabia, Austria, the Netherlands, Poland, Sweden, and France, indicating a shift towards cleaner rail transport. Alstom currently has orders for 41 hydrogen train sets from the European countries.

- In addition, Siemens Mobility's Mireo Plus H green hydrogen trains, with an extended range of up to 1200 kilometres and a top speed of 160 km/h, are put into operation in Berlin–Brandenburg and Bavaria. Spain, too, has concluded its initial trials of hydrogen-powered trains.

A New, Clean Path for India

- India's green hydrogen-powered train programme signals a major step forward in transport innovation and sustainability. As the Indian Railways integrate hydrogen technology in its operations, the nation moves closer to its twin ambitions of energy independence and net-zero emissions.
- The success of the trial runs on the Jind–Sonipat route, and eventually other rail routes in India, is expected to create a model for implementing this forward-looking strategy on a wider scale. With continued investment in tech research, infrastructure, and local manufacturing capabilities, India's experiment with green hydrogen-powered rail travel could establish new global benchmarks in eco-friendly transportation, ensuring that future generations benefit from a cleaner, more efficient rail system powered by renewable energy.

NGT seeks Centre's response on use of invasive fish species as mosquito control agents

- The National Green Tribunal (NGT) has sought a response from the Centre on two highly-invasive and alien fish species being used as biological agents for controlling mosquitoes.
- The tribunal was hearing a plea about two fish species — *Gambusia Affinis* (Mosquitofish) and *Poecilia Reticulata* (Guppy) — being released in water bodies to control mosquitoes in various states.
- The states which stored and released Mosquitofish were Assam, Arunachal Pradesh, Gujarat, Karnataka, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh, Odisha, Punjab and Andhra Pradesh, while Guppy species had been released in Maharashtra, Karnataka, Punjab and Odisha, the plea said.
- The introduction of *Gambusia affinis* and *Poecilia reticulata* aims to reduce mosquito-borne diseases.
- These fish consume mosquito larvae, providing a biological control method.
- However, their invasive nature poses risks to local biodiversity.
- The National Biodiversity Authority has identified these species as harmful to indigenous fish populations.
- The National Biodiversity Authority has declared these two fish species as "invasive and alien" as they adversely impacted the local aquatic ecosystems by causing food scarcity for indigenous fish species.
- The National Green Tribunal's involvement marks the legal implications of introducing invasive species. The tribunal has called for responses from various authorities, including the Union

Ministry of Health and Family Welfare and the National Centre for Vector Borne Diseases Control. This scrutiny reflects a growing awareness of biodiversity conservation.

- Globally, many countries are reconsidering the use of invasive species for pest control. Alternatives such as habitat management, biological control using native species, and environmentally friendly insecticides are being explored. These methods aim to balance pest control with ecological integrity.
- NGT also referred to the ban imposed on Mosquitofish by countries such as Australia and New Zealand.
- The plea referred to a report by the Invasive Species Specialist Group, as per which Mosquitofish was among the 100 world's "worst invasive alien species".

National Green Tribunal

- The National Green Tribunal (NGT) was established on October 18, 2010 under the National Green Tribunal Act, 2010 for effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources.
- It is a specialised body equipped with the necessary expertise to handle environmental disputes involving multi-disciplinary issues.
- NGT has five places of sitting — the principal bench at New Delhi and zonal benches at Pune, Kolkata, Bhopal and Chennai.
- The Tribunal is headed by the chairperson who sits in the principal bench and has at least ten but not more than twenty judicial members and at least ten but not more than twenty expert members.
- Any person seeking relief and compensation for environmental damage involving subjects in the legislations mentioned in Schedule I of the National Green Tribunal Act, 2010 may approach the Tribunal.
- The precursor to the NGT Act was the 186th Report of the Law Commission of India submitted in March 2003 which came after the Supreme Court repeatedly urged Parliament through various judgments to establish specialised environmental courts, with qualified judges and technical experts on the bench.
- the Supreme Court also put forward that there should be direct appeals to the Supreme Court from such environmental courts.
- The Law Commission then recommended creation of a specialised court to deal with the environmental issues. The Law Commission expressed the view that it is not convenient for the High Courts and the Supreme Court to make local inquiries or to receive evidence. Moreover, the superior Courts will not have access to expert environmental scientists on permanent basis to assist them.

- The NGT was conceived as a complementary specialised forum to deal with all multidisciplinary environmental issues, both as original as well as an appellate authority.
- The specialised forum was also made free from the rules of evidence applicable to normal courts and was permitted to lay down its own procedure to entertain oral and documentary evidence, consult experts, etc with specific mandate to observe the principles of natural justice.
- The right to a healthy environment has been construed as a part of the right to life under Article 21 of the Constitution in the judicial pronouncement in India.
- The NGT is set up under the constitutional mandate under Entry 13 List I of Schedule VII to enforce Article 21 in regard to the environment and the Tribunal was conferred special jurisdiction for enforcement of environmental rights.

A surge of dead sea turtles in the sand

- Hundreds of Olive Ridley sea turtle carcasses have been found since the first week of January in the Chennai and Chengalpattu districts. Conservationists say the number of deaths is three times the usual number during the mating season and have sounded alarm bells about bottom trawling, the widespread use of fishing gear, and plastic pollution
- Olive Ridley turtles, which are found in warmer waters, such as the southern Atlantic, Pacific, and Indian Oceans, haul themselves up on to India's eastern shore every year by the tens of thousands and lay eggs in an event known as *arribada* (arrival by sea in Spanish).
- While Odisha is a mass nesting site for Olive Ridley turtles in India, thousands of these small wild animals also come sporadically to nest between December and April along the Tamil Nadu coastline, a lifeline for millions who depend on fishing for their livelihood.
- The biodiverse and eco-sensitive Gulf of Mannar, located off the districts of Thoothukudi and Ramanathapuram in the south, is an essential feeding site for these turtles. The creatures then migrate to Odisha, West Bengal, and beyond.
- Along the 34-km coast from the Marina Beach in Chennai to Kovalam in Chengalpattu, seeing dead sea turtles on the shore during mating season is not unusual — every year, an average of 350 dead turtles can be found, says Shravan Krishnan, a volunteer with the Students Sea Turtle Conservation Network (SSTCN).
- However, this year, until January 31, conservationists had counted 1,200 dead sea turtles, more than three times the normal figure.
- In the Chennai and Chengalpattu districts, located along the 1,076 kilometre-long coastline of Tamil Nadu, many people recall seeing dead Olive Ridley sea turtles washed ashore this year.
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Guests from the sea

- **Olive Ridleys are the smallest of the seven sea turtle species.** They weigh up to 45 kilogrammes and reach only about 2 feet in shell length. Their name comes from their olive-coloured carapaces (hard upper shells). Though their numbers have remained stable in recent years, Olive Ridleys remain a key species in global conservation efforts and **are classified 'vulnerable' by the International Union for Conservation of Nature Red List.**
- Sea turtles play a crucial role in the marine ecosystem. By feeding on crustaceans that live on the seabed, they help release the oxygen that is trapped there. They maintain healthy seagrass levels by nibbling on seagrass and algae. They provide shelter for commercially important fish species and control jellyfish populations that could otherwise harm fish larvae.
- On January 27, the task force decided to strengthen regulations on trawl fishing, enforce the use of **Turtle Excluder Devices (TEDs)**, and restrict the horsepower of boat engines.
- **TEDs are metal grids designed to allow** turtles to escape from trawl nets. But fisherfolk have expressed concerns that these devices could reduce their catch.
- A fisherman working on a mechanised boat in Kasimedu explains that with dwindling resources in the ocean, even a small fall in catch can have a significant impact on his profits.
- "There have been no efforts from the Fisheries Department to introduce improved TED models or compensate fishermen for the months they are required to use them
- The government has also increased joint patrols involving the Fisheries Department, Forest Department, Indian Coast Guard, and Marine Police. According to long-term studies and monitoring, including telemetry research, will also begin soon. Plans have also been put in place to involve police authorities in monitoring and addressing trawler violations.

Paving the way for green buildings in India: Insights for 2025 and beyond

- As the world grapples with the realities of climate change, India has emerged as a key player in the global effort to reduce carbon emissions and promote sustainable development.

- The green building sector, in particular, stands at the intersection of environmental responsibility and economic opportunity, offering a viable pathway to mitigate the environmental impact of rapid urbanisation. Looking ahead to 2025, the adoption of green building technologies in India is poised to accelerate, underpinned by policy support, technological advancements, and growing stakeholder awareness.

The story so far

- In 2024, India made significant progress in reducing carbon emissions, achieving two out of three Nationally Determined Contributions (NDCs) under the Paris Agreement ahead of schedule.
- While fossil fuel emissions are projected to rise by 4.6 per cent, increased investments in renewable energy and strengthened regulatory frameworks demonstrate the country's commitment to its net-zero targets.
- In parallel, this dedication is further reflected in a rapid adoption of green building practices, driven by initiatives such as the annually occurring Green Building Congress and supportive measures in the Union Budget this year, which emphasise net-zero construction and resource-efficient design. By implementing strategies that cut energy consumption by up to 30 per cent and water usage by 50 per cent, India's construction sector is aligning with global sustainability goals. Market forecasts project a compound annual growth rate (CAGR) exceeding 5 per cent in the green building market through 2028, highlighting the growing demand for environmentally conscious construction solutions.

Key trends shaping green building technology in 2025

- Green buildings have been a focal point for conversations around net-zero and decarbonisation for quite some time now, with the trend steadily intensifying. The reasons are clear: (a) buildings in India consume 30 per cent of all the electricity generated; (b) buildings account for more than 60 per cent of the carbon emissions in cities; and (c) buildings contribute to nearly 40 per cent of global emissions. At the same time, the opportunity is also ripe, with the real estate sector not only being on a steady growth path, but the fact that 70 per cent of our real estate hasn't even been built yet!
- As 2024 comes to a close, it merits examining some key trends and technologies that will likely shape the green building sector in the coming year. With advancements in AI, Generative AI, and other advanced technologies like IoT, building management systems, building information modelling, HVAC and security systems will no doubt become more agile and robust.
- Additionally, we expect a sharp shift towards greater integration within these systems which enables different discrete functions within the building to work in tandem, learn from each other and result in enhanced efficiency overall. Buildings will also increasingly incorporate renewable energy sources, as they become readily available.

- We see solar power in particular at the helm of this trend, right at the building design stage itself. Innovations such as building-integrated photovoltaics (BIPV) and advanced solar panel technologies will empower structures to generate their own clean energy, therefore reducing the dependence on fossil fuels.
- As information and knowledge becomes more readily available, and policy frameworks continue to evolve with a view to expedite India's net-zero vision, it will come as no surprise that these technologies will see greater adoption, particularly across new building stock that are currently under construction or yet to be developed.
- With an increasing number of modern commercial buildings (hospitals, educational institutions), industrial parks and smart cities mushrooming rapidly, building technology and renewable energy integration will play a huge role in not only enhancing sustainability, but also delivering an elevated experience of these built environments.
- Where we expect to see a significant uptick is in the residential buildings space. Consumers today are extremely conscientious and are uncompromising in their choices, especially when it concerns real-estate investments. In fact, we have seen first hand how 'green haven' residential buildings have gotten sold out within mere days of completion.
- For the renewable energy space, this will also mean a proliferation of 'micro units' meant for independent homes, residential apartment buildings/complexes (aside from industrial parks and large commercial properties).

Towards a nuanced approach for decarbonising buildings

- While, on the one hand, the increased adoption is all but a foregone conclusion, truly affecting impact in the green building sector in India requires a multifaceted approach, where technology, policy, and community efforts work in harmony.
- From integrating renewable energy sources and smart building technologies for greater energy efficiency, to waste and waste water management strategies, to adopting localised, sustainable materials, the path to decarbonising buildings must be tailored to accommodate the diverse and evolving needs of India's construction sector and India's complex climactic patterns.
- Whether dealing with the challenge of retrofitting existing structures or planning for the 70 per cent of real estate yet to be built, a one-size-fits-all strategy is insufficient for addressing the unique requirements of the nation's building stock. Rather, a consultative approach might be prudent to recommend customised solutions on a case by case basis.
- The journey to net-zero buildings is as much about innovation as it is about collaboration. As India stands on the cusp of a green revolution in its construction sector, the integration of tailored solutions will be pivotal in driving progress toward a resilient, low-carbon future.

India's forest cover report: Balancing progress and challenges

- The India State of Forest Report 2023 (ISFR) offers a mixed bag of insights into the state of the nation's forests.
- On the surface, the report brings encouraging news: India has added 156.41 sq. km. of forest cover within Recorded Forest Areas (RFA) and achieved a total increase of 1,445.81 sq. km. in forest and tree cover.
- This progress reflects India's commitment to combating climate change, enhancing green cover, and achieving its Nationally Determined Contributions (NDC) targets under the Paris Agreement.
- However, the report also highlights significant challenges, including widespread degradation, a decline in natural forests, and a worrying shift in forest quality.

The Positive Picture: Progress in Numbers

- India's total forest and tree cover now stands at 25.17% of the country's geographical area, with forest cover accounting for 7,15,342.61 sq. km (21.76%) and tree cover outside forested areas contributing 1,12,014.34 sq. km (3.41%). States like Chhattisgarh (+683.62 sq. km), Uttar Pradesh (+559.19 sq. km), Odisha (+558.57 sq. km), and Rajasthan (+394.46 sq. km) have shown significant increases in forest and tree cover, largely driven by afforestation drives, agroforestry promotion, and compensatory plantation efforts.
- Agroforestry and plantations have also been instrumental in boosting tree cover outside Recorded Forest Areas (RFAs), particularly in states like Gujarat (+241.29 sq. km) and Bihar (+106.85 sq. km).
- Advances in high-resolution satellite imagery and mapping techniques have further ensured accurate assessments and effective policy interventions. These achievements highlight a commendable balance between development and environmental conservation, underscoring India's Leadership in climate action.

Hidden Concerns: The Quality of Forests

- While the overall figures indicate progress, deeper analysis reveals signs of forest degradation, including a troubling shift from Moderately Dense Forests (MDF) to Open Forests (OF).
- MDFs, with canopy density between 40-70%, are critical for biodiversity and ecosystem services, and their decline suggests thinning and fragmentation that compromise ecological stability.
- States like Madhya Pradesh (-612.41 km²), Karnataka (-459.36 km²), and Nagaland (-125.22 km²) have reported significant reductions in forest cover, while the Northeast, known for its rich biodiversity, saw a decrease of 327.30 square kilometers due to shifting cultivation, encroachments, and developmental pressures.
- Mangroves, essential for coastal defense and carbon sequestration, have also suffered, with a decline of 7.43 square kilometers nationally and Gujarat recording the highest loss, further emphasizing the need for targeted conservation efforts.

Balancing Positivity with Challenges

- The ISFR 2023 captures India's progress in expanding green cover but also underscores the need to address several underlying challenges. While afforestation and agroforestry have contributed significantly to the quantitative increase in forest cover, qualitative issues, such as the degradation of natural forests within RFAs, cannot be ignored.
- Development pressures continue to take a toll on India's forests. Infrastructure projects, mining activities, and urbanization are encroaching on natural forest areas, particularly in biodiversity-rich regions.
- Protected areas, once considered bastions of conservation, are now increasingly vulnerable to forest fires. The report notes rising fire incidents, which are exacerbated by climate change and human activities, highlighting the fragility of these ecosystems.
- In the Northeast, traditionally known for its dense forest cover, the practice of shifting agriculture, or jhum cultivation, remains a significant challenge. This practice contributes to forest loss, despite government interventions aimed at promoting sustainable alternatives.
- The region reported a loss of 327.30 sq. km. of forest cover, reflecting the urgent need for targeted conservation strategies in this biodiversity hotspot.

The Way Forward: Leveraging Opportunities

- India must adopt a comprehensive approach to forest management to sustain progress and address the challenges highlighted in the ISFR 2023. Enhancing forest quality through improved canopy density, restoration of degraded forests, and biodiversity preservation should be prioritized, with focused efforts in regions like the Northeast and Western Ghats.
- Protecting natural forests demands stricter enforcement against deforestation and encroachments, supported by advanced monitoring tools such as satellite imagery and AI for real-time tracking.
- Agroforestry, while significant for tree cover increases, must complement rather than replace natural forests, with mixed-species plantations bridging ecological gaps and supporting rural livelihoods.
- Community participation remains crucial for sustainable forest management, empowering local and tribal populations to integrate traditional knowledge with conservation practices.
- Special attention must be given to mangroves, especially in Gujarat, to counter their decline and maintain their role in coastal defense and biodiversity. Refining forest density classifications into smaller 10% intervals, such as Sparse Forest (10-20%) and Extremely Dense Forest (80-100%), would provide detailed insights into forest degradation and transitions, enabling more targeted interventions.

- By combining technological advancements, refined classifications, and community-driven efforts, India can ensure its forests remain central to ecological and climate resilience.

A Balanced Narrative

- The ISFR 2023 highlights both achievements and challenges, showcasing progress in expanding green cover but raising concerns about forest degradation and biodiversity loss.
- While India's efforts in afforestation and agroforestry are commendable, policymakers must focus on maintaining the ecological integrity of forests. Natural forests are irreplaceable ecosystems that sustain biodiversity and communities.
- As India works toward its net-zero goals, forest conservation must be a long-term priority, balancing development with sustainability.
- The ISFR 2023 stands as both a milestone and a reminder of the urgent need to protect and restore forests as a foundation for climate resilience and sustainable growth.

Red flag over rhododendron tree in Nagaland valley

- One of the last trees of its kind standing in a popular trekking destination in Nagaland has made a silent statement — time may be running out for the *Rhododendron wattii*.
- A study published in the *Journal of Threatened Taxa* focussed on the flowering phenology of a *Rhododendron wattii* tree in the 27 sq. km.
- Dzukou Valley that extends into the adjoining Manipur. Phenology is the study of how plants and animals change seasonally.
- The researchers noted that it was the lone tree of the species within a specified area at 2,600 metres above the mean sea level, far from the trekking route and caves that visitors frequent. The only other *Rhododendron wattii* reported during a field survey in 2012-13 in the Nagaland part of Dzukou Valley was felled by the locals for firewood.
- Endemic to Manipur and Nagaland, the *Rhododendron wattii* was first collected by Sir George Watt from Nagaland's Japfu Hill range during his 1882-85 survey. It is a small tree attaining a maximum height of 25 feet.
- "Flowering occurs from the end of February to April, and fruiting is observed from April to December. The flowers present in trusses of 18-25 flowers are pink with darker flecks and purplish basal blotches," the study said.
- "No reports on this species are available from Manipur. In Nagaland, it has been reported from two areas beyond Dzukou Valley,"

Poor seedling survivability

- There are more than 1,000 species of rhododendrons worldwide. The northeastern region has 129 of the 132 taxa recorded in India.

- According to the International Union for Conservation of Nature Red List, the *Rhododendron wattii* is vulnerable due to population fragmentation and an area occupancy of less than 500 sq. km.
- However, Ashiho Asosü Mao, Director of the Botanical Survey of India, reported it to be critically endangered in its natural habitat.
- The Jing-Chaturvedi study found the natural regeneration of the plant species to be very low although it produces numerous seeds after the flowers are pollinated mainly by the fire-tailed sunbird and bumble bees.
- Poor seedling survivability, anthropogenic activities, and wildfires — a large swathe of Dzukou Valley burnt for two weeks in 2020-21 — were among the factors responsible for the disappearance of this species.
- “There is an urgent need to conserve this species by protecting its natural habitat,”.

New orchid

- The rhododendron gloom in Nagaland contrasted sharply with a botanical cheer across the border in Manipur, not far from Dzukou Valley. A trio of researchers recorded *Phalaenopsis wilsonii* as a new member of the orchid family in the State.

Adaptation in India: Where are the schemes and money?

- The government of India in the Economic Survey 2024-25 had highlighted the significance of adaptation to the adverse impacts of global warming and consequent climate change and lamented the lack of international climate finance for the same but has not adequately supported adaptation action with finance in its Budget 2025-26.
- In fact, the word ‘climate’ was mentioned only thrice in the finance minister’s budget speech and the word ‘adaptation’ was not mentioned even once. The word ‘resilience’ was mentioned a couple of times and only once in the ‘climate’ context.
- The phrases ‘global warming’ and ‘climate change’ were not mentioned even once in the speech despite India being the seventh most vulnerable country to the impacts of climate change in the world, according to the Economic Survey 2024-25.
- Adaptation to the adverse impacts of climate change is a wide subject with diverse aspects trickling down to almost all sectors of the economy and is often conflated with general development.
- According to some, one can think of adaptation as development activities that keep in mind that global warming and consequent climate change are ongoing, urgent and impacting the present and will not just impact the future.
- Even then, some dedicated focus is required on adaptation schemes, perhaps just to understand how the impacts of climate change on various sectors of the economy and communities are intensifying and what needs to be done to adapt to them.

- Under the budget estimates for the Ministry of Environment, Forests and Climate Change (MoEFCC), the National Adaptation Fund (NAF), Climate Change Action Plan (CCAP) and the National Mission on Himalayan Studies (NMHS) were shifted from schemes to non-schemes and moved to the secretariat budget head of the ministry without a clear budget outlay.
- All these three budget heads haven't received any budget allocation since 2022-23. The actual spending under these budget heads which happened last in 2022-23 were Rs 21.95 crore for NAF, Rs 26.60 crore for NMHS and Rs 31.98 crore for CCAP.
- While the NAF or the NAF for Climate Change (NAFCC) is crucial for executing projects on different aspects of adaptation across the country, mainly related to agriculture and animal husbandry, the NMHS is crucial to understand adaptation and ecological security in the fragile region of the Himalayas spread across 13 states and UTs of the country.
- The CCAP or the National Action Plan on Climate Change (NAPCC), on the other hand, defines eight missions related to climate change and was formulated in 2008. The NAPCC has not been revised since then, despite the rapid changes in India's climate in the last decade-and-a-half and their intensifying impacts on the lives and livelihoods of people.
- The NAFCC administered and implemented by the National Bank for Agriculture and Rural Development (NABARD) was established in 2015 "to meet the cost of adaptation to climate change for the states and union territories of India that are particularly vulnerable to the adverse effects of climate change."
- An update from the MoEFCC published by the Press Information Bureau (PIB) on August 5, 2024, stated that 30 projects have been sanctioned under the NAFCC across 27 states and UTs with a total project cost of Rs 847.48 crore.
- A NAFCC project titled *Climate Resilient Interventions in Dairy Sector in Coastal and Arid Areas in Andhra Pradesh* was sanctioned on August 16, 2016, with a total budget of Rs 12,71,36,316 for three districts of Andhra Pradesh — Anantapuramu (Anathapur), Sri Potti Sriramulu Nellore (Nellore) and Vijayanagaram (Vizianagaram).
- One of the components of the project was to establish community-based best practices for managing heat stress and impacts of cyclones on dairy animals.
- Of the total sanctioned budget, an amount of Rs 6,35,68,108 was released to NABARD on October 26, 2016, and Rs 5,12,78,000 was released by NABARD to the executing entity on August 11, 2017, which is not named. The executing entity was able to utilise only Rs 2,28,49,000 of this amount.
- "The challenges encountered in implementation of the project include delays in land identification & alienation, identification of civil engineering executive agency & technical resource agency, finalization of climate resilient animal hostel design," said the PIB update, based on a response by Kirti Vardhan Singh, minister of state of MoEFCC, in the Lok Sabha on August 5, 2024.

- The PIB update also informs that the NAFCC was made a non-scheme in November 2022 without citing any reasons for doing so or stating if the objectives of the fund had been fulfilled.
- The National Coastal Mission scheme which is related to the sustainable management of India's coastline and has some component of climate change adaptation to it has had its budget outlay reduced from Rs 8 crore to Rs 2 crore.
- **A central scheme under the Ministry of Earth Sciences (MoES) — Ocean services, Modelling, Application, Resources and Technology (O-SMART) which** is crucial for building better models for understanding the changes occurring in the Indian Ocean region — has not been allotted any budget in 2025-26. It was not allotted any money in 2024-25 as well.
- The research activities carried **out under the O-SMART scheme could also be important for understanding the changing character of tropical cyclones** and the south west monsoon, which then becomes crucial for understanding their impacts on lives and livelihoods and adaptation to the same.
- But all is not gloom and doom in the Budget 2025-26 in terms of adaptation to climate change.
- One of the climate change-related programmes under the NAPCC and MoEFCC which has received an increased budget allocation in Budget 2025-26 is the **National Mission for a Green India (NMGI) with Rs 220 crore**, up from Rs 160 crore in 2024-25. The NMGI implements projects on afforestation and fire prevention and management across the country.
- Another important aspect of adaptation is observing how changes are occurring to weather patterns over India and how they can be understood in the context of global warming and consequent climate change.
- To this end, the Government of India introduced 'Mission Mausam' on September 13 2024, with a budget outlay of Rs 2,000 crore over 2024-26.
- "Mission Mausam has the goal of making Bharat a 'Weather-ready and Climate-smart' nation, so as to mitigate the impact of climate change and extreme weather events and strengthen the resilience of the communities," said the PIB in a press release.
- "The mission aims to establish 50 Doppler Weather Radars (DWR), 60 Radio Sonde/Radio Wind (RS/RW) stations, 100 disdrometers, 10 Wind Profilers, 25 radiometers, 1 Urban testbed, 1 Process testbed, 1 Ocean Research station and 10 Marine Automatic Weather Stations with upper air observation," the press release added.
- Even with these steps much more was required in terms of new schemes and budget allocation to old schemes in Budget 2025-26 for an enhanced understanding of adaptation to global warming and consequent climate change in India.

Green banks' coalition goes bust: Biggest American fossil funders exit Net Zero alliance

- It is widely agreed that the 29th Conference of Parties (COP29) to the United Nations Framework Convention on Climate Change in Azerbaijan, informally dubbed the 'finance COP', [was a failure](#). It did not ensure that developing countries secured a fair deal on climate finance.
- Barely three months later, six of the largest American banks, which are also deeply entangled in fossil fuel financing, have [formally exited](#) the UN-backed Net Zero Banking Alliance (NZBA).
- [As of January 6, 2025, Bank of America, Citigroup and Morgan Stanley have left the alliance. This follows the departure of Wells Fargo and Goldman Sachs in December 2024.](#) Most recently, JP Morgan has also [withdrawn](#) from the alliance. Effectively, [only three American banks remain](#): Amalgamated Bank, Areti Bank and Climate First Bank — but these do not hold nearly as much [global influence](#) as the larger banks that have exited.

What is NZBA?

- The **NZBA is a 'bank-led, UN-convened' group of leading banks** from around the world committed to aligning their lending, investment and capital market activities with Net Zero greenhouse gas emissions by 2050, according to its website.
- Through collective knowledge-sharing, the frameworks developed by the NZBA aim to assist members in setting and achieving "credible science-based Net Zero targets for 2030 or sooner."
- More specifically, the alliance requires a [commitment statement](#) to be signed by **bank CEOs as a precondition for membership**.
- According to the NZBA website, one of the key commitments is to transition all operational and attributable greenhouse gas (GHG) emissions from their lending and investment portfolios to align with pathways to Net Zero by mid-century or earlier.
- The GHG emissions covered in the commitment include Scope 1, 2 and 3 emissions, with Scope 3 requiring banks to account for all categories of their clients' emissions "where significant and where data allow."
- [In essence, the Net Zero plan is meant to cover both the banks' own emissions and those of the entities they finance. Scope 1, 2 and 3 emissions \(direct and indirect\) of both the banks and their clients are to be included.](#)
- [However, the document](#) specifies that 'off-balance sheet activities', such as assisting a client in issuing bonds for a particular activity, are not currently included but will be incorporated in the next iteration of commitments.
- [Launched ahead of COP26 in Glasgow under the UNEP Finance Initiative, the alliance boasts 136 members across 44 countries, with a collective asset base of \\$57 trillion. It was established at the same time as the better-known Glasgow Financial Alliance for Net Zero \(GFANZ\).](#)
- GFANZ is a growing group of private-sector entities aiming to foster collaboration in the financial services sector to support the objectives of the Paris Agreement — and the NZBA is one of several

sectoral alliances under this umbrella. But climate campaigners have [criticised](#) this approach since its inception, questioning its [effectiveness](#) in delivering meaningful emissions reductions.

Why are they leaving?

- Statements suggest that the increasing exodus of major banks from climate alliances is linked to growing Republican opposition to 'green' and ESG (environmental, social and governance) policies in the US and is true for financial actors in general.
- [For example](#), members of another UN-linked climate coalition, the Net Zero Financial Service Providers Alliance, have come under Republican scrutiny in recent years, alleging that because the big players with enormous power are collectively advocating for strong Net Zero plans for their clients, they are 'depriving disfavoured companies' of economic opportunities and pressuring them to comply.
- In the US, antitrust laws refer to [legislation](#) designed to prevent "anticompetitive conduct and mergers" to ensure a fair marketplace. However, Republicans interpret the collective alignment of financial institutions with Paris Agreement goals as a threat to carbon-intensive businesses, arguing that such group commitments could 'starve fossil fuel-related companies of credit' and other financial opportunities. Yet, the [legality](#), premise and intent of these allegations have been [hotly debated](#).
- Other lawsuits and increased Republican-led scrutiny of ESG policies in the US are based on criticism that large financial institutions, by integrating climate considerations into their operations, are deprioritising their fundamental responsibility of ensuring high returns for investors.
- With the [return](#) of known climate-denier Donald Trump to the White House, the urgency for major banks to shield themselves from political scrutiny appears to have intensified. However, despite all this movement, [critics argue](#) that the NZBA's role in driving real climate impact is questionable at best.

Has the NZBA ever made a difference?

- It has been previously reported that American banks have largely obstructed the setting of higher climate finance and Net Zero targets compared to their European counterparts. They remained part of the NZBA and GFANZ after initially threatening to leave, only because the coalitions reiterated that their commitments were not mandatory — highlighting the limitations of voluntary pledges, particularly in climate action.
- [More importantly, data suggests](#) that membership in the NZBA has not actually curtailed fossil fuel financing by US banks. In 2023, JPMorgan Chase provided \$41 billion to oil, gas and coal companies, while Bank of America, Citigroup and Wells Fargo ranked among the top five global financiers of fossil fuels between 2016 and 2023.

- [Legal experts in the US have suggested that membership in the NZBA may have been little more than virtue signalling.](#) With a new president in office, perhaps the banks' strategy to appease critics — and avoid legal scrutiny — must shift gears accordingly.

So why does this matter?

- It is interesting to note that none of the banks have provided concrete reasons for leaving the NZBA as yet and almost all have made statements underscoring their continued commitment to Net Zero emissions — just not through the alliance.
- Other [criticisms](#) of NZBA have included the fact that a 'Net Zero by 2050' target is already outdated given the rapidly shrinking global carbon budget; that the commitments operate more as guidelines rather than enforceable standards; and that the alliance did not explicitly require banks to reduce fossil fuel financing in the first place.
- Given these shortcomings, it may not be entirely accurate to consider the exits a major setback for global efforts to align finance with the Paris Agreement's goals. Some of the world's largest banks have now backtracked on their climate commitments, which were considered one step away from mere [greenwashing](#) by some.
- Within the broader climate policy discourse, this development fits into the ongoing debate surrounding Article 2.1(c) of the Paris Agreement, which calls for "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development."
- Arguably, the departure of these banks leaves one less space to hold facilitators of fossil fuel expansion accountable — a setback nonetheless. The tangible, long-term effects of these exits, however, remain to be seen

Half Circle to circularity: Review of Draft Notification on EPR for paper waste and sanitary products

- The Union Ministry of Environment, Forest and Climate Change (MoEF&CC) has released a [draft notification](#) proposing **Extended Producer Responsibility (EPR) for packaging made from paper, glass, and metal, as well as sanitary products.**
- The notification arrives a year after Centre for Science and Environment (CSE) released a [comprehensive report](#) in December 2023 to address the same concerns.
- The CSE publication proposed developing Extended Producer Responsibility (EPR) guidelines for paper waste to reduce dependency on imported wastepaper and increase the use of domestically available raw materials.
- Historically, management of waste generated from materials like paper, glass and metal has fallen under the ambit of the Solid Waste Management Rules.
- The latest draft EPR guidelines introduce a framework where producers, importers and brand owners (PIBOs) are responsible for collecting and recycling the packaging waste they generate. This system aims to reduce the burden on landfills and promote circularity in resource utilisation.

Falling short of circularity: EPR for Paper Waste

- The current guidelines primarily focus on packaging-grade paper, which, while representing 60 per cent of total paper production, already boasts a relatively high collection rate of around 60 per cent. This indicates that a mature recycling system for this segment is in place.
- However, a far more critical segment is writing and printing paper, constituting 30 per cent of production, yet with a lower collection rate of a mere 40 per cent.
- CSE emphasises the need to include this segment under EPR, given that paper made from virgin fibres can be recycled multiple times (six to seven times) throughout its lifecycle.
- So the limited scope fails to capitalise on the full potential of wastepaper circularity and undermines efforts to reduce the reliance on imported wastepaper for writing and printing paper.

Settling for lenient targets of recovery

- CSE has proposed ambitious recovery targets for recycled fiber-based (RCF) paper industries:
- 95 per cent domestic recovery rate by 2028: This aggressive target aims to significantly boost domestic recycling efforts.
- Limited international sourcing: Importing wastepaper should be restricted to a mere five per cent of total raw material needs.
- Focus on domestic sources: Prioritise the use of recycled or virgin wastepaper sourced entirely within the country.
- However, the draft EPR guidelines limit these targets to packaging-grade paper. This exclusion may undermine the broader goal of comprehensive waste management. Targeting a 70 per cent recovery rate by 2026-27 is overly lenient and essentially redundant, as this target has already been almost achieved.
- Furthermore, as suggested by CSE, a recovery rate of 95 per cent from 2027-28 onwards is more appropriate, considering the fraction of imported material. However, the draft notification aims for only 85 per cent during that timeframe.

Beyond the bin

- While this draft EPR guidelines represent a positive step towards sustainable waste management, a closer analysis reveals crucial gaps that need to be addressed to create a truly robust and effective framework.
- The CSE, in its aforementioned report highlighted several recommendations, some of which have been incorporated in the draft, while others remain unaddressed.
- The draft guidelines clearly demonstrate the government's intent to move towards a circular economy model for managing packaging waste.
- However, to realise the full potential of EPR and achieve a truly circular system, the MoEF&CC should seriously consider incorporating the missing elements highlighted by the CSE. Addressing

these limitations will ensure a more robust, inclusive, and effective EPR framework, ultimately leading to increased domestic wastepaper recovery, reduced reliance on imports, and environmental sustainability.

Contamination, landslides: Potential dangers of mining world's largest lithium deposit

- The world is moving fast to embrace electric vehicles over fuel-based ones. Lithium-ion batteries are the fuel for these newly desired vehicles.
- **The world's largest known lithium deposit is in Salar de Uyuni, Bolivia**, a white salt desert that spans thousands of kilometres in Bolivia.
- Scientists conducted a study on the implications of mining lithium at the Salar de Uyuni. The study reported in Environmental Science & Technology Letters informs strategies to manage future mining operations more sustainably and protect the fragile Salar environment.
- Even though mining in this region is in the preliminary stage, in the long run, it can lead to the depletion of groundwater levels and even landslides.
- Scientists conducted a chemical analysis of the brine solution from eight ponds, where they found the arsenic levels to be nearly 50 parts per million, 1,400 times higher than the benchmark considered ecologically acceptable by the US Environmental Protection Agency.
- one of the researchers, acclaimed, "This arsenic level is extremely high. My group has worked all over the world — in Africa, Europe, Vietnam, India — and I don't think we ever measured that level of arsenic."
- The leaking of brine from one pond to another might lead to **bioaccumulation, which can affect the biodiversity** of the region. For instance, Flamingos which feed on local brine shrimp, are sensitive to arsenic at levels above 8 parts per million.
- The team also found a higher concentration of boron in evaporation ponds. However, the levels of both arsenic and boron in the lithium processing plants were much lower, even lower than in the natural brine.
- The team investigated the potential repercussions of taking spent brine — that is, brine left over after lithium is removed — or wastewater from lithium processing and injecting it back into the lithium deposit. The lithium mining industry has indicated these approaches can counteract land subsidence.
- One potential solution to preventing land subsidence would be to carefully blend spent brine with wastewater to achieve a chemical balance with the natural brine, as said by the authors. They also added that further investigation is needed into this.
- "We see lithium as the future for energy security, so we're trying to analyse it from different angles to ensure sustainable development and supplies," .

India strengthens efforts to combat climate change and environmental challenges

- The central government has reaffirmed its commitment to addressing environmental challenges and climate change through a series of legislative, regulatory, and administrative measures aimed at conservation, pollution control, and sustainability. The Ministry of Environment, Forest & Climate Change (MoEFCC) has been spearheading these initiatives, implementing key policies and programs to protect the environment and enhance India's green cover.

Tree Plantation Initiative

- One significant initiative was launched on World Environment Day, celebrated on June 5, 2024. The Prime Minister introduced the campaign 'Ek Ped Maa Ke Naam' (#Plant4Mother), encouraging people to plant trees as a tribute to their mothers and to Mother Earth. MoEFCC has collaborated with central and state governments, institutions, and organizations to facilitate the planting of 140 crore trees by March 2025, with 109 crore saplings already planted by January 2025.

Expansion of Protected Areas

- The number of protected areas in India has grown significantly, from 745 in 2014 to 1,022, now covering 5.43 percent of the country's total geographic area. The number of community reserves has also risen from 43 in 2014 to 220. The country also has 57 tiger reserves under the Wildlife Protection Act, 1972, aimed at conserving tigers and their habitats, while 33 elephant reserves have been designated to ensure safe habitats for elephants.

Conservation of Wetlands

- Since 2014, India has added 59 wetlands to the list of Ramsar sites, bringing the total to 89 and covering an area of 1.35 million hectares. India now has the largest Ramsar site network in Asia and the third-largest globally in terms of the number of sites. Udaipur and Indore have also been recently included in the Wetland Accredited Cities list under the Wetland City Accreditation Scheme of the Ramsar Convention.

Tiger Population and Conservation Efforts

- The All India Tiger Estimation 2022 report estimates India's tiger population at 3,682, accounting for 70 percent of the world's wild tiger population. The total area under the tiger reserve network is now 82,836.45 square kilometers, or about 2.5 percent of India's total geographical area.

India's Climate Action Strategy

- India's climate action is guided by its updated Nationally Determined Contributions (NDCs) and a long-term strategy to achieve net-zero emissions by 2070. The National Action Plan on Climate Change (NAPCC) provides a framework for various missions targeting solar energy, energy efficiency, sustainable habitat, water conservation, the Himalayan ecosystem, sustainable agriculture, human health, and strategic climate knowledge.

- MoEFCC has also implemented key programs such as the Climate Change Action Programme (CCAP) and the National Adaptation Fund for Climate Change (NAFCC) to support climate resilience efforts.

Progress in Renewable Energy and Emission Reduction

- As a result of these measures, India has significantly reduced the emission intensity of its GDP by 36 percent between 2005 and 2020. By October 2024, non-fossil sources accounted for 46.52 percent of the country's installed electricity generation capacity.
- The total renewable energy capacity, including large hydropower projects, has reached 203.22 gigawatts, with renewable power alone increasing 4.5 times from 35 gigawatts in March 2014 to 156.25 gigawatts. India's forest and tree cover has also expanded, now accounting for 25.17 percent of the country's total geographical area, contributing an additional carbon sink of 2.29 billion tonnes of CO₂ equivalent from 2005 to 2021.

India's Global Climate Commitment

- Despite its historically low contribution to global emissions, India has taken proactive steps to align with the principles of equity and common but differentiated responsibilities under the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement.

Why global sea ice cover has dipped to record low — what this means

- **Sea ice refers to the free-floating ice in the polar regions.** While it generally expands during the winter and melts in the summers, some sea ice remains year-round. Note that this is different from icebergs, glaciers, ice sheets, and ice shelves, which form on land.
- Global sea ice cover dipped to a new record low last week.
- Over the five-days leading up to February 13, the combined extent of Arctic and Antarctic sea ice dropped to 15.76 million sq km, down from the previous five-day record low of 15.93 million sq km in January-February 2023, according to BBC analysis of data from the US National Snow and Ice Data Center (NSIDC).
- **Sea ice refers to the free-floating ice in the polar regions.** While it generally expands during the winter and melts in the summers, some sea ice remains year-round. Note that this is different from icebergs, glaciers, ice sheets, and ice shelves, which form on land.
- Sea ice plays a crucial role in cooling the planet by trapping existing heat in the ocean, and thus precluding it from warming the air above. Therefore, a reduction in sea ice cover can have disastrous consequences for Earth.

The dip

- Currently, Arctic sea ice is at its lowest recorded extent for the time of year. Meanwhile, Antarctic sea ice is close to a new low, based on satellite records going back to the late 1970s.

- But given historical trends, this is not all that surprising. Since the late 1970s, NSIDC has estimated that some 77,800 sq km of sea ice has been lost per year.
- Between 1981 and 2010, Arctic sea ice extent in September — when it reaches its minimum extent — shrunk at a rate of 12.2% per decade, according to the National Aeronautics and Space Administration (NASA).
- In the Antarctic, the situation is a bit different. Until 2015, the region actually witnessed a slight year-on-year increase in sea ice. Between late 2014 and 2017, however, the Antarctic lost two million square km of sea ice — an area equivalent to roughly four times the size of Spain, according to the Copernicus Marine Service. Sea ice levels again increased in 2018.
- In 2023, maximum Antarctic sea ice reached historically low levels. Sea ice cover was more than two million sq km lower than usual — an area about 10 times the size of the UK.
- Last year, the cover was higher than in 2023 but still 1.55 million sq km below the average maximum extent from 1981-2010.

Behind the dip

- Experts suggest that the 2025 low could be due to a combination of warm air, warm seas and winds breaking apart the ice..
- Antarctic sea ice is particularly vulnerable to ice-breaking winds. Unlike Arctic ice, it is surrounded by the ocean instead of continents and is thus more mobile, and also comparatively thinner. The situation has been made worse this year due to warmer air and warmer waters towards the end of the southern hemisphere summer (December to February).
- Higher air temperatures led to the melting of the edges of the Antarctic ice sheet — also known as ice shelves — which extend over the ocean. “[The] ongoing ocean warming is setting the backdrop to all of this,”.
- In the Arctic, where winter lasts from November to February, sea ice remained low because of a delayed freezing around the Hudson Bay, a large saltwater body in northeastern Canada. The delay occurred as unusually warm oceans took a longer time to cool down.
- The region also witnessed some storms which broke apart ice around the Barents Sea, located off the northern coasts of Norway and Russia, and the Bering Sea, the stretch between Alaska and Russia. Experts say that Arctic ice has become thinner and more fragile over the years, and hence more susceptible to breaking by storms.
- Higher than usual air temperatures in areas such as Svalbard, Norway, resulted in further loss of sea ice.

What dip means

- Less sea ice cover means that more water is getting exposed to the Sun and more heat (solar radiation) is getting absorbed, leading to a further rise in temperatures.

- Notably, sea ice keeps temperatures down in the polar regions, as its bright, white surface reflects more sunlight back to space than liquid water. The loss of sea ice cover could be one of the reasons why the polar regions are getting warmer at a faster rate than the rest of the world.
- Studies have found that melting sea ice is also slowing down the flow of water through the world's oceans. This is happening because freshwater from melting ice enters the ocean, and reduces the salinity and density of the surface water, thereby diminishing that downward flow to the sea's bottom. A slowdown of ocean overturning can severely impact the global climate, the marine food chain, and the stability of ice shelves.

What is the Aravali safari park project? | Explained

What is the project?

- As per the tender invited by the Haryana Tourism Department, the proposed Aravali safari park will have animal cages, guest houses, hotels, restaurants, auditoriums, an animal hospital, childrens' parks, botanical gardens, aquariums, cable cars, a tunnel walk with exhibits, an open-air theatre and eateries.
- The project has now been transferred to the forest department and an expert committee has been set up to oversee it. Of the total 3,858 hectares proposed in the tender, 2,574 will be spread across 11 villages in Gurugram and the remaining 1,284 in Nuh, across its seven villages.

Why is there opposition?

- The hills in the southern districts of Gurugram and Nuh are a part of Aravali, the **oldest fold mountain range in the world**. It runs diagonally across Rajasthan extending from Champaner in Gujarat in the southwest to near Delhi in the northeast for about 690 km.
- It is ecologically significant as it combats desertification by checking the spread of the Thar Desert towards eastern Rajasthan, and **performs the role of an aquifer with its highly fractured and weathered quality rocks** allowing water to percolate and recharge the groundwater. It is also a rich habitat to a wide spectrum of wildlife and plant species.
- A group of 37 retired Indian Forest Service officers have written a letter to Prime Minister Narendra Modi seeking to scrap the project arguing that the project's aim is to simply increase tourist footfall and not conserve the mountain range. The "primary purpose of any intervention in an eco-sensitive area should be 'conservation and restoration' and not destruction", the letter said. The increased footfall, vehicular traffic and construction will disturb aquifers under the Aravali hills which are critical reserves for the water-starved districts of Gurugram and Nuh (the groundwater level in the two districts has been categorised as "over-exploited" by the Central Ground Water Board).
- Additionally, **the location of the project falls under the category of "forest", which is protected under the Forest Conservation Act, 1980**. Besides, Haryana has very low forest cover

of 3.6%, and therefore, the State needs rewilding of natural forests and not destructive safari projects, the letter said.

What are the laws protecting Aravali?

- Of the approximately 80,000 hectare Aravali hill area in Haryana, a majority is protected under various laws and by orders of the Supreme Court and NGT. "The most widespread protection to the Aravalis comes from the Punjab Land Preservation Act (PLPA), 1900. The Special Sections 4 and 5 of the Act restrict the breaking of land and hence deforestation in hills for non-agricultural use..
- ..Recently around 24,000 hectares has been notified as Protected Forest under the Indian Forest Act, as a proposed offset to forest land diversion in the Nicobar islands....
- Similarly, the *T.N. Godavarman Thirumulpad* judgment (1996) extends legal protection to forests as per dictionary meaning — which should cover the remaining Aravali areas that are not notified as forest.....the Regional Plan-2021 for the National Capital Region also offers crucial protection, designating the Aravalis and forest areas as 'Natural Conservation Zone' and restricting the maximum construction limit to 0.5%," .

What is the Aravali Safari Park Project?

- The Aravali Safari Park is proposed to cover a vast area of 3,858 hectares, spread across the southern districts of **Gurugram and Nuh in Haryana**. The park will include various facilities such as:
 - Animal enclosures and safaris
 - Guest houses, hotels, restaurants, and cafeterias
 - Auditoriums, open-air theatres, and children's parks
 - Botanical gardens, aquariums, and cable cars
 - An animal hospital, and a tunnel walk with exhibits
- Of the total proposed area, 2,574 hectares are planned for development in 11 villages in Gurugram, and the remaining 1,284 hectares will cover seven villages in Nuh.
- While the government presents the project as a major tourism boost, the scale of the park and its location have sparked widespread concern.

Ecological Significance of the Aravalis:

- The Aravalis are one of the oldest fold mountain ranges in the world, stretching across Rajasthan, Haryana, and parts of Delhi. This range is ecologically vital for several reasons:
- **Combats Desertification:** The Aravalis act as a natural barrier, preventing the spread of the Thar Desert toward the eastern regions of Rajasthan and Haryana.

- **Water Recharge:** The hills are a significant aquifer, recharging groundwater resources. The fractured and weathered rocks in the region allow rainwater to percolate and replenish water tables, which are crucial for the water-scarce districts of Gurugram and Nuh.
- **Biodiversity Hotspot:** The Aravali range is home to a diverse range of wildlife and plant species. These ecosystems are considered fragile, requiring protection from overdevelopment.

Environmental Concerns:

- **Disturbance to Aquifers and Water Resources:** The proposed safari park would increase footfall, vehicular traffic, and construction activity in the region. This could disrupt the delicate aquifer system under the Aravali hills, which are crucial for maintaining groundwater levels in the area.
- **Impact on Forests and Biodiversity:** The project is located in a region designated as "forest" land, which is protected under various environmental laws. These include the **Forest Conservation Act of 1980** and the **Punjab Land Preservation Act of 1900**, which restrict non-agricultural use of the land to prevent deforestation. Additionally, the Aravalis play a critical role in maintaining the region's biodiversity, and any large-scale development could lead to habitat destruction.
- **Legal Protections for the Aravalis:** Aravalis are designated as a **Natural Conservation Zone** under the **Regional Plan-2021** for the National Capital Region (NCR), which limits construction activities in these areas to only 0.5%.
- **Haryana's Low Forest Cover:** Haryana is one of the states with the lowest forest cover in India, at just 3.6%.

- **Aravali Ranges**

- The Aravali Ranges are a major mountain range in western India, stretching across the states of Rajasthan, Haryana (southwestern parts), and Gujarat.
- **Length:** Approximately 800 km (500 miles) in length.
- The Aravalis are one of the oldest mountain ranges in India, formed around 2.5 billion years ago.
- **Type:** They are primarily composed of ancient metamorphic rocks including granite, gneiss, and quartzite.
- **Key Peaks:** Guru Shikhar is the highest peak in the range, located in the Sirohi district of Rajasthan, with an elevation of 1,722 meters (5,650 feet).
- Haryana is home to around 1 lakh hectares of the Aravalis. Of this, 45,000 hectares of the hills are notified under Punjab Land Preservation Act (PLPA) and the Aravali Plantation, giving them legal cover from non-forest activities.
- The remaining 55,000 hectares were never recorded or notified as forests.

How big a health hazard is Sangam water with high level of faecal coliform

- The National Green Tribunal (NGT) has raised **concerns over high faecal coliform bacteria levels** and unsafe BOD Levels in the Ganga and Yamuna rivers in Prayagraj as millions are taking a dip at the Sangam during the Maha Kumbh.
- This came after a report by the Central Pollution Control Board (CPCB), filed on February 3, indicated high levels of faecal bacteria at various points along both the rivers near Prayagraj's Sangam, especially on Shahi Snan days.

But what does high levels of faecal bacteria in water mean, and how big a health hazard is it?

- Levels of faecal coliform, which get in water due to the mixing of human or livestock excreta, indicate water quality and help in monitoring the presence of disease-causing bacteria in any water sample.

What is BOD?

- According to a PTI report, BOD refers to the amount of oxygen required by aerobic microorganisms to break down organic material in a water body. A higher BOD level indicates more organic content in the water.
- Giving a more detailed description, the United States Geological Survey says, "Biochemical oxygen demand (BOD) represents the amount of oxygen consumed by bacteria and other microorganisms while they decompose organic matter under aerobic (oxygen is present) conditions at a specified temperature."
- This means that a higher BOD level indicates the presence of more organic matter in a water body.
- A small amount of dissolved oxygen, up to about ten molecules of oxygen per million of water, is crucial to maintain aquatic life and aesthetic quality of water bodies such as lakes and streams, says the USGS.
- For river water, if the BOD level is less than 3 milligrams a litre, it is considered safe for bathing.

WHAT IS FAECAL COLIFORM, AND WHAT ARE SAFE LEVELS?

- "The strength of faecal matter in sewage is monitored by coliform counts, a water quality parameter that acts as an indicator of pathogens that most commonly cause diarrhoea, as well as typhoid and a whole host of enteric diseases
- A 2004 committee formed by the Ministry of Urban Development recommended that the desirable limit of faecal coliform should be at 500 MPN/100ml and said that the maximum permissible limit should be capped at 2,500 MPN/100ml for discharge into the river.
- MPN/100ml denotes the most probable number per 100 millilitre of water sample.
- The Union Ministry of Environment, Forest and Climate Change's CPCB, in its Maha Kumbh 2025 dashboard on the water quality at the various spots along the Ganga and the Yamuna also notes that the faecal coliform in the water should be less than or equal to 2,500 MPN/100ml.

- In the last recorded data on faecal coliform from February 4, the CPCB reported its levels in the Ganga at 11,000 MPN/100ml before Shastri Bridge and 7,900 MPN/100ml at Sangam.

HOW DANGEROUS IS FAECAL COLIFORM?

- Though coliform bacteria itself isn't a cause of illness, it indicates the presence of pathogenic organisms of faecal origin like bacteria, viruses, or protozoa, in water samples, the CSE report explains.
- Dr Atul Kakar, Senior Consultant in the Department of Internal Medicine at New Delhi's Sir Ganga Ram Hospital, said that "the level of sanitisation and preparedness required is not up to the mark, and the bacteria from our stool are entering the water".
- "Therefore, it is not safe for consumption or even for bathing. This is what the report has indicated," .
- "Whenever there is infected water, it can lead to various waterborne diseases, including skin diseases, and ailments like loose motions, diarrhoea, vomiting, typhoid, and cholera," .
- Contamination of water with faecal coliform bacteria in drinking-water, according to a paper in the World Health Organisation, "has been implicated in the spread of important infectious and parasitic diseases such as cholera, typhoid, dysentery, hepatitis, giardiasis, guinea worm and schistosomiasis.
- Such bacterial contamination on "the surface of water bodies poses a health risk in its reuse, be it for a variety of domestic purposes including safe drinking water, as well as exposing farmers who often use raw sewage or polluted streams to meet their irrigation needs.
- Bathing in waters with high levels of fecal coliform bacteria "increases the chance of developing illness (fever, nausea, or stomach cramps) from pathogens entering the body through the mouth, nose, ears, or cuts in the skin", according to KnowYourH2O, a US-based programme working on promoting the use of safe drinking water.
- Typhoid fever, hepatitis, gastroenteritis, dysentery, and ear infections, could also result from bathing or swimming in water with high fecal coliform, it adds.
- So, bathing in waters with levels of fecal bacteria above 2,500 MPN/100ml has health risks involved..

GEOGRAPHY

Prakriti 2025 - International Conference on Carbon Markets

- **PRAKRITI 2025 (Promoting Resilience, Awareness, Knowledge, and Resources for Integrating Transformational Initiatives)**, the International Conference on Carbon Markets, successfully concluded on its second day, bringing together national and international experts, policymakers, industry leaders, researchers, and practitioners.
- The conference was inaugurated on February 24, 2025, by **Shri Manohar Lal**, Hon'ble Minister of Power and Housing & Urban Affairs.
- As a flagship initiative of the Government of India, organized by the Bureau of Energy Efficiency under the patronage of the Ministry of Power and the Ministry of Environment, Forest and Climate Change, PRAKRITI 2025 served as a premier platform for in-depth discussions on global carbon market trends, challenges, and future pathways

- **Ms. Dia Mirza, Actor, Producer, National Goodwill Ambassador for United Nations** graced the event with her presence. She participated in an impactful fireside chat moderated by **Mr. Saurabh Diddi, Director, Bureau of Energy Efficiency**.
- She commended the **Government of India** for its initiatives under **LiFE (Lifestyle for Environment)**, highlighting its role in promoting mindful consumption and leading a global movement. Additionally, she emphasized the importance of engaging children and youth to drive meaningful change in climate conversations.
- The second day of the conference featured thematic addresses and a series of plenary sessions led by senior government officials and industry experts.
- Key discussions focused on: Incentivizing Renewable Energy developers through Carbon Markets, Development in Article 6 and Opportunities for India, Bringing Price Transparency in Global Carbon Marketplace, Role of Ecosystem-Based Interventions in Achieving Net-Zero Goals, Climate Tech Startups for Sustainable Development, and Leveraging finance for the deployment of clean technologies.
- The two-day event witnessed robust participation from key Indian ministries, including the Ministry of Power, Ministry of Environment, Forest and Climate Change, and the Ministry of Agriculture, Financial Institutions, Corporates, International NGOs, PSUs, etc.
- Approximately 80+ experts and 600+ delegates engaged in the conference's discussion in the last two days, focusing on carbon market mechanisms, policy framework, climate finance and technologies.
- This demonstrates a coordinated, intergovernmental strategy, fostering synergistic collaboration and broad stakeholder participation, affirming India's dedication to meet climate goals.
- More than just a conference, Prakriti 2025 has distinguished itself as one of the most comprehensive and significant carbon market events for learning, sharing knowledge, and exploring opportunities for collaboration in the global effort to combat climate change.
- Prakriti 2025 will build on this momentum, marking a significant milestone in both India's national climate agenda and the broader international climate discourse

About BEE

- The Government of India set up the Bureau of Energy Efficiency (BEE) on March 1, **2002 under the provisions of the Energy Conservation Act, 2001**.
- The mission of the Bureau of Energy Efficiency is to assist in developing policies and strategies with a thrust on self-regulation and market principles, within the overall framework of **the Energy Conservation Act, 2001** with the primary objective of reducing the energy intensity of the Indian economy.

- BEE coordinates with designated consumers, designated agencies and other organizations and recognises, identifies and utilises the existing resources and infrastructure, in performing the functions assigned to it under the Energy Conservation Act.
- The Energy Conservation Act provides for regulatory and promotional functions.

Saffron reedtail damselfly, endemic to Western Ghats, spotted for first time in Karnataka in Madhugundi of Chikkamagaluru

- Two naturalists have spotted the saffron reedtail, a rare species of damselfly endemic to the Western Ghats of India, for the first time in Karnataka. They found the damselflies, referred to as *Indosticta deccanensis*, in the forests along the Nethravati river in Madhugundi village near Sunkasale in Chikkamagaluru district last year. Earlier, the damselflies were noticed in Tamil Nadu and Kerala.
- The saffron reedtail, scientifically known as *Indosticta deccanensis*, belongs to the family Platystictidae.
- These damselflies are slender and delicate, often found near slow-moving streams.
- Their distinctive saffron bodies give them their common name.
- They thrive in environments with pristine water quality, making them sensitive indicators of ecosystem health.
- The discovery of the saffron reedtail in Madhugundi is for several reasons. It extends the known geographical range of this species, suggesting a broader habitat than previously documented. This finding contributes to understanding the biodiversity within the Western Ghats, a UNESCO World Heritage site known for its rich flora and fauna.
- Saffron reedtails are sensitive to environmental changes. Their presence indicates a healthy ecosystem. They rely on clean water and undisturbed habitats. Therefore, their discovery puts stress on the importance of protecting these environments from threats like deforestation and pollution.
- The damselflies of the *Indosticta deccanensis* species are commonly called saffron reedtail because of the saffron bodies. They are seen in streams surrounded by thick vegetation. Mr. Padiyar, a postgraduate in wildlife and management, who works as a naturalist at River Mist Resorts at Madhugundi, told *The Hindu* that the particular species belongs to the family Platystictidae, commonly referred to as shadow damselflies.
- The discovery in Madhugundi would help in understanding the richness of biodiversity in the forests of the area. "Prior to this discovery, the distribution of these damselflies was documented in the southern parts of the Western Ghats. Finding them in Madhugundi extends its known range northward, suggesting that the species may occupy a larger area than previously thought," he said.

- “They are slender and delicate insects, usually found near slow-moving forest streams where they rely on pristine water quality for their lifecycle. The presence of them is an indicator of a healthy ecosystem, as they are highly sensitive to environmental changes and pollution. It also emphasises the need to protect the pristine habitats from deforestation, water pollution, and climate change
- Local communities play a vital role in conservation. Educating residents about the importance of biodiversity can encourage a sense of responsibility. Engaging locals in conservation efforts can help protect habitats and promote sustainable practices.
- Biodiversity is crucial for ecosystem stability. It provides essential services like clean water, air, and soil fertility. Protecting diverse species ensures the resilience of ecosystems against environmental changes

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Two more Ramsar sites take total to 20 in Tamil Nadu

- Tamil Nadu has added two more Ramsar sites: **Sakkarakottai** and **Therthangal** bird sanctuaries. This brings the state's total number of Ramsar sites to **20**, the highest in India. Uttar Pradesh follows with 10 Ramsar sites.
- The Sakkarakottai Bird Sanctuary spans 230.495 hectares while the Therthangal Bird Sanctuary covers 29.295 hectares. Both sanctuaries meet all the important Ramsar criteria. They lie along the Central Asian Flyway and are critical breeding and foraging grounds for waterbirds, including the Spot-billed Pelican, Black-headed Ibis, and Oriental Darter.
- These wetlands also play a crucial role in climate regulation, recharging of groundwater, and irrigation, benefiting the livelihoods of local communities.
- The declaration reinforces TN's efforts under the Tamil Nadu Wetlands Mission, the first state-led initiative in India exclusively focused on wetland conservation and restoration.
- The **Ramsar Convention**, signed in 1971, aims to protect wetlands worldwide through local conservation efforts, national policies, and international cooperation.
- Wetlands included under the treaty encompass a wide range of ecosystems, from **marshes, lakes, rivers,** and **peatlands,** to **coastal habitats** such as **mangroves, saltmarshes, mudflats, seagrass beds,** and even **coral reefs.**
- **Importance of Ramsar Status:** The **Ramsar status** provides enhanced conservation efforts and global recognition for these crucial ecosystems. It opens the door for **increased funding** and ensures better protection for these fragile areas.
- **Tamil Nadu's Wetland Conservation Efforts**
- The newly designated **Sakkarakottai** and **Therthangal** bird sanctuaries are located in **Ramanathapuram district**, which already hosts two other Ramsar sites: **Chitrangudi** and **Kanjirankulam.**

- Tamil Nadu has been at the forefront of wetland conservation in India, with its first Ramsar designation granted in 2002 for the **Point Calimere Wildlife and Bird Sanctuary**.
- Other sanctuaries in Tamil Nadu that have received Ramsar recognition include **Kazhuveli** and **Nanjarayan Bird Sanctuaries**, which were added in **2024**.
- Alongside the Tamil Nadu sites, **India** has recently added **four new Ramsar sites** in total, bringing the country's total Ramsar sites to **89**:
- **Khecheopalri Wetland** (Sikkim)
- **Udhwa Lake** (Jharkhand)

What is La Nina? The ocean cooling phenomenon that shapes India's climate

- January 2025 was the warmest January on record, with an average surface air temperature of 13.2°C, 0.79°C above January's 1991-2020 average, according to Copernicus Climate Change Service, the European Union's Earth Observation Programme.
- The surface air temperature was 1.5°C above the pre-industrial level.
- It also reported that Sea Surface Temperatures (SSTs) were below average over the central equatorial Pacific, but close to or above average over the eastern equatorial Pacific, suggesting a slowing or stalling of the move towards La Niña conditions. SSTs remained unusually high in many other ocean basins and seas

WHAT IS LA NINA?

- La Nina means "Little girl" in Spanish. It is also called El Viejo, anti-El Nino, or a cold event. It is a part of El Nino Southern Oscillation (ENSO) which is characterised by cooler-than-normal temperatures along the Equatorial Pacific Ocean.
- According to Noaa, La Nina is characterised by unusually cold ocean temperatures in the Equatorial Pacific, compared to El Nino, which is characterised by unusually warm ocean temperatures in the Equatorial Pacific
- In the neutral phase, the Eastern side of the Pacific Ocean (the coastal regions of South America) is cooler than the western side (Indonesia, Australia). This occurs due to the movement of hot surface winds from east to west and the upwelling of cooler winds from west to east making the east side cooler and nutrient-rich.
- This cycle is disrupted during the El Nino phase where the hot surface winds move from west to east and cooler winds from east to west, leading to drought conditions in India and Africa.
- The strengthening of the neutral phase due to the stronger trade winds makes the Equatorial Pacific Ocean cooler than usual. This makes the South American coast cooler than normal, bringing more rainfall in summer to Western Australia and more monsoon rainfall to India.

HOW DOES IT AFFECT THE CLIMATE OF INDIA?

- In a written reply to the question, Union Minister of State (Independent Charge) for Science & Technology and Earth Sciences, Dr. Jitendra Singh mentioned the effect of La Nina on the Indian monsoon during its last occurrence.
- The last time La Nina occurred was from 2020-23, causing normal to above-normal rainfall across most parts of the country during the southwest monsoon season. This was not true to the regions in extreme North and north-east India, which received below-normal rainfall.
- In some regions, there were floods and damage to crops, but in the larger context, it helped in the growth and development of certain Kharif crops."

HOW WILL THE DELAYED LA NINA AFFECT INDIA?

- The La Nina was expected to occur in July last year. Now the meteorologists suggest the chances of developing La Nina are about 57-60%.
- This could lead to weaker monsoons, impacting the intensity and timing of rainfall in India, and more heat during summer. This could even lead to decreased tropical cyclone activity in the Bay of Bengal region

Fort William, Army's Eastern HQ, renamed Vijay Durg

- In the latest step toward eliminating colonial practices and mindsets within the armed forces, Fort William in Kolkata, the headquarters of the Eastern Army Command, has been renamed Vijay Durg.
- Additionally, Kitchener House inside Fort William has been renamed Manekshaw House, and South gate, formerly known as St. George's Gate, is now Shivaji Gate.
- According to Wg Cdr Himanshu Tiwari, the Defence Public Relations Officer in Kolkata, the decision was made in mid-December and all communications have since ceased using "Fort William," adopting the new name instead. However, the official announcement is still pending.
- Fort William, named after King William III of England, was constructed by the British in 1781. The new name, Vijay Durg, is derived from the oldest fort along the Sindhudurg coast in Maharashtra and served as a naval base for the Marathas under Chhatrapati Shivaji.
- In recent years, there have been a series of measures aimed at removing "vestiges of the colonial era" and "Indianising" military traditions and customs — an initiative Prime Minister Narendra Modi has termed as "*gulami ki mansikta se mukti* (freedom from the mentality of slavery)".
- In March 2022, while addressing top military leadership at Kevadia in Gujarat, Prime Minister Narendra Modi emphasised the importance of engancing indigenisation in national defence — not just in terms of sourcing of equipment and weapons but also in the doctrines, procedures and customs practised by the armed forces. He urged the three services to "rid themselves of legacy systems and practices that have outlived utility and relevance".
- In September 2022, the Navy adopted a new naval ensign that moves away from its colonial past, featuring a new octagonal design inspired by the seal of Chhatrapati Shivaji.

- Measures taken include replacing musical tunes played during the Beating Retreat ceremony with Indian compositions and reviewing various ceremonial practices and attire
- Kolkata's historic Fort William have been renamed as Vijay Durg to remove colonial influence from the Indian Army.
- The new name Vijay Durg serve as a naval base for the Marathas under Chhatrapati Shivaji Maharaj.
- **Vijay Durg is an ancient fort which is** located on the Sindhudurg coast of Maharashtra. The name change shows the pride in India's indigenous military history, under the Maratha Empire.

Background of Fort William

- Fort William was originally built by the British in Kolkata in 1781
- And it was named after King William III of England.
- It was served as the headquarter of the Eastern Army Command during British rule and remains a major military site.
- The Beating Retreat ceremony, traditionally play with British military music, now features Indian compositions replacing colonial-era tunes.
- The Indian Army has reviewed its ceremonial practices and dresses as well, to bring them in line with Indian culture and heritage.

Over 68,000 ponds completed under mission Amrit Sarovar to combat water scarcity

- Mission Amrit Sarovar, launched in April 2022, has achieved remarkable progress in addressing the country's water scarcity issue by constructing or rejuvenating over 68,000 Amrit Sarovars (ponds) as of January.
- The mission, aimed at building 75 ponds in each district, with a total target of 50,000 ponds nationwide, has already surpassed its goal. These Sarovars have significantly enhanced surface and groundwater availability across various regions, addressing immediate water needs and establishing sustainable water sources.
- The initiative not only highlights the government's commitment to combating water scarcity but also emphasizes long-term environmental sustainability and the well-being of local communities. The ponds serve as symbols of climate resilience and ecological balance, contributing to the nation's overall water management strategy.
- Phase II of Mission Amrit Sarovar will continue with a renewed focus on ensuring water availability through community participation (Jan Bhagidaari). This phase aims to further strengthen climate resilience and deliver lasting benefits for future generations by fostering ecological balance.
- The works under Mission Amrit Sarovar are being executed through convergence with various ongoing schemes such as the Mahatma Gandhi National Rural Employment Guarantee Scheme

(MGNREGS), the 15th Finance Commission Grants, and sub-schemes of Pradhan Mantri Krishi Sishu Yojana, including the Watershed Development Component and Har Khet Ko Pani. States are also using their own schemes, and public contributions like crowdfunding and Corporate Social Responsibility (CSR) are encouraged to support the initiative.

- Each pond will have a pondage area of minimum of one acre with water holding capacity of about 10,000 cubic meters.
- This initiative has made significant progress in addressing the critical issue of water scarcity.
- It plays an important role in increasing the availability of water, both on surface and underground.
- The groundwater resources assessment by Central Ground Water Board (CGWB), in collaboration with state governments, shows a significant rise in groundwater recharge due to sustained conservation efforts.
- Recharge from tanks, ponds and water conservation structures increased from 13.98 billion cubic meters (BCM) in 2017 to 25.34 BCM in 2024, reflecting the success of water conservation such as Mission Amrit Sarovar and the role of tanks, ponds & water conservation structures in sustaining groundwater levels.
- Public contributions like crowdfunding and Corporate Social Responsibility are also allowed for the work.
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Why the discovery of potash reserves in Punjab is significant

- Potash reserves have been discovered in three mining blocks in Punjab's **Fazilka** and **Sri Muktsar Sahib** districts. These blocks include **Kabarwala (Muktsar Sahib)**, **Sherewala** and **Ramsara (Fazilka)**, and **Shergarh and Dalmir Khara (Fazilka)**.
- Punjab Mining Minister Barinder Kumar Goyal said the government will explore potash mining in Fazilka and Sri Muktsar Sahib districts, where surveys previously detected large mineral reserves in three mining blocks.
- Surveys of the Geological Survey of India (GSI) have also identified reserves in parts of Rajasthan. These findings highlight the potential for potash mining in both states, reducing India's dependence on imports and bolstering the domestic fertilizer industry. However, some concerns have been flagged.

First, what is potash?

- Potash refers to potassium-bearing minerals that are primarily used in fertilisers. Over 90% of potash is used as fertilizer and it is one of the three primary agricultural nutrients (Nitrogen, Phosphorus and Potassium or N-P-K). According to the official Indian Minerals Yearbook for 2021, "Potash can be used on all plants to boost plant health and nutrition as well as to increase crop

yields. While all potash fertilizers contain potassium there are a number of different forms in which it exists.”

- The **Geological Survey of India (GSI)** conducted extensive surveys from **2017 to 2021**, confirming the presence of potash at a depth of approximately **450 meters**.
- Punjab is now the **second state in India**, after Rajasthan, to have significant potash deposits.

Types of Potash Fertilizers:

- **Muriate of Potash (MOP):** Contains chloride and is commonly used for carbohydrate-rich crops like wheat.
- **Sulphate of Potash (SOP):** Chloride-free and preferred for high-value crops like fruits and vegetables.
- Potash is also used in water purification, glass manufacturing, soaps, detergents, and explosives.
- India currently imports **5 million tonnes of potash annually**, mainly for fertilizers and industrial applications. This discovery could significantly reduce India's dependence on imports, saving foreign exchange and boosting domestic production.
- The mining and processing of potash are expected to create **employment opportunities** and contribute to the **economic development** of Punjab. Processing factories may be established near the mining sites that could boost local economies.
- The Punjab government has assured that **no land acquisition** will be required for mining.
- **Advanced drilling systems** will be used to extract potash from depths of **450 meters**, ensuring minimal impact on land ownership and agricultural activities.
- Before commencing operations, the government is conducting thorough **environmental and social impact assessments (ESIAs)** to address concerns related to land use, water resources, and local communities.
- Farmers in the region had initially expressed concerns about potential land acquisition. However, the government has clarified that mining will not disrupt agricultural land or displace farmers.

Broader Implications for India

- India spends billions of dollars annually on potash imports. The discovery of domestic reserves could reduce this expenditure, contributing to **economic self-reliance**.
- Indigenous potash reserves will support the **Nutrient Based Subsidy (NBS)** scheme, which provides subsidies to farmers based on the nutrient content of fertilizers.
- Potash has been classified as a **critical mineral** under the **Mines and Minerals (Development and Regulation) Amendment Act, 2023**.
- The government must ensure that mining operations are conducted efficiently and sustainably.
- Continuous conversation between government and local communities is crucial to address any potential concerns and ensure smooth project implementation.

- The government must enforce strict environmental regulations to minimize the ecological impact of mining activities.

4.0 magnitude earthquake jolts Delhi-NCR out of sleep, big tremors, rumbling noise

- The 4-magnitude earthquake that originated in Delhi early on Monday (February 17, 2025) was the strongest since a 4.6-magnitude temblor in the city in 2007. While of a 'moderate' intensity, the latest earthquake, accompanied by a distinct rumble, served as a rude, early-morning awakening to denizens of the city at the broader National Capital Region in Noida, Ghaziabad and Gurugram because it was 'shallow,' or a mere five kilometres from the surface.
- "The 4.6-magnitude quake in November 2007 barely registered with many because it was at a 10-km depth, meaning that most of the energy dissipated by the time that seismic waves reached the surface
- In analysis by the institution of seismic activity in a 50-km radius of Monday's quake says that from 1993 to 2025, 446 earthquakes ranging in magnitude from 1.1- 4.6 have been reported. The maximum magnitude (M 4.6) of an earthquake was reported on November 25, 2007, which is about six kilometres north-west of quake, which originated at Jheel Park, in Delhi, according to the agency.
- While it is common to associate earthquakes with the slipping, sliding and collision of tectonic-boundary plates — as the sprawling slabs of Earth's outer crust, on which the continents are perched, are called — the 5:30 a.m. quake was not tectonics.
- "[The quake] occurred due to normal faulting that supported the concept of hydro fracturing as the principal cause of seismogenesis of varying strengths," an NCS report on the event noted.
- In other words, below Delhi's surface lie vast water channels of aquifers, ancient rivers and rivulets, and over aeons, they erode the underlying rocks causing various "fractures", triggering seismic waves in the process.
- A 6-magnitude quake releases a thousand times more energy than a 4-magnitude one. Every step up, the earthquake-measurement scale is 33 times the energy released on the immediate, lower rung.
- While the timing and location of earthquakes can not be predicted, earth scientists can estimate, based on reports of previous historical earthquakes in the region and measurements, the accumulated stress in various zones and the likelihood of a future one.
- Based on this, scientists have long warned of an impending quake in the Himalayas — along what is called the Main Central Fault — that is likely to be of magnitude 8 or above.

How do earthquakes happen?

- According to the theory of plate tectonics, the Earth's crust and upper mantle are made of large rigid plates that can move relative to one another. Slip on faults near the plate boundaries can result in earthquakes.
- The point inside the Earth where the earthquake rupture starts is called the focus or hypocentre. The point directly above it on the surface of the Earth is the epicentre.

What are seismic waves?

- Any elastic material when subjected to stress, stretches in a proportional way, until the elastic limit is reached. When the elastic limit is crossed, it breaks. Similarly, the Earth also has an elastic limit and when the stress is higher than this limit, it breaks.
- Then there is a generation of heat, and energy is released. Since the material is elastic, the energy is released in the form of elastic waves. These propagate to a distance determined by the extent of the impact. These are known as seismic waves.

How are earthquakes measured?

- Earthquakes are measured by seismographic networks, which are made of seismic stations, each of which measures the shaking of the ground beneath it. In India, the National Seismological Network does this work. It has a history of about 120 years and its sensors can now detect an earthquake within five to ten minutes.
- According to Shyam S. Rai who is a Raja Ramanna Fellow and Professor Emeritus at the Indian Institute of Science Education and Research, Pune, the wave parameters are measured, not the total energy released.
- He explains that there is a relationship between the quantum of energy released and the wave amplitude.
- The amplitude of the wave is a function of the time period of the wave. It is possible to convert the measured wave amplitude into the energy released for that earthquake. This is what seismologists call the magnitude of the earthquake.

What is the Richter magnitude scale?

- This is a measure of the magnitude of an earthquake and was first defined by Charles F. Richter of the California Institute of Technology, U.S., in 1935.
- The magnitude of an earthquake is the logarithm of the amplitude of the waves measured by the seismographs.
- Richter scale magnitudes are expressed as a whole number and a decimal part, for example 6.3 or 5.2. Since it is a logarithmic scale, an increase of the whole number by one unit signifies a tenfold increase in the amplitude of the wave and a 31-times increase of the energy released.

How are zones designated?

- Based on seismicity, intensity of earthquakes experienced, and geological and tectonic qualities of a region, countries are divided into several zones. In India, for example, there are four zones, designated Zone II-Zone V. Among these, Zone V is the most hazardous and Zone II the least hazardous.

Can you build early warning systems for earthquakes?

- Since parameters of the earthquake are unknown, it is near impossible to predict an earthquake. The problem with earthquakes is that they are heavily dependent on the material property, which varies from place to place, says Professor Rai.
- If there are elastic waves propagating through a material, there are two kinds of waves — the primary wave which reaches first, and the second one called the secondary wave, which is more destructive.
- Suppose the primary wave is measured, and we have efficient computer systems, all the inputs and excellent data collection, then it can be said that a possible earthquake of this much magnitude and energy has occurred and this could lead to a ground amplitude which could be destructive.
- If it is known that the amount of energy released is extremely high, trains and power grids can be shut down and the damage minimised. “This has worked in some locations, but not on a large commercial basis,”
- “The most successful early warning systems are in Japan. They have several hundreds of thousands recording devices. Responses are sent to a central point where they estimate whether it is large enough to form a tsunami or some other hazard, and precautionary steps are taken.

Earthquake power

- A quake's destructive force depends not only on its strength, but also on location, distance from the epicentre and depth.
- Quakes can strike near the surface or deep within the Earth. Most quakes occur at shallow depths, according to the U.S. Geological Survey.

Shallow quakes

- Shallow quakes generally tend to be more damaging than deeper quakes. Seismic waves from deep quakes have to travel farther to the surface, losing energy along the way.
- Shaking is more intense from quakes that hit close to the surface like setting off “a bomb directly under a city,” said Susan Hough, a USGS seismologist.

What is shallow earthquake?

- Earthquakes can occur anywhere between the Earth's surface and about 700 kilometers below the surface.
- For scientific purposes, this earthquake depth range of 0-700 km is divided into three zones: shallow, intermediate and deep.

- i) Shallow earthquakes are between 0 and 70 km deep.
- ii) Intermediate earthquakes 70-300 km deep
- iii) Deep earthquakes 300-700 km deep.
- In general, the term “deep-focus earthquakes” is applied to earthquakes deeper than 70 km.

Terms related to earthquake:

- **Earthquake:** An earthquake is a sudden, rapid shaking of the ground caused by the shifting of rocks deep underneath the earth's surface. Earthquakes can cause fires, tsunamis, landslides or avalanches. Earthquakes are classified as, Slight ($M < 5.0$), Moderate ($5.0 < M < 6.9$) and Great ($M > 7.0$) depending upon the magnitude on the Richter scale. An earthquake having a magnitude, $M < 2.0$ is termed as a microearthquake.
- **Seismograph:** A seismograph, or seismometer, is an instrument used to detect and record earthquakes. Generally, it consists of a mass attached to a fixed base. During an earthquake, the base moves and the mass does not. The motion of the base with respect to the mass is commonly transformed into an electrical voltage. The electrical voltage is recorded on paper, magnetic tape, or another recording medium. This record is proportional to the motion of the seismometer mass relative to the earth, but it can be mathematically converted to a record of the absolute motion of the ground. Seismograph generally refers to the seismometer and its recording device as a single unit.
- **Richter scale:** The Richter magnitude scale was developed in 1935 by Charles F. Richter of the California Institute of Technology as a mathematical device to compare the size of earthquakes.
- The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded by seismographs. Adjustments are included for the variation in the distance between the various seismographs and the epicenter of the earthquakes.
- On the Richter Scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude 5.3 might be computed for a moderate earthquake.
- **Epicenter:** It is the point on the surface of the Earth, vertically above the place of origin (hypocenter or focus) of an earthquake.
- **Fault:** A fault is a fracture or zone of fractures between two blocks of rock. Faults allow the blocks to move relative to each other.
- This movement may occur rapidly, in the form of an earthquake — or may occur slowly, in the form of creep. Faults may range in length from a few millimeters to thousands of kilometers.
- Most faults produce repeated displacements over geologic time. During an earthquake, the rock on one side of the fault suddenly slips with respect to the other. The fault surface can be horizontal or vertical or some arbitrary angle in between.

- **Aftershock:** An earthquake that follows a large magnitude earthquake called, “main shock” and originates in or around the rupture zone of the main shock.
- Generally, major earthquakes are followed by a number of aftershocks, which show a decreasing trend in magnitude and frequency with time.

Storms, droughts, displacement: How climate change is hitting India's tribes

- India is home to 104 million Indigenous people, about 8.6% of the population, according to The Indigenous World 2023. Their strong connection to nature also makes them particularly vulnerable to extreme weather driven by climate change.
- If you see ants building mounds along the sides of their nests, would it mean anything to you? For **the Toba tribe of the Nilgiri Hills, it signals that rain** is on the way. This deep understanding of the natural world is a key reason many Indigenous communities remain resilient despite growing challenges.
- Floods, unpredictable rainfall, rising temperatures, and deforestation are among the many threats to their traditional way of life.
- Yet, Indigenous cultures hold valuable knowledge that can contribute to climate adaptation.
- The Cancun Adaptation Framework (CAF) recognises the importance of integrating traditional wisdom into national adaptation efforts. Sustainable farming, ecosystem management, and Indigenous weather forecasting are just a few time-tested methods that offer practical solutions to climate-related challenges.

Deforestation and Land Degradation

- Indigenous groups have been depending on forest resources for cultural practices and sustenance for a number of generations. However, their way of existence has been threatened by widespread destruction of land and deforestation. As reported by Global Forest Watch, India lost 414,000 hectares of humid primary forest (4.1%) between 2002 and 2023. This loss represents 18% of the nation's overall decline in tree cover during the same time frame.
- The most recent report from the Global Forest Watch monitoring project reveals that India has lost 2.33 million hectares of tree cover since 2000, a 6% decrease. Communities are being displaced and traditional land-use practices are being harmed by the increasing rate of forest clearing without first consulting Indigenous peoples.

Climate Displacement and Food Insecurity

- The rate of climate displacement faced by tribal populations is nearly seven times higher than the global average. Food insecurity and eating habits changes are just two of the serious consequences of forced migration caused by floods, droughts, and cyclones.
- A shift toward market-based diets which often lack dietary nutrients is due to the decline of traditional food sources including river fish, local cereals, and forest produce. Indigenous

populations have become more prone to disease outbreaks and mental health problems as a result of this change, which also increases risks for health and malnutrition.

- Indigenous communities have developed sophisticated weather prediction methods based on natural observations. The Toda tribe of the Nilgiri Hills in Tamil Nadu predicts the monsoon's arrival by observing ant behavior.
- When ants begin building small mounds near their nests, it signals impending rainfall. Similarly, the **Jarawa tribe of the Andaman and Nicobar Islands can forecast cyclone intensity by observing fish behavior.**
- If fish swim in shallow waters near the shore, it often indicates an approaching storm. These traditional methods, rooted in local ecological knowledge, are often more reliable than modern meteorological predictions, emphasizing the importance of blending traditional wisdom with modern technology.

Sustainable Ecosystem Management

- Indigenous communities have always played a key role in managing ecosystems sustainably, helping to protect natural resources and biodiversity. **In Meghalaya, the Khasi community practices agroforestry to keep the environment in balance.** They use home gardens, shifting farming, and responsibly manage forest resources as part of their food system.
- Similarly, the Bishnoi people are deeply committed to nature, following strict conservation practices such as protecting wildlife, saving water, and planting trees. These traditional methods offer important lessons on how to build resilience to climate change and restore the environment.
- Traditional farming methods are important for climate-resilient agriculture. In India, various tribes use their knowledge to farm sustainably. **The Apatani tribes grow rice and fish together and use smart irrigation.** In the **cold deserts of Himachal Pradesh, the Lahaul tribes gather ice water and practice agroforestry to keep** farming during winter.
- The Dongria Kondh tribes in the Eastern Ghats grow different crops and use organic farming to cope with dry conditions. **The Irular tribes in the Western Ghats use natural pest control and store seeds to make farming more sustainable.** These methods help secure food and protect nature while adapting to climate change.

Community Resilience and Disaster Preparedness

- Indigenous communities have strong social structures that promote resilience and cooperation during crises. **The Mising community in Assam, for instance, has developed adaptive practices to combat frequent flooding.** Elevated houses (chang ghars), community-led disaster response strategies, and traditional flood-resistant crop varieties help them cope with climate risks.

- Similarly, the Kadar tribe of Kerala practices sustainable forest management, ensuring the long-term availability of essential resources like honey and medicinal plants.

Integrating Indigenous Knowledge with Modern Technology

- An integrated approach that combines modern science with Indigenous knowledge is important for tackling the problems brought on by climate change and extreme weather events. Incorporating Indigenous weather forecasting techniques may enhance satellite-based early warning systems. For greater climate resilience, national afforestation efforts can incorporate Indigenous communities' agroforestry practices.
- In order to make sure that Indigenous viewpoints are heard in the formulation of policies and plans for climate adaptation, it is also essential that we promote local initiatives.
- Indigenous communities in India continue to contend with a serious danger from extreme weather events.
- While problems like food hunger, biodiversity loss, and displacement are becoming more severe, Indigenous communities have a centuries-old knowledge system that can make an important contribution to resilience and climate adaptation.
- It is necessary to acknowledge and combine these ancient methods with contemporary findings from science in order to arrive at long-term solutions that will help both Indigenous communities and the rest of the population.
-

Government classifies barytes, felspar, mica, quartz as major minerals

- The government has **changed** the **classification** of barytes, felspar, mica and quartz into the category of major minerals.
- This move would pave the way for an increased exploration and scientific mining of such resources that are primary source of many critical minerals.
- Earlier, these were classified as **minor minerals**.
- "The Ministry of Mines vide gazette notification dated 20th February, 2025 has shifted minerals Barytes, Felspar, Mica and Quartz from the list of minor minerals to the category of major minerals".
- The development came on the heels of the government's National Critical Mineral Mission which seeks exploration and mining of critical minerals within the country including recovery of these minerals from various mines, overburden and tailings.
- **Quartz, felspar and mica are found in pegmatite rocks**, which are an important source of many critical minerals such as beryl, lithium, niobium, tantalum, molybdenum, tin, titanium and tungsten among others.

- These minerals have important role in various new technologies, in energy transition, spacecraft industries, and healthcare sector, among others.
- When **the leases of quartz, felspar and mica mines are granted as minor mineral** leases, the lease holders do not declare existence of critical minerals or extract the critical minerals associated with it such as **lithium, beryl, etc as their primary objective is to use these minerals as minor minerals for construction, glass/ceramic making, etc.**
- Consequently, the critical minerals associated with these minerals are neither getting extracted nor reported, the mines ministry said.
- Similarly, baryte has various industrial applications, including those for oil and gas drilling, electronics, television screens, rubber, glass, ceramics, paint, radiation shielding and medical applications. It is used to **make high density concrete to block X-ray emissions in hospitals, power plants, and laboratories.**
- Baryte often occurs as concretions and vein fillings in limestone and dolostone. It is found in association with ores of antimony, cobalt, copper, lead, manganese and silver.
- **Baryte with iron ore occurs in pocket type of deposit** which cannot be mined in isolation. While mining either of the minerals, the production of associated mineral is inevitable, the ministry said.
- Reclassification of these minerals will not adversely affect the lease period of the existing leases.
- As major minerals, the leases for these minerals will get extended to a period of 50 years from the date of grant or till the completion of renewal period, if any, whichever is later **as per section 8A of the MMDR Act, 1957**, it said.
- These mines will gradually register with the Indian Bureau of Mines and will be regulated as major minerals. A transition time of four months, that is, up to June 30 has been provided.
- The revenue from mines of these minerals will continue to accrue to the state government as earlier.

NASA's SPHEREx space telescope to explore what happened right after the Big Bang

- NASA is preparing to launch a megaphone-shaped observatory on a mission to better understand what happened immediately after the Big Bang that initiated the universe and to search the Milky Way for reservoirs of water, a crucial ingredient for life.
- The U.S. space agency's SPHEREx space telescope is tentatively scheduled to be launched on Friday aboard a SpaceX Falcon 9 rocket from Vandenberg Space Force Base in California.
- **SPHEREx - short for Spectro-Photometer for the History of the Universe, Epoch of Reionization and Ices Explorer** - is looking to answer questions about the origin of the universe while mapping the distribution of galaxies.

- Closer to home – relatively speaking – SPHEREx will look within our galaxy for reservoirs of water frozen on the surface of interstellar dust grains in large clouds of gas and dust that give rise to stars and planets.
- The observatory during its planned two-year mission will collect data on more than 450 million galaxies, as well as more than 100 million stars in the Milky Way, as it explores the origins of the universe and the galaxies within it. It will create a three-dimensional map of the cosmos in 102 colors -individual wavelengths of light.
- The mission is intended to gain insight into a phenomenon called cosmic inflation, the rapid and exponential expansion of the universe from a single point in a fraction of a second after the Big Bang that occurred roughly 13.8 billion years ago. By way of comparison, Earth is about 4.5 billion years old.
- “By mapping the distribution of galaxies over the whole sky, we can directly constrain unique properties of inflation. This is why we want to map the whole sky and why we need spectroscopy (studying objects based on color) to make the map 3D. The fact that we can connect these two things – the distribution of galaxies on large scales all the way to the physics of inflation – is very powerful and very mind-boggling and almost magical,” Dore added.
- Jim Fanson, SPHEREx project manager at the Jet Propulsion Laboratory, called cosmic inflation “the consensus framework for explaining aspects of the universe that we observe on large scales.”
- “It postulates that the universe expanded by a trillion-trillion-fold in a small fraction of a second after the Big Bang,” Fanson said.
- **SPHEREx is set to take pictures in every direction around Earth**, splitting the light from billions of cosmic sources such as stars and galaxies into their component wavelengths to determine their composition and distance. Researchers also will measure the collective glow of light from the space between galaxies.
- In addition, **SPHEREx will look for water and molecules including carbon dioxide and carbon monoxide frozen on the surface of dust grains in molecular clouds**, which are dense regions of gas and dust in interstellar space. Scientists believe that reservoirs of ice bound to dust grains in these clouds are where most of the universe’s water forms and dwells.
- Being launched along with SPHEREx is a constellation of satellites for NASA’s PUNCH mission to observe the sun’s corona, the outermost layer of its atmosphere. The aim is to better understand the solar wind, the continuous flow of charged particles from the sun.

Evidence of beaches from ancient Martian ocean detected by Chinese rover

- Ground-penetrating radar data obtained by China’s Zhurong rover has revealed buried beneath the Martian surface evidence of what look like sandy beaches from the shoreline of a large ocean that may have existed long ago on the northern plains of Mars.

- The findings are the latest evidence indicating the existence of this hypothesized ocean, called **Deuteronilus, roughly 3.5 to 4 billion years ago, a time when Mars – now cold and desolate** – possessed a thicker atmosphere and warmer climate. An ocean of liquid water on the Martian surface, according to scientists, potentially could have harbored living organisms, much like the primordial seas of early Earth.
- The rover, which operated from May 2021 to May 2022, journeyed about 1.2 miles (1.9 km) in an area that exhibits surface features suggestive of an ancient shoreline. Its ground-penetrating radar, which transmitted high-frequency radio waves into the ground that reflected off subsurface features, probed up to 80 meters (260 feet) beneath the surface.
- The radar images detected some 33-115 feet (10-35 meters) underground thick layers of material with properties similar to sand, all sloped in the same direction and at an angle similar to that of beaches on Earth just below the water where the sea meets the land. The researchers mapped these structures spanning three quarters of a mile (1.2 km) along the rover's path.
- "The Martian surface has changed dramatically over 3.5 billion years, but by using **ground-penetrating radar we found direct evidence of coastal deposits that weren't** visible from the surface," said planetary scientist Hai Liu, a member of the science team for China's Tianwen-1 mission that included the rover.
- On Earth, beach deposits of this size would have needed millions of years to form, the researchers said, suggesting that on Mars there was a large and long-lived body of water with wave action that distributed sediments carried into it by rivers flowing from nearby highlands.
- "The beaches would have been formed by similar processes to those on Earth – waves and tides,".. "Such oceans would have profoundly influenced Mars' climate, shaped its landscape and created environments potentially suitable for life to emerge and thrive."
- "Shorelines are great locations to look for evidence of past life. "It's thought that the earliest life on Earth began at locations like this, near the interface of air and shallow water."
- The rover explored in the southern part of Utopia Planitia, a large plain in the Martian northern hemisphere.
- The researchers ruled out other possible explanations for the structures Zhurong detected.
- "A primary part of this work was testing these other hypotheses. Wind-blown dunes were considered, but there were a few issues. First, dunes tend to come in groups, and these groups produce characteristic patterns not present in these deposits," Penn State geoscientist and study co-author Benjamin Cardenas said.
- "We also considered ancient rivers, which exist in some nearby locations on Mars, but we rejected that hypothesis for similar reasons based on the patterns we saw in the deposits. And you don't typically get structures like this in lava flows, either. Beaches simply fit the observations the best,"

- Earth, Mars and the solar system's other planets formed roughly 4.5 billion years ago. **That means Deuteronilus would have disappeared approximately a billion years into Martian history**, when the planet's climate changed dramatically. Scientists said some of the water may have been lost to space while large amounts may remain trapped underground.
- A study published last year based on seismic data obtained by NASA's robotic **InSight lander found that an immense reservoir of liquid water may reside** deep under the Martian surface within fractured igneous rocks.
- For decades, scientists have used satellite images to trace Martian surface features resembling a shoreline. But any such evidence on the surface could have been erased or distorted by billions of years of wind erosion or other geological processes.
- That is not the case with the newly found structures, which were entombed over time under material deposited by dust storms, meteorite strikes or volcanism.
- "These are beautifully preserved because they are still buried in the Martian subsurface,".

Conserving wetlands for the future

- **Wetlands are regions of land that are generally saturated** with water. However, when rain causes water to pool on land, it does not constitute a wetland. More specifically, wetlands are areas where water either covers the soil or is found at or near the soil surface year-round or for fluctuating periods throughout the year.
- These **ecosystems encompass marshes, swamps, peatlands, lagoons, mangroves, and floodplains**. Wetlands provide habitats for a wide range of species, function as natural water filters, and assist in alleviating the impacts of climate change.

What do wetlands do anyway?

- Wetland ecosystems directly and indirectly benefit millions of people, offering various goods and services.
- They help regulate floods, inhibit coastal erosion, and lessen the impacts of natural disasters such as cyclones and tidal waves. They also have the ability to store water for extended durations.
- Their capacity to hold excess flood water during heavy rains prevents flooding and supports a steady flow downstream, thus maintaining water quality and enhancing biological productivity for both aquatic organisms and local human populations.
- Flooded wetlands efficiently capture rainwater and serve as a key resource for replenishing groundwater aquifers.
- Many wading birds and waterfowl, including egrets, herons, and cranes, find breeding grounds in wetlands. Additionally, wetlands offer food and habitat for various mammals.
- They function as natural filtration systems, helping to eliminate a wide array of pollutants from water, including harmful viruses and heavy metals. Wetlands retain nutrients by sequestering

excessive nitrogen and phosphorus in the subsoil, thereby reducing the likelihood of eutrophication.

- **Mangrove forests are particularly valued for their production of fish and shellfish, livestock fodder, fuel, construction materials, traditional medicine, honey, and beeswax, although many mangrove areas have been replaced by other types of land use.**
- Furthermore, significant socio-economic benefits such as a reliable supply of water, fisheries, firewood, medicinal plants, livestock grazing opportunities, agricultural resources, energy, wildlife, transportation, and recreation and tourism are notable.
- Unfortunately, since 1970, nearly 35% of global wetland areas have been lost, mainly due to human activities like agricultural drainage, urban expansion, and pollution.
- This concerning decrease prompted the need for global efforts to safeguard these vital ecosystems for future generations.

Signing to protect

- **The Ramsar Convention on wetlands, established in 1971, is an international treaty that outlines the framework for conserving wetlands and their resources,** which became effective in 1975. Since then, nearly 90% of UN member nations have joined this initiative. World Wetlands Day is celebrated every February 2 to commemorate the adoption of the Ramsar Convention.
- The **theme for World Wetlands Day 2025 is 'protecting wetlands for our common future,'** emphasising the significance of this essential resource for both the environment and human prosperity. The United Nations officially recognised February 2 as World Wetlands Day in 2021.
- Originally, the event aimed to promote awareness about wetland conservation; however, it has since transformed into a worldwide movement that engages governments, NGOs, and communities.
- **Wetlands cover about 6% of the earth's land surface.** There are several kinds of wetlands, such as marshes, swamps, lagoons, bogs, fens, and mangroves. They are home to some of the richest, most diverse, and most fragile of natural resources. **The association of man and wetlands is ancient, with the first signs of civilisation originating in wetland habitats such as the floodplains of the Indus, the Nile Delta, and the Fertile Crescent of the Tigris and Euphrates rivers.**
- As they support a variety of plant and animal life, biologically they are one of the most productive ecosystems as well.
- India has a wealth of wetland ecosystems distributed in different geographical regions. Most of the wetlands in India are directly or indirectly linked with major river systems such as the Ganges, Cauvery, Krishna, Godavari, and Tapi.

- India has a total of 27,403 wetlands, of which 23,444 are inland wetlands and 3,959 are coastal wetlands. According to the Directory of Asian Wetlands (1989), **wetlands occupy** 18.4% of the country's area (excluding rivers), of which 70% are under paddy cultivation.
- The coastal wetlands occupy an estimated 6,750 sq. km and are largely dominated by mangrove vegetation. About 80% of the mangroves are distributed in the Sundarbans of West Bengal and the Andaman and Nicobar Islands, with the rest in the coastal states of Odisha, Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, Goa, Maharashtra, and Gujarat.
- Wetlands in southern peninsular India are mostly manmade and are known as yeris (tanks). They are constructed in every village and provide water for various human needs, besides serving as nesting, feeding, and breeding sites for a large variety of bird species.
- A survey by the Wildlife Institute of India revealed that 70-80% of individual freshwater marshes and lakes in the Gangetic floodplains have been lost in the last five decades.
- At present, only 50 percent of India's wetlands remain. They are disappearing at a rate of 2% to 3% every year. Indian mangrove areas have been halved almost from 7,00,000 hectares in 1987 to 4,53,000 hectares in 1995 (Sustainable Wetlands, Environmental Governance-2, 1999). A recent estimate based on remote sensing shows only 4000 sq. km of mangrove resources in India.
- The loss of wetlands leads to environmental and ecological problems, which have a direct impact on the socio-economic benefits of the associated populace.
- Serious consequences, including increased flooding, species decline, deformity or extinction, and decline in water quality, could result. Wetlands are also important as a genetic reservoir for various species of plants, including rice, which is a staple food for 3/4 of the world's population.
- The National Committee on Wetlands, Mangroves, and Coral Reefs constituted to advise the government on appropriate policies and measures to be taken for the conservation and management of the wetlands, has identified 93 wetlands for conservation and management on a priority basis.
- India currently has 85 sites designated as Wetlands of International Importance (Ramsar Sites), with a surface area of over 1.34 million hectares.

SECL's Dipka Megaproject Boosts Coal Dispatch with New Silos.

The operationalisation of the new silo and rapid loading system at SECL's coal plant marks a significant milestone in eco-friendly and efficient coal evacuation under the First Mile Connectivity (FMC) initiative.

- SECL's Dipka Megaproject has successfully commenced operations with the first coal rake loaded from its newly built Rapid Loading System and Silos 3 & 4 marking a significant step towards eco-friendly and efficient coal transportation, according to the Ministry of Coal.
- South Eastern Coalfields Limited (SECL) is a Chhattisgarh-based subsidiary of Coal India under Ministry of Coal.

- This development aligns with the broader goals of the Ministry of Coal and Coal India Limited to modernise coal transportation infrastructure, reduce environmental impact, and enhance operational efficiency.
- Under the guidance of the Ministry of Coal, SECL has prioritised the development of FMC infra under the PM Gatishakti Plan. SECL has undertaken 17 First Mile Connectivity (FMC) projects with a cumulative capacity of 233 MTPA.
- Out of these, 9 projects with a total capacity of 151 MTPA have already been commissioned demonstrating the company's commitment to modernizing coal transportation. Rest 8 FMC projects of 82 MTPA capacity are under various phases of development with a target to commission them in the next 2-3 years.
- FMC is widely recognized as an efficient and eco-friendly coal transportation mode

The implementation of FMC infrastructure at Dipka brings multiple benefits:

- Improved efficiency and accurate loading, minimizing both underloading and overloading of coal in rakes.
- Faster loading times leading to shorter turnaround time and improving rake availability.
- Enhanced coal quality, minimizing contamination and losses.
- Reduced dependence on road transport, leading to savings on diesel expenses and a cleaner environment.
- The commissioning of these new silos represents a win-win situation for SECL, Indian Railways, and coal consumers by streamlining logistics, optimizing coal movement, and reducing environmental impacts.

Highlights of the Dipka Megaproject:

1) Commissioning of Silos 3 & 4:

- The newly commissioned Dipka CHP-Silo FMC project has an annual coal evacuation capacity of 25 million tonnes (MTPA).
- With the addition of Silos 3 & 4, the total coal dispatch capacity of Dipka has surged to 40 MTPA, up from the previous 15 MTPA capacity through the Merry-Go-Round (MGR) system.
- This upgrade ensures that transportation infrastructure is now aligned with production levels, enabling seamless coal evacuation.

2) Rapid Loading System:

- The Rapid Loading System ensures faster and more accurate loading of coal into rakes, minimizing underloading and overloading.
- This system reduces loading times, leading to shorter turnaround times and improved rake availability for Indian Railways.

3) Eco-Friendly and Efficient Coal Evacuation:

- The FMC project at Dipka is a part of SECL's efforts to promote sustainable coal transportation.
- By reducing dependence on road transport, the project saves on diesel expenses and contributes to a cleaner environment.
- It also enhances coal quality by minimising contamination and losses during transportation.

4) First Mile Connectivity (FMC) Projects:

- Under the PM GatiShakti Plan, SECL has prioritised the development of FMC infrastructure to modernise coal transportation.
- SECL has undertaken 17 FMC projects with a cumulative capacity of 233 MTPA.
- Out of these, nine projects with a total capacity of 151 MTPA have already been commissioned, while the remaining eight projects (82 MTPA capacity) are under development and targeted for commissioning in the next 2-3 years.

5) Benefits of FMC Infrastructure:

- Improved efficiency and accurate loading, minimising both underloading and overloading of coal in rakes.
- Faster loading times leading to shorter turnaround time and improving rake availability.
- Enhanced coal quality, minimising contamination and losses.
- Reduced dependence on road transport, leading to savings on diesel expenses and a cleaner environment.
- The commissioning of the new silos and rapid loading system at Dipka represents a win-win situation for all stakeholders, including SECL, Indian Railways, and coal consumers. It underscores the importance of infrastructure modernisation in achieving operational efficiency and environmental sustainability in the coal sector.

Flashpoint Gulf of Tonkin: China conducts live-fire drills after Vietnam marks new maritime boundary

- China began live-fire exercises in the Gulf of Tonkin, merely days after Vietnam announced a new line marking what it considers its territory in the body of water between the countries.
- According to China's Maritime Safety Administration, the exercises would be focused on **the Beibu Gulf area, closer to the Chinese side of the Gulf of Tonkin**, and will continue till Thursday evening.
- The drills follow an announcement made by Vietnam establishing a baseline used to calculate the width of its territorial waters in the Gulf of Tonkin.
- State-run Vietnam News reported that the baseline was in compliance with the UN Convention on the Law of the Sea and would provide "a robust legal basis for safeguarding and exercising Vietnam's sovereignty, sovereign rights and jurisdiction."

- China and Vietnam have long had a maritime agreement governing the Gulf of Tonkin, but have been locked in competing **claims in the nearby South China Sea over the Spratly and Paracel Islands and maritime areas.**
- China has been growing aggressive in pursuing those claims, and in October assaulted 10 Vietnamese fishermen near the Paracel Islands, three of whom suffered broken limbs.
- A China claims almost the entire South China Sea as its own, though it has not publicly released the exact coordinates of its claim other than a map with 10 dashed lines broadly demarcating what it calls its territory.
- In addition to Vietnam, China's claims overlap with those of the Philippines, Malaysia, Brunei and Taiwan, while Indonesia has also figured in violent confrontations with the Chinese coast guard and fishing fleets in the waters around the Natuna Islands.
- Tensions have been particularly high with the Philippines, with regular confrontations between the two countries. In the most recent incident, a Chinese navy helicopter flew within 10 feet of a Philippine patrol plane last week over the South China Sea, near the hotly disputed Scarborough Shoal off the northwestern Philippines.

Key points:

- Baselines are used to determine limits to territorial waters and exclusive economic zones, and are a sensitive subject in the South China Sea, where China, Vietnam and other countries in the region have some conflicting claims.
- The ministry marked the line on a map with 14 points running from offshore Quang Ninh province to Quang Tri province.
- The baseline creates additional legal basis to protect and enforce Vietnam's sovereignty, sovereign rights and jurisdiction, serving economic development, marine management, and promoting international cooperation.
- The baseline is the basis for determining the boundaries and scope of Vietnam's maritime zones according to the provisions of United Nations Convention on the Law of the Sea (UNCLOS) and the Agreement on the Delimitation of the Gulf of Tonkin signed between Vietnam and China in 2000.
- In March 2024, China announced its baseline in the Gulf of Tonkin, and in response Vietnam said international law and the rights and interests of other countries must be respected.

NASA launches satellite on mission to detect water on the moon

- A dishwasher-sized NASA satellite was launched into space from Florida to identify where water – a precious resource for lunar missions – resides on the moon's surface in places such as the permanently shadowed craters at its poles.

- A SpaceX Falcon 9 rocket lifted off from the Kennedy Space Center in Cape Canaveral carrying NASA's Lunar Trailblazer orbiter. The Lunar Trailblazer spacecraft was built by Lockheed Martin's space division.
- The **satellite was a secondary payload onboard the rocket**, with the primary payload being a lunar lander mission led by Intuitive Machines.
- The lunar surface is often thought of as arid but previous measurements have found the presence of some water, even in warmer sun-lit locations.
- In cold and permanently shadowed places at the lunar poles, it has long been hypothesized that there could be significant amounts of water ice.
- Lunar Trailblazer, which weighs about 440 pounds (200 kg) and measures about 11.5 feet (3.5 meters) wide when its solar panels are fully deployed, is being sent to find and map this water on the moon's surface.
- For future moon exploration, including potential long-term lunar bases staffed by astronauts, lunar water would be of vital importance because it could be processed not only as a drinking supply but also into breathable oxygen and hydrogen fuel for rockets.
- The bottoms of hundreds of craters at the moon's South Pole, for instance, are permanently shadowed and may hold ice patches. Some water also may be locked inside broken rock and dust on the lunar surface.
- Lunar Trailblazer is scheduled **to perform a series of moon flybys and looping orbits over a span of several months to position itself** to map the surface in detail. It eventually will orbit at an altitude of roughly 60 miles (100 km) and collect high-resolution images of targeted areas to determine the form, distribution and abundance of water and to better understand the lunar water cycle.
- "We see tiny amounts of water on sunlit portions of the moon, which is mysterious," said planetary scientist Bethany Ehlmann, the mission's principal investigator and director of Caltech's Keck Institute for Space Studies.
- "The most interesting (aspect) for many is the potentially large amounts of ice in the permanently shadowed regions of the lunar poles. **Lunar Trailblazer will peer inside to see how much is at the surface.**"
- Such locations could serve as a resource for lunar explorers in the future.
- "Understanding where a rover would drive or an astronaut would walk to examine deposits for science and future resource use will benefit all future landed missions," Ehlmann said.
- **Two Lunar Trailblazer instruments will take measurements from orbit together. The Lunar Thermal Mapper, or LTM,** will map and measure the lunar surface temperature. The High-

resolution Volatiles and Minerals Moon Mapper, or HVM3, will look at the moon's surface for a telltale pattern of light given off by water.

- “We believe that the movement of water on the moon is likely driven by the surface temperature. So by measuring the presence and amount of water via the HVM3 instrument and the surface temperature via the LTM instrument we can better understand this relationship,” said planetary scientist Tristram Warren, who worked on developing the LTM instrument.
- **Lunar water is thought to come from several potential sources.** One possibility is that solar wind – charged particles from the sun – could react with lunar minerals to create water.
- **Another source might be comets or meteorites, which** may have delivered water to the moon over billions of years. The exact amount of lunar water remains uncertain, but it is potentially hundreds of millions of tons.
- “Other than for human exploration, lunar water is also scientifically very exciting. The moon has been orbiting near the Earth almost since the formation of Earth itself. So understanding the origin of the lunar water might help us to understand the origin of water on Earth,” .

What is the 'Philadelphi corridor' and why is it a sticking point in Israel-Hamas talks?

- A It's a small sliver of land, but it's become a major sticking point in talks between Israel and Hamas.
- The so-called Philadelphi corridor has emerged as a critical factor holding up a cease-fire deal that would end the monthslong war in the Gaza Strip and secure the release of hostages still held in the enclave.
- Outcry over the killing of six hostages has intensified pressure on Israeli Prime Minister Benjamin Netanyahu, with President Joe Biden saying Monday that he was not doing enough to secure a deal. But Netanyahu signaled he had no plans to soften his stance on keeping troops in the area despite mass protests and internal disagreements.

What is the Philadelphi corridor?

- The Philadelphi corridor, also known as the Salah al-Din axis, refers to a narrow strip of land just under 9 miles in length and around 100 yards wide that runs along the Gaza side of the coastal enclave's border with Egypt.
- It includes the key Rafah border crossing, long considered a lifeline for Palestinians in Gaza — allowing crucial supplies of food, medicine and other aid to get into the strip and enabling the movement of Palestinians in and out of the enclave under a 17-year blockade imposed by Israel.
- The corridor was set up as a buffer zone in accordance with the 1978 Camp David Accords between Egypt and Israel, with the aim of controlling movement in and out of Gaza and preventing arms smuggling between the Egyptian Sinai and the Palestinian enclave.

Location of key Gaza buffer zone

- The Philadelphi Corridor runs the length of Gaza's southern border and includes two key crossing points.
- A The area was under Israeli control until Israel's unilateral withdrawal from the Gaza Strip in 2005, prior to which Israel and Egypt signed the Philadelphi Accord, which allowed Egypt to send hundreds of border guards to patrol the corridor's borders.
- In May, the Israeli military announced it had established "tactical control" over the corridor after launching a widely condemned offensive on the crowded city of Rafah in southern Gaza.
- Israeli officials said troops had discovered some 150 tunnels along the corridor believed to have been used by Hamas to smuggle weapons and supplies into the enclave, though they said it wasn't clear if the tunnels had been used since Oct. 7.
- **A What's the disagreement?**
- Israeli Prime Minister Benjamin Netanyahu has insisted that Israel must maintain a military presence in the southern Gaza border area as part of any truce deal, in order to prevent Hamas from using the corridor.
- But Hamas has rejected any continued Israeli presence in the corridor, with key negotiator Khalil Al-Hayya saying in an interview with Al Jazeera on Sunday that unless Israeli forces withdraw from the area, "there is no agreement."
- It's only recently that the Philadelphi corridor has emerged as a central issue in cease-fire negotiations, which have stalled despite a renewed push from the United States.
- Washington has publicly blamed Hamas, but U.S. and foreign officials told NBC News that new conditions introduced by Netanyahu have also held up progress, including the insistence on control of Gaza's southern border with Egypt.
- Two people briefed on the negotiations told NBC News that Biden may offer a final "take it or leave it" deal to Israel and Hamas as soon as this week.
- Still, despite mounting diplomatic pressure and domestic unrest, Netanyahu has remained defiant.
- Calling the Philadelphi corridor a Hamas' "lifeline," the Israeli leader said during a news conference in Jerusalem on Monday that the strip was "central and determines our entire future."
- "The axis of evil needs the Philadelphi corridor — we need to hold it," he said, at one point pointing to a map that appeared to erase the existence of the Israeli-occupied West Bank.
- Netanyahu argued that if Israel were to pull troops out of the corridor, international pressure would make it difficult to return.
- Egypt, a key mediator in talks, issued a blanket rejection of Netanyahu's comments Monday, dismissing his speech as an attempt at distracting "the attention of Israeli public opinion" and obstructing a deal.
-

Cape Vultures spotted after 30 years in South Africa's Eastern Cape

- The Cape Vulture (*Gyps coprotheres*), an Old World vulture species that resides exclusively in Southern Africa and is threatened due to dwindling numbers, has returned to South Africa's Eastern Cape province after three decades,
- The sighting comes as a huge relief to conservationists.
- "Since the 1980s, Cape Vulture numbers have been steadily declining. Between 1992 and 2007, populations in South Africa reduced by 60-70% and were first categorised as 'threatened'. By 2021, the total population size was estimated at 9,600 to 12,800 mature individuals, which raised their status to 'vulnerable' showing their numbers were improving,
- A However, vulture numbers overall are dramatically declining with some species experiencing reductions of up to 80 per cent in recent decades, leading to what is termed the 'African Vulture Crisis', it added.
- There are 23 species of vulture globally. These are divided into two families: *Accipitridae* or Old World vultures, of which there are 16 species, are found across Africa, Europe, and Asia. *Cathartidae* or New World vultures, with seven species, are native to the Americas and the Caribbean.
- "The 16 species of Old World vultures are spread across nine genera. Of these, nine species are either resident in Africa or migrate to and from the continent. Only three species — the White-headed Vulture, Hooded Vulture, and Cape Vulture — are exclusive to Africa with the Cape Vulture only resident to southern Africa alone," the statement pointed out.
- Vultures play a major role in the ecosystem. They dispose of carcasses quickly, thus preventing the spread of diseases like anthrax, botulism, and rabies among wildlife and humans.
- Their absence would also lead to an increase in other scavengers, such as feral dogs and rats, which are less efficient at disposing of carcasses and can carry diseases harmful to humans and livestock.

Cape Vulture (*Gyps coprotheres*)

- The Cape Vulture (*Gyps coprotheres*) is an **Old World** vulture species that is threatened due to dwindling numbers.
- It is an Old World vulture in the family *Accipitridae*.
- It is endemic to southern Africa, and lives mainly in **South Africa, Lesotho, Botswana**, and in some parts of **northern Namibia**.
- There are 23 species of vulture globally. These are divided into two families:
- *Accipitridae* or **Old World vultures**, of which there are 16 species, are found across Africa, Europe, and Asia.
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- **IUCN Status:** Vulnerable
-

Why gharials are endangered, how MP has emerged the leader in their conservation

- A Madhya Pradesh Chief Minister Mohan Yadav last week released 10 gharials, a critically endangered species, into the Chambal river at the National Chambal Gharial Sanctuary in Morena.
- Madhya Pradesh's decades-long conservation efforts have earned it the title of a "gharial state," hosting over 80 per cent of India's gharials.

What are gharials?

- The gharial is a species of *Gavialis gangeticus*—long-snouted, fish-eating crocodilians. The name 'gharial' comes from the Hindi word *ghara*, meaning pot or vessel, referring to the bulbous snout tip of adult males, which resembles an inverted pot.
- In Indian mythology, gharials hold sacred significance, often depicted as the divine mount of the goddess Ganga.
- Their slender snouts, lined with numerous sharp, interlocking teeth, are adapted to trap fish, the mainstay of their diet.
- Males grow from 3-6 meters, and females 2.6–4.5 meters. Gharials mate during November, December, and January.
- Sandbanks, sandbars, and islands are critical to their ecology, serving as preferred sites for basking and nesting.
- From March to May, as river levels recede, female gharials climb onto exposed sandbanks and islands to nest communally, with many laying eggs in the same area. Females provide parental care for the first few days after hatching.
- Gharials are important for a river's ecosystem, as they clean up carrion.
- Globally, Gharial populations saw a steady recovery until 1997, but between 1997 and 2006, numbers plummeted by 58%, dropping from 436 adults to 182, according to a 2007 research paper.
- Wildlife researchers have said the species is likely extinct in Myanmar and Bhutan, with only small, uncertain populations remaining in Pakistan, Nepal, and Bangladesh's upper Brahmaputra.

What threats do gharials face?

- Historical threats included overhunting for skins, trophies, eggs, and traditional medicine. Modern challenges—dam construction, irrigation canals, siltation, river course changes, embankments, sand-mining, pollution, and fishing—continue to devastate populations. Gill nets, in particular, kill gharials of all sizes, even in protected areas.

What are the conservation efforts?

- Between 1975 and 1982, India established 16 captive breeding and release centers and five gharial sanctuaries. Today, **the species survives primarily in five refuges**: National Chambal Sanctuary (NCS), Katarniaghat Sanctuary, Chitwan National Park, Son River Sanctuary, and Satkosia Gorge Sanctuary.
- Conservation efforts include captive breeding programmes to rear and release hatchlings back into the river, monitoring populations, actively managing threats like sand mining, and engaging local communities in habitat preservation and awareness campaigns
- An MP wildlife officer said the biggest measures are “stronger river protection, better environmental management, sandbank restoration and community involvement.”

Why is the Chambal sanctuary crucial?

- A Spanning three states, the Chambal sanctuary protects a 435-km stretch of one of India's cleanest rivers. Apart from gharials, the stretch hosts over 290 bird species, including rare Indian Skimmers (80% of the national population).
- The sanctuary has also been helpful in reviving gharial populations elsewhere. Gharials had disappeared from the rivers of Punjab around 1960-70. Gharials were sent to Punjab from the Deori Gharial Center of Chambal in 2017. In 2018, 25 gharials were sent to the Sutlej River, and in 2020, 25 gharials were sent to the Beas River.

Scientists predict major quake in Chile's mineral-rich north

- Fifteen years ago on February 27, a devastating 8.8 magnitude quake struck southern Chile off the coast of Concepcion, shaking the ground for four minutes and unleashing a tsunami that left 550 dead.
- It was the deadliest natural disaster in the country since the 1960 9.5 magnitude quake, the strongest ever recorded in the world. Now scientists are expecting a big earthquake in the country's mineral-rich north
- **Chile is the world's largest copper producer and second-largest lithium producer.** The country's largest copper mines are located in the north as well as all of its lithium production.
- "Every 10 years there's a big event," said Felipe Leyton, a seismologist at the University of Chile, adding that there are areas of the country that build up a lot of geological stress through fault lines.
- "This lets you see the potential for a big earthquake that lets us say in the short term, in seismic and geological terms, we're expecting a big earthquake in the northern part of the country."

- Chile, a long and skinny country spanning 4,300 km (2,672 miles) in length with an average width of 180 km (112 miles), **has the Andes mountain range running all along its western border.**
- **Chile is located on the seismically active Ring of Fire that surrounds the Pacific Ocean. Its mountains and earthquakes are the product of the Nazca and South American tectonic plates crashing into each other all along the length of Chile.**
- Dr. Mohama Ayaz, a geologist, says GPS technology lets scientists monitor plate movement for any variation and anticipate possible seismic events.

HISTORY

Chhatrapati Shivaji Maharaj Jayanti 2025: Know the history, significance, and celebrations

- AChhatrapati Shivaji Maharaj Jayanti celebrates the birth anniversary of the prominent Maratha warrior king and founder of the Maratha Empire, Chhatrapati Shivaji Maharaj. Also known as Shiv Jayanti, it is a significant occasion in India, especially in the state of Maharashtra.
- It is marked on **February 19** every year; Shivaji Maharaj was born on the same date in 1630;

Chhatrapati Shivaji Maharaj Jayanti 2025: History.

- Born as Shivaji Bhosale (1630-1680 CE), Chhatrapati Shivaji Maharaj was a prominent warrior king and founder of the Maratha Empire, widely admired for his progressive leadership, military acumen, and fight for Swarajya (self-rule).
- Shivaji's efforts to free India from foreign rule and emphasis on good governance have earned him the standing of a national hero.
- To honour his principles and contributions, the celebration of Chhatrapati Shivaji Maharaj Jayanti began in 1870 after discovering his tomb at Raigad Fort, which was further elaborated by freedom fighter Bal Gangadhar Tilak, to bring Shivaji Maharaj's contributions to public consciousness during India's struggle for independence.

Historical Background of Shivaji Maharaj

- **Birth of Shivaji Maharaj**
- Shivaji Maharaj was born on 19th February 1630 at Shivneri Fort, which is located near Pune in Maharashtra, India. He was born to Shahaji Bhonsle, a Maratha general in the service of the Bijapur Sultanate, and Jijabai, a deeply religious and strong-willed woman who greatly influenced his character and future leadership. Shivaji's birth at Shivneri Fort holds special significance as it was a stronghold of the Maratha family, symbolising the resilience and spirit of the Maratha warriors that Shivaji would embody throughout his life.
- **Early Life and Upbringing**
- Shivaji Maharaj's early years were shaped by his mother, Jijabai, who instilled values of bravery, justice, and devotion to religion, teaching him key texts like the Ramayana and Mahabharata.
- Her guidance helped him develop a deep respect for Hindu culture and the need for an independent Maratha kingdom. Additionally, his mentor, Dadoji Kond Deo, played a crucial role in his military education, teaching him skills in horse riding, sword fighting, and strategic thinking, which later helped him defeat larger enemies like the Mughal Empire.

Shivaji Maharaj's Rise and Military Prowess

- Shivaji Maharaj's leadership emerged early, with his first victory at age 16, capturing Torna Fort in 1645. His use of guerrilla tactics helped him conquer key forts and regions, outsmarting larger enemy forces.
- Beyond military success, Shivaji was an astute administrator, promoting local governance, religious tolerance, and inclusive policies, earning the loyalty of his subjects. His conquests spanned across Maharashtra, Karnataka, and Tamil Nadu, and he built a disciplined, resilient army.
- Committed to justice and the welfare of common people, Shivaji's leadership was characterized by resilience, determination, and national pride. His birth anniversary, Shivaji Maharaj Jayanti, honors his remarkable legacy.

Important Battles

- Shivaji Maharaj fought several key battles that not only strengthened his kingdom but also expanded the Maratha Empire.
- **Battle of Pratapgad (1659):** A historic battle fought between **Shivaji Maharaj** and the **Adilshahi general Afzal Khan** near the **Pratapgad Fort** in **Satara, Maharashtra**.
- **Battle of Pavan Khind (1660):** A strategic defense led by **Baji Prabhu Deshpande** at **Pavan Khind** near **Vishalgad** against **Siddi Masud** of the **Adilshahi**.
- **Sacking of Surat (1664):** Shivaji raided the Mughal-controlled **Surat** in **Gujarat**, leading to a significant victory over **Inayat Khan**, a Mughal captain.
- **Battle of Purandar (1665):** Fought between the **Mughal Empire** and the **Maratha Empire**; the Treaty of Purandar was signed afterward.
- **Battle of Sinhagad (1670):** **Tanaji Malusare**, a Maratha commander, successfully recaptured **Sinhagad Fort** near **Pune**, defeating **Udaybhan Rathod** of the Mughal army.
- **Battle of Kalyan (1682-83):** **Bahadur Khan** of the **Mughal Empire** defeated the Marathas at **Kalyan**.
- **Battle of Sangamner (1679):** The final battle in which **Shivaji Maharaj** himself participated, marking the end of a significant phase in his military campaigns.

Importance of Shivaji Maharaj Jayanti

- Shivaji Maharaj Jayanti, celebrated on February 19, holds cultural significance, especially in Maharashtra, where it symbolizes Maratha pride. The day features processions, reenactments, speeches, and decorations, fostering unity.
- It honors Shivaji's leadership, reforms, and military innovations, such as guerrilla warfare and fort-building. He promoted inclusive governance, justice, religious harmony, and cultural preservation.
- The day inspires future generations with ideals of courage, patriotism, and self-determination, celebrating Shivaji's lasting impact on India's cultural and political history.

Chhatrapati Shivaji Maharaj Jayanti History

- Chhatrapati Shivaji Maharaj Jayanti was first initiated by Mahatma Jyotirao Phule in 1870 to highlight Shivaji's contributions to uniting India. Phule aimed to inspire Indians during British colonial rule by bringing Shivaji's legacy into focus.
- Later, Bal Gangadhar Tilak popularised the celebration, linking Shivaji's values of unity, self-rule, and bravery to the freedom struggle.
- Celebrated every year on February 19, the day marks Shivaji's birth in 1630 and is observed with processions, reenactments, and cultural programs. It honours his leadership, courage, and vision for an independent kingdom.

Celebration of Shivaji Maharaj Jayanti in Detail

- **Military Innovations:** Shivaji Maharaj revolutionised Indian warfare with his use of guerrilla tactics, utilising the Sahyadri mountains for strategic advantage. He built over 300 forts for defence, including Raigad and Sinhagad. He also established a strong intelligence network to outsmart his enemies.
- **Administrative Reforms:** Shivaji's governance was innovative, including an efficient tax system and a people-centered judiciary. He created India's first modern navy and promoted inclusive governance, appointing individuals based on merit rather than caste or religion.
- **Religious Tolerance:** Despite being a devout Hindu, Shivaji promoted religious harmony, respecting all faiths. His army was diverse, and he protected religious sites and ensured the safety of women during military campaigns.

Shivaji Maharaj's Influence on India's Freedom Struggle

- Shivaji Maharaj's life and legacy served as a powerful source of inspiration for Indian leaders during the freedom struggle.
- **Symbol of Resistance:**
- Shivaji Maharaj's defiance of the Mughal Empire and other foreign powers showcased the spirit of independence and self-rule.
- He became a symbol of national pride and resistance against oppression.

Admired by Freedom Fighters:

- Leaders like Bal Gangadhar Tilak, who famously declared "Swaraj is my birthright," drew directly from Shivaji Maharaj's ideals.
- Subhas Chandra Bose and Veer Savarkar often cited Shivaji Maharaj as an inspiration for their revolutionary efforts.

Inspiration for Military Strategy:

- Shivaji Maharaj's use of guerrilla tactics influenced Indian leaders and freedom fighters to adopt similar strategies against the British.

Tributes and Honors

- Shivaji Maharaj's legacy is honored through numerous statues, monuments, and institutions.

Statues and Monuments

- **Chhatrapati Shivaji Maharaj Terminus (Mumbai):** A UNESCO World Heritage Site, this iconic railway station is named after him.
- **Shivaji Maharaj Statue:** A colossal statue being constructed off the Mumbai coast will be one of the tallest statues in the world, symbolizing his enduring legacy.

Cultural and Educational Recognition

- Various schools, colleges, and universities are named after Shivaji Maharaj, reflecting his importance as a historical and cultural icon.

- His life and deeds are celebrated in books, movies, and television series, spreading his legacy to new generations.

Special Events for Shivaji Maharaj Jayanti

- Shivaji Maharaj Jayanti is celebrated with grandeur across Maharashtra and other parts of India where his legacy is cherished. The day reflects his indomitable spirit, his contributions to Indian history, and the pride he instilled in his people.
- **Raigad Fort Events:** Raigad Fort, the site of Shivaji Maharaj's coronation, hosts commemorative ceremonies with floral tributes, cultural performances like Povadas, and reenactments of significant moments from his life.
- **Shivneri Fort Celebrations:** At Shivneri Fort, Shivaji's birthplace, grand processions, historical tours, and storytelling sessions about his mother, Jijabai, are organized to highlight his early influences.
- **Sindhudurg Fort Events:** Sindhudurg Fort, a symbol of Shivaji's naval prowess, features maritime tributes, cultural programs, and exhibitions on his contributions to the navy.
- **Kolhapur Celebrations:** In Kolhapur, public gatherings, competitions, and educational programs honor Shivaji Maharaj's legacy, especially his administrative brilliance.
- **Mumbai Celebrations:** Mumbai hosts grand parades with traditional performances, along with illuminated landmarks like the Chhatrapati Shivaji Maharaj Terminus, celebrating his enduring legacy.

Established as 'antidote' to 'linguistic hostility and bitterness': what are zonal councils?

- Union Home Minister Amit Shah chaired the 27th meeting of the Western Zonal Council in Pune on Saturday (February 22). We look at the formation of these bodies in the **1950s as an 'antidote' for the linguistic hostilities** and bitterness from the re-organisation of the states on a linguistic basis, and what their functions are.

Idea mooted by then Prime Minister Jawaharlal Nehru

- The idea of **creation of Zonal Councils** was mooted by the first Prime Minister Jawaharlal Nehru in 1956 when during the course of debate on the report of the States Reorganisation Commission, he suggested that the states proposed to be reorganised may be grouped into four or five zones having an Advisory Council "to develop the habit of cooperative working" among these states, say the records of the Ministry of Home Affairs (MHA).
- "This suggestion was made by Pandit Nehru at a time when linguistic hostilities and bitterness as a result of re-organisation of the states on linguistic patterns were threatening the very fabric of our nation.
- As an antidote to this situation, it was suggested that a high-level advisory forum should be set up to minimise the impact of these hostilities and to create healthy inter-state and Centre-State

environment with a view to solving inter-state problems and fostering balanced socio economic development of the respective zones.

- In the light of the vision of Pandit Nehru, five Zonal Councils were set up as per the States Reorganisation Act, 1956, the MHA records say.

Members of the Zonal Councils

- The present composition of the Zonal Councils is as follows:
- The Northern Zonal Council, comprising the States of Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, National Capital Territory of Delhi and Union Territory of Chandigarh.
- The Central Zonal Council, comprising the States of Chhattisgarh, Uttarakhand, Uttar Pradesh and Madhya Pradesh.
- The Eastern Zonal Council, comprising the States of Bihar, Jharkhand, Orissa, and West Bengal.
- The Western Zonal Council, comprising the States of Goa, Gujarat, Maharashtra and the Union Territories of Daman & Diu and Dadra & Nagar Haveli.
- The Southern Zonal Council, comprising the States of Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and the Union Territory of Puducherry.
- North Eastern Council was set up under the North Eastern Council Act, 1972 with Assam, Arunachal Pradesh, Manipur, Tripura, Mizoram, Meghalaya and Nagaland as its members. The state of Sikkim which was earlier in the Eastern Zonal Council was included in the North Eastern Council in 2002.

Composition of Zonal Councils

- Each Zonal Council has a Standing Committee consisting of Chief Secretaries of the member states. These Standing Committees meet from time to time to resolve the issues or to do necessary groundwork for further meetings of the Zonal Councils. Senior officers of the Planning Commission and other Central Ministries are also associated with the meetings depending upon necessity.
- The composition of each council is as follows:
- The Union Home Minister is the chairman of each of these council.
- The Chief Ministers of the states included in each zone act as Vice-Chairman of the Zonal Council for that zone by rotation, each holding office for a period of one year at a time.
- Chief Minister and two other ministers as nominated by the Governor from each of the states and two members from Union Territories included in the zone
- . One person nominated by the planning commission for each of the Zonal Councils, Chief Secretaries and another officer nominated by each of the states included in the Zone.
- In 2018, the Union Cabinet chaired by the Prime Minister Narendra Modi approved the nomination of the Union Home Minister as ex-officio chairman of North Eastern Council and the Minister Development of North Eastern Region (DoNER) to serve as Vice Chairman of the Council.

Role of Zonal Councils

- The MHA has said that the Zonal Councils provide an excellent forum where irritants between Centre and States and among states can be resolved through free and frank discussions and consultations.
- The councils act as regional forums of cooperative endeavour for states linked with each other economically, politically and culturally.
- The zonal councils can discuss matters of common interest in the field of economic and social planning, matters concerning border disputes, linguistic minorities or inter-state transport and matters connected with the reorganization of the states under the States Reorganisation Act.

India remains cornerstone of UN peacekeeping, its women peacekeepers indispensable: UN peacekeeping chief

- India remains a cornerstone of UN peacekeeping and its women peacekeepers have demonstrated that missions with greater female representation improve operational outcomes and contribute to lasting peace, the United Nations peacekeeping chief has said.
- UN Under-Secretary-General for Peace Operations Jean-Pierre Lacroix will visit New Delhi this week to attend the conference 'Enhancing the Role of Women in Peacekeeping: A Global South Experience' being organised by India on February 24-25.

More women in peacekeeping

- "More women in peacekeeping means a more effective peacekeeping. India has long been a leader in advancing women, peace and security in peacekeeping missions —not only as a top troop and police contributor but also as a pioneer in advancing gender parity, its leadership in training and capacity building and its commitment to increasing women's participation in missions,"
- **India's women peacekeepers**
- "India's women peacekeepers have proven to be indispensable in UN peacekeeping, forging trust between our uniformed personnel and local communities in some of the world's most challenging conflict zones.
- "Their presence contributes to the success of peacekeeping efforts. Through community engagement, they build crucial connections with local women, build trust, contribute to early warning and protection efforts, improve humanitarian outreach and act as role models for women and girls in the communities they serve," he said.
- **In Abyei, Indian women peacekeepers have adapted patrol routes** and provided targeted support to marginalised groups, ensuring safer environments for women and children.
- Their ability to navigate cultural sensitivities and build genuine relationships enhances both mission success and community healing, he said.

- Beyond their on-the-ground contributions, Indian women peacekeepers are “pioneers” in gender-inclusive peacekeeping.
- “Their deployment across various missions highlights how diverse teams lead to stronger, more effective operations. Their courage and commitment inspire not only their fellow peacekeepers but also the local populations they serve,”

India in UN peacekeeping missions

- India ranks among the top contributors to UN peacekeeping missions with 5,384 personnel, including 153 women, across 10 missions as of September 2024.
- India **deployed the first all-female Formed Police Unit (FPU) to Liberia in 2007**. Today, 20.45% of its deployed military observers and staff officers are women. Additionally, India's Engagement Platoons in the United Nations Interim Force for Abyei (UNISFA) and UN Organisation Stabilisation Mission in the Democratic Republic of the Congo (MONUSCO) “exemplify” the impact of women in peacekeeping. He noted that Deputy Commander of the Female Engagement Team at UNISFA Captain Seema Gowdar's team in Abyei has strengthened civilian protection and community trust.
- Another “prime example” of women leadership in peacekeeping is Major Radhika Sen, whose “outstanding work” in MONUSCO earned her the 2023 UN Military Gender Advocate of the Year Award.
- “Her dedication exemplifies how gender-inclusive leadership strengthens peacekeeping and sets the stage for future generations of women in uniform,” he said.
- Beyond its deployments, **India leads in training through the Centre for UN Peacekeeping (CUNPK) in Delhi, which sets “global standards”** for pre-deployment and specialized courses. India actively supports efforts to counter misinformation and hate speech, collaborating with the UN to refine policies, command structures, and training.
- “India's impact goes beyond personnel—it is shaping training, leadership, inclusion, accountability, and strategic communications. As peacekeeping evolves, India's contributions remain essential to mission success, civilian protection, and lasting peace,” he said.
- Lacroix said that in 2007, when India deployed the first all-female FPU to Liberia, it set a “global precedent” and today the country continues this legacy.
- He said that the conference, which is being organised by the Ministry of External Affairs in partnership with the Ministry of Defence and CUNPK, serves as a platform to reinforce that commitment while fostering collaboration, peer support, and professional development among women peacekeepers.

Challenges peacekeeping faces

- It also has a special resonance for UN Peacekeeping as it will be an opportunity to reflect on the challenges peacekeeping faces and how best to address them at the peacekeeping Ministerial level meeting in Berlin in May.
- Against the backdrop of increased attacks on UN peacekeepers who are working in increasingly hostile environments, Lacroix underscored that peacekeeper safety is a shared responsibility.
- "Troop- and police-contributing countries must hold attackers accountable and strengthen multilateral efforts to protect personnel." "As conflicts grow more complex, attacks on peacekeepers have increased, making decisive action essential to protect those who serve global peace and security," he said. Furthermore, he said that investing in advanced technology and training is key to adapting to modern threats.
- "AI-driven systems, data analytics, and cyber tools can enhance intelligence gathering, improve mission performance, and strengthen protection in hostile environments." He however stressed that safety is not just about equipment but relies on coordination and trust. "Stronger intelligence-sharing and deeper engagement with local communities can provide early warnings and reduce risks," he said.
- He added that women peacekeepers play a vital role in this, fostering trust and gathering critical insights that enhance mission security. "Increasing their leadership and operational roles will further strengthen peacekeeping. By breaking barriers, building partnerships, and equipping peacekeepers with the right tools and support, we can create forces that not only protect but lead the way to a safer, more just world. Their safety is not just about preserving lives—it upholds the very principles of peace and security," he said.
- The UN peacekeeping chief called on UN Member States to increase efforts to nominate women candidates for senior uniformed leadership positions, especially in the military.
- Currently, **of the 11 peacekeeping operations, only one is led** by a uniformed woman: Major General Anita Asmah of Ghana recently deployed as Head of Mission and Force Commander of the UN Disengagement Observer Force (UNDOF).
- "We need more trailblazing uniformed women like her and we need women nominated at all roles, including in operations and leadership, where they are currently underrepresented.

Ajit Singh, Pagri Sambhal Jatta movement

- Farmers protesting at the Punjab and Haryana borders **are observing February 23 as Pagri Sambhal Diwas**, in honour of Ajit Singh, paternal uncle of freedom fighter Bhagat Singh.

What was the 'Pagri Sambhal Jatta' movement?

- In 1907, Ajit Singh started the Pagri Sambhal Jatta movement in protest against three agricultural laws imposed by the British. 'Pagri Sambhal Jatta' literally translates to 'take care of your turban, o farmer', and invokes self respect and honour.

- The three laws were: The Punjab Land Alienation Act, 1900; The Punjab Land Colonisation Act, 1906; and The Doab Bari Act, 1907.
- The Punjab Land Alienation Act restricted the rights of farmers to sell or mortgage their land freely. It favored moneylenders and landlords, making it difficult for peasants to escape debt. The Punjab Land Colonisation Act gave the British control over land ownership in the newly developed Chenab Colony (now in Pakistan). Farmers had to transfer their land to the British government upon death instead of passing it to their heirs. The Doab Bari Act, 1907, too, took away farmers' ownership rights over their lands, effectively reducing them to contract workers.
- Along with this, the British raised taxes on agricultural land and water for irrigation, increasing the financial burden on farmers. Many small farmers and peasants were forced into debt and land loss.
- Soon, farmers started protests against these laws, demanding their repeal. Ajit Singh and Kishan Singh (Bhagat Singh's father) formed the Bharat Mata Society, a revolutionary group for farmers. Lala Lajpat Rai and other leaders also supported the movement. The slogan "Pagri Sambhal Jatta" was coined by Banke Dayal, a nationalist poet, and became a symbol of resistance.

Who was Ajit Singh?

- Born on February 23, 1881 at Khatkar Kalan village in Punjab (it is now part of Shaheed Bhagat Singh Nagar district), Ajit Singh was a prominent freedom fighter, revolutionary, and nationalist leader. He played a significant role in inspiring his nephew Bhagat Singh.
- Ajit was the elder brother of Kishan Singh, Bhagat Singh's father. From 1909 to 1947 he remained in exile, as he was targeted by the British for his role in the Pagri Sambhal Jatta movement. He came to India in March 1947 but died in Dalhousie due to ill health on August 15, 1947, the day India got independence

Impact of the movement

- Pagri Sambhal Jatta was one of the first major farmer movements against British rule, laying the foundation for future resistance in Punjab. The agitation led to mass protests and civil disobedience. Due to intense pressure, the British government withdrew some of the oppressive clauses of the laws.
- The movement inspired future protests, including the Ghadar Movement and Bhagat Singh's revolutionary activities.
- Both Ajit Singh and Lala Lajpat Rai were arrested in May 1907 and exiled to Burma (now Myanmar), but due to public pressure, were released in November 1907. Ajit Singh, however, escaped to Persia, then Turkey, Brazil, Germany, and later settled in Italy. He worked closely with revolutionaries in Europe and was associated with Lala Hardayal and Madame Cama.

Pagri Sambhal Diwas

- From 2021 onwards, February 23 has been observed as Pagri Sambhal Diwas. In 2021, farmers were protesting at the Delhi borders seeking repeal of the now-scrapped three farm laws, and hence had observed Ajit Singh's birth anniversary as Pagri Sambhal Diwas. At present, farmers have been protesting at Punjab and Haryana borders since February 13, 2024, seeking MSP as a legal guarantee among other demands.
- "Rich tributes are paid to him. Pagri Sambhal Jatta has been a slogan of resistance since 1907,".

Prime Minister Modi attends Jahan-e-Khusrau: How 13th century poet is a flag-bearer of pluralistic Sufi tradition

- In his address to the 25th edition of *Jahan-e-Khusrau* at New Delhi's Sunder Nursery on Friday, Prime Minister Narendra Modi described the annual music festival that commemorates the Sufi poet-musician Amir Khusrau as imbued with the "fragrance of the soil of Hindustan".
- Bestowed with the sobriquet of *Tuti-yi-Hind*, the 'Parrot of India', the 13th century mystic is seen as a father figure for North India's syncretic Ganga-Jamuni culture.
- Khusrau made lasting contributions to Indian classical music, Sufi *qawwali*, and Persian literature, and is also credited for developing Hindavi, a precursor to modern Hindi and Urdu.

Khusrau, the 'Indian Turk'

- Much of what is known about Khusrau comes from his own writings, which are interspersed with autobiographical information. Many facts about his life are unknown, or steeped in legend.
- Khusrau's father likely came to India from Central Asia in the early 13th century, as the Mongol hordes of Genghis Khan ravaged Islamic Transoxiana (corresponding to parts of modern-day Uzbekistan, Tajikistan, southern Kazakhstan, Turkmenistan and Kyrgyzstan). He entered the service of Sultan Iltutmish (1211-36), and married the daughter of an Indian Muslim. The couple's second child, Abu'l Hasan Yamin ud-Din Khusrau, was born in 1253.
- A "Khusrau was proud of both sides of his lineage, and his life and writings symbolise a synthesis of the two different cultures," Paul E Losensky and Sunil Sharma wrote in their introduction to *In the Bazaar of Love* (2011), a collection of Khusrau's poems. The poet often referred to himself as an "Indian Turk".
- It is believed that Khusrau was born in Patiyali in present-day Etah district of Uttar Pradesh. But the poet himself never mentioned his birthplace, and it is possible he was born closer to Delhi.
- **A poet for the sultans**
- Khusrau became a professional poet at age 20, and served as one until his death. He started out in the service of princes and nobles, before becoming a permanent fixture in the court of the Delhi Sultan.

- A “In mediaeval Islamic culture, praise poetry was one of the principal means for a ruler to establish and propagate his cultural and political legitimacy,” Losensky and Sharma wrote.
- The court poet depended on continued patronage of his patron and always faced ample competition. Amir Khusrau served at least five Sultans — Muiz ud din Qaiqabad, Jalaluddin Khalji, Alauddin Khalji, Qutbuddin Mubarak Shah, and Ghiyasuddin Tughlaq — and many other powerful patrons over five decades, which testifies to the quality of his poetry. He wrote in Persian, the language of the court, as well as Hindavi.
- Sultan Jalaluddin Khalji bestowed upon Khusrau the title of ‘Amir’. Historian Ziauddin Barani wrote in *Tarikh-i-Firuz Shahi* that Jalaluddin held Khusrau “in great esteem”, and Khusrau “served as keeper of the Qur’ān” in his court (*trans.* Losensky and Sharma).
- **Disciple of Nizamuddin Auliya**
- Khusrau was the most beloved disciple of the Chishti Shaikh Nizamuddin Auliya, who once wished that his favourite pupil would be buried with him.
- A He [Khusrau] is the keeper of my secrets, and I shall not set foot in Paradise without him. If it were lawful, I should have instructed you to bury him in the same grave with me so that we two may always remain together,” the *Pir* is said to have said. (Quoted in Mohammad Wahid Mirza’s *The Life and Works of Amir Khusrau*, 1929).
- A “He [Khusrau] was equally respected in the royal court as well as the [Sufi master’s] khanqah. Neither the king nor the saint ever suspected the fidelity and loyalty of Khusrau who frequented the two opposite camps with equal respect and honour,” scholar Saifullah Saifi wrote in ‘Sufi Poet Amir Khusrau: A Link between the Court and the Khanqah’ published in *Regional Sufi Centres in India* (2011).
- Master and disciple died within months of each other in 1325. When he heard of the *Pir*’s passing, Khusrau is said to uttered these words: “Beauty sleeps on the bed, her hair across her face. Come Khusrau, let’s go home, night has set over this place.” (*trans.* Losensky and Sharma)
- **Khusrau’s lasting legacy**
- 700 years after his death, the lyrical beauty, sophisticated wordplay, and exploration of diverse themes in Khusrau’s poetry continues to enamour audiences.
- He wrote highly of Hindus. “The Brahmans of India have greater wealth of philosophical thought than what Rumi had revealed to the World. As nobody has tried to learn from the Brahmans, their learning has not been revealed to the world,” he wrote in his *masnavi Nuh Siphir*. (Quoted in *Indian Literary Criticism: Theory and Interpretation*, ed. G N Devy).
- Khusrau’s *ghazals* and *qawwalis* are today sung in both sacred and secular contexts, at sufi dargahs and Bollywood musicals. His most popular compositions include *Chhaap Tilak*, *Zehal-e-Maskeen*, and *Sakal Ban Phool Rahi Sarson*.

- However, his musical contributions likely go farther than this. Khusrau is said to be instrumental in the development of modern Indian classical music — he is credited with crafting dozens of *ragas*, creating *ornate* khayal music, and inventing the *sitar* and *tabla*, even though evidence for this is limited.

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How Chandra Shekhar remained 'Azad' until the very end

- Chandra Shekhar Azad was only 24 when he died on February 27, 1931. And through his death he ensured that his resolve to never be captured alive — to be *azad* (free) till his very last breath — was not broken. Here's the story.
- **Becoming 'Azad'**
- Born in the princely state of Alirajpur (present-day Madhya Pradesh) in 1906, Chandra Shekhar Sitaram Tiwari grew up in poverty. He left his home when only 15 years-old. After a brief while in the dockyards of Bombay, Chandra Shekhar found himself in Benares, where he was given free accommodation and clothing at a Sanskrit school.
- But studies did not interest him. And with the Mahatma Gandhi-led Non Cooperation Movement at its apex, the politically bustling Benares gave him ample opportunity to do other things. Soon, he was a part of Congress-organised youth groups, picketing liquor shops and participating in protests. He would eventually be arrested, charged with disrupting public disorder, and produced before a magistrate. It was at this point that Chandra Shekhar became Azad.
- A The judge asked the young boy his name and other family details. He replied that his name was 'Azad', his father's name was 'Swatantra' [Independence] and his home address was a jail cell," historian Aparna Vaidik wrote in *Waiting for Swaraj: Inner Lives of Indian Revolutionaries* (2021). Enraged at his insolence, the judge ordered that Chandra Shekhar be caned 15 times.
- A After being released, Chandra Shekhar dropped his Brahmin name and took on the title of Azad, making resolving to never be captured again.
- **From satyagraha to revolution**
- Azad was very upset when Gandhi called off the Non Cooperation Movement in February 1922. And like many of his contemporaries, his frustration pushed him down a more militant path.
- As fellow revolutionary Manmathnath Gupta recalled, "This is is the line from where the new current started in the lives of people like Chandrashekhar Azad and myself, who later on from being staunch followers of Gandhi jumped to the other side, and were sucked in the vortex of revolutionary movement".
- A He would soon join the Hindustan Republican Army (HRA) of Ram Prasad Bismil and Sachindranath Sanyal, where he participated in numerous political dacoities to raise funds for an eventual armed uprising. The most famous of these was the Kakori train robbery of 1925. Of those

involved, Azad was the only one to escape the authorities — Azad had fled to Jhansi, where he lay low till the trial ended.

- Subsequently, he began organising again. It was at this time that he met Bhagat Singh.
- **HSRA's two actions**
- The two would eventually gather a crew of revolutionaries from across United Provinces and Panjab, and establish the Hindustan Socialist Republican Association (HSRA) in 1928. This was the successor to the HRA, but now with a far more explicit socialist bent, courtesy Bhagat Singh.
- While Bhagat Singh was the political ideologue of the organisation, **Azad was its military leader** — the one who strategised, planned and helped execute 'actions', gave the young men training in target practice, and helped organise arms and ammunition. He would, most famously, plan and execute the murder of John Saunders, a British police officer in Lahore in December 1928. Bhagat Singh and Rajguru shot Saunders, while Azad shot dead a police constable who chased the assassins.
- The HSRA pamphlet after Saunderson's death said the following: "With the death of J P Saunders the assassinaiton of Lala Lajpat Rai has been avenged... Today the world has seen that the people of India are not lifeless; their blood has not become cold... Our aim is to bring about a revolution which would end all exploitation of man by man. Inqulab Zindabad!" It was signed by 'Balraj', one of the many pseudonyms that Azad went by.
- The HSRA would carry out **one more "action"** — the bombing of the Central Assembly in Delhi by Bhagat Singh and Batukeshwar Dutt in 1929. After this, the British crackdown sent the organisation in disarray. Almost all of its leaders were eventually arrested. Bhagat Singh, along with Rajguru and Sukhdev Thapar would be hanged for the killing of Saunders on March 21, 1931.
- **Last stand in Allahabad**
- But Azad remained free, continuing to operate while underground, mostly focussed on hatching a plan to free his comrade Bhagat Singh from prison. But his luck would soon run out.
- On February 27, 1931, Azad was on his way to meet fellow revolutionary Sukhdev Raj (no connection to Sukhdev Thapar) at Allahabad's Alfred Park when the police got to know about his whereabouts. The park was soon surrounded by a police battalion. Outmanned and outgunned, Azad nonetheless put up a brave fight.
- He helped Sukhdev escape, and put up his final stand. He shot as many as three policemen dead, but was badly injured in the process. With only one bullet left in his pistol, Azad decided to stay true to his resolve to never be taken alive, and shot himself in the head.

Azad's Shift to Revolutionary Politics

- **Frustration with Gandhi's Non-Cooperation Movement:** In 1922, when Mahatma Gandhi called off the **Non-Cooperation Movement** after the **Chauri Chaura incident**, Azad felt betrayed. This led him to abandon Gandhian methods and embrace more radical, revolutionary politics.
- **Joining the Hindustan Republican Army (HRA):** Azad became part of the **HRA**, led by **Ram Prasad Bismil and Sachindranath Sanyal**, which sought to use armed struggle to gain India's independence. The HRA raised funds through political dacoities (robberies), one of the most famous being the **Kakori train robbery** in 1925.
- **Escape from Authorities:** Azad was the only one to escape the authorities after the Kakori robbery. He took refuge in Jhansi until the trial was over and continued to organize revolutionary activities.

Key Actions

- **Meeting Bhagat Singh and Formation of HSRA:** In 1928, Azad met **Bhagat Singh**. The two revolutionaries, along with other young fighters, formed the **Hindustan Socialist Republican Association (HSRA)**, a more radical successor to the HRA.
- While Bhagat Singh was the ideological leader, Azad was the military strategist and planner for the group.
- He was responsible for training revolutionaries in arms and executing critical actions.
- **Assassination of J.P. Saunders:** One of the most notable acts of Azad's leadership was the planning and execution of the **assassination of J.P. Saunders**, a British police officer responsible for the lathi charge that led to the **death of Lala Lajpat Rai**. Bhagat Singh and Rajguru shot Saunders, while Azad killed a constable who chased them.
- **Bombing of the Central Assembly:** In 1929, Bhagat Singh and **Batukeshwar Dutt** bombed the Central Assembly in Delhi to protest against repressive laws. Although they were arrested, the HSRA continued its efforts for the independence struggle.

International Relations

India to employ targeted containment to stop transmission of leprosy

- The World Health Organization (WHO) has requested governments to prioritise leprosy elimination and ensure sustained funding for surveillance, treatment, care and support, while calling upon them to include those affected by leprosy in policy and decision-making processes.

The Global Leprosy Strategy

- The Global Leprosy Strategy 2021-2030 has a vision of zero disease, zero disability and zero stigma and discrimination.
- It was developed through a broad consultative process with all major stakeholders, including national programme managers, technical agencies, experts and persons or communities directly affected by leprosy.
- **Jordan became the first country to be verified and acknowledged by the WHO for elimination of leprosy**, demonstrating what is possible with focused and concerted efforts. Additionally, in 2023, 56 countries reported zero new case of leprosy, a significant milestone.
- "We can eliminate leprosy with collective, coordinated and united action. Therefore, we urge governments to prioritise leprosy elimination, and ensure sustained funding for surveillance, treatment, care and support. We also call on them to include persons affected by leprosy in policy and decision-making processes. We urge communities to combat stigma through education, inclusion and supporting those affected.
- The Union Health Ministry is looking at a more targeted approach to containing leprosy in India after having achieved the status of elimination of leprosy as a public health problem as per the World Health Organization's (WHO) criteria of less than 1 case per 10,000 population at the national level in 2005.
- To contain **the chronic infections caused by *Mycobacterium leprae***, the **Central government approved** of a new treatment regimen for leprosy, aiming to stop its transmission at the subnational level by 2027. It introduced a three-drug regimen for Pauci-Bacillary (PB) cases in place of a two-drug regimen for six months.
- "The sustained work by the Central government has ensured that leprosy is now no longer a public health problem. We are currently looking at a targeted approach to tackle the disease in five states and 124 districts in India."
- The five states in India with the highest prevalence of leprosy are Bihar, Chhattisgarh, Jharkhand, Maharashtra, and Odisha.
- The Union Health Ministry launched the National Strategic Plan (NSP) and Roadmap for Leprosy (2023-27) on January 30 2023, to achieve zero transmission of leprosy by 2027, i.e., three years ahead of the Sustainable Development Goal (SDG).

- The NSP and roadmap contain implementation strategies, year-wise targets, public health approaches, and overall technical guidance for the programme.
- The strategy and roadmap focuses on awareness for zero stigma and discrimination, promotion of early case detection, prevention of disease transmission by prophylaxis (leprosy post exposure prophylaxis), and the roll-out of a web-based information portal (Nikusth 2.0) for reporting of leprosy cases.
- “After achieving elimination status at the national level, the National Leprosy Eradication Programme (NLEP) has taken a number of initiatives to encourage early case detection of patients to prevent Grade 2 Disabilities, and to ensure free-of-cost treatment of leprosy patients.
- There are few districts within states/UTs, where leprosy is endemic. With various interventions introduced under NLEP in the last few years, the number of new leprosy cases detected has come down to 75,394 in 2021-22 from 125,785 in 2014-15, accounting for 53.6% of global new leprosy cases,”.
- According to the WHO, leprosy predominantly affects the skin and peripheral nerves. It is diagnosed by finding at least one of the following cardinal signs: definite loss of sensation in a pale or reddish skin patch, a thickened or enlarged peripheral nerve, with loss of sensation and/or weakness of the muscles supplied by that nerve, and/or microscopic detection of bacilli in a slit-skin smear.
- Cases of leprosy are classified **into two types for treatment purposes: paucibacillary (PB) cases and multibacillary (MB) cases**. If left untreated, the disease may cause progressive and permanent disabilities. The bacteria are transmitted via droplets from the nose and mouth during close and frequent contact with untreated cases. Leprosy is curable with multidrug therapy (MDT) and is reported from all the six WHO regions, the majority of annual new case detections are from the South-East Asia Region.
- The WHO supports India’s National Leprosy Eradication Programme (NLEP) to eradicate leprosy as a public health issue. The WHO also provides free multi-drug therapy (MDT) to treat leprosy in India.
- Globally, **leprosy is a neglected tropical disease (NTD) that** still occurs in more than 120 countries, with around 200,000 new cases reported every year. Elimination of leprosy as a public health problem (defined as a prevalence of less than 1 per 10,000 population as per the World Health Assembly resolution 44.9) was achieved globally in the year 2000 and in most countries by the year 2010. The reduction in the number of new cases has been gradual.
- As per data of 2023, Brazil, India, and Indonesia continue to report more than 10,000 new cases, while 12 other countries (Bangladesh, Democratic Republic of the Congo, Ethiopia, Madagascar,

Mozambique, Myanmar, Nepal, Nigeria, Philippines, Somalia, Sri Lanka, and the United Republic of Tanzania) each reported 1000–10,000 new cases.

Tropex 25

- **TROPEX** is the Indian Navy's largest biennial maritime exercise, involving the Indian Army, Air Force, and Coast Guard. Conducted in the Indian Ocean, it aims to validate operational concepts and enhance operational readiness and interoperability in a multi-threat environment.
- The exercise is a crucial component of India's defence strategy, designed to test and improve the interoperability of various forces in real-world scenarios. The presence of high-ranking officers aboard the aircraft carrier underscores the importance of this initiative for national security and military preparedness.
- TROPEX-25, or Theatre Level Operational Readiness Exercise 2025, is military exercise conducted by the Indian Navy. This biennial event showcases India's military capabilities and readiness in the Indian Ocean Region. The exercise involves coordination among the Indian Navy, Army, Air Force, and Coast Guard, emphasising joint operations and integrated fleet readiness.
- TROPEX is the largest maritime exercise of the Indian Navy.
- It occurs every two years and involves multiple branches of the armed forces.
- Recently, senior military leaders observed the exercise aboard INS Vikrant.
- The event featured operational demonstrations and live weapon firings, showcasing India's combat readiness.
- TROPEX-25 reflects India's evolving military doctrine. Joint warfare and fleet integration are now central to national defence. The exercise marks the importance of unified operations among different military branches. This shift is crucial as modern conflicts often span multiple theatres.
- For the first time, the Eastern and Western Fleets operated together during TROPEX-25. This integration demonstrates India's ability to function as a single maritime force. The combined efforts enhance operational capabilities across the Indian Ocean Region, signalling a robust deterrent to potential adversaries.
- INS Vikrant's participation marked a very important moment in India's naval strategy. The aircraft carrier is no longer just a symbolic asset. It plays a critical role in networked fleet combat and real-world naval strike missions. This capability expands India's maritime reach in the Indo-Pacific.
- TROPEX-25 sends a clear signal to the Indo-Pacific region, especially in light of China's growing naval presence. The exercise showcases India's ability to counterbalance Chinese activities in the Indian Ocean. It reinforces India's commitment to maintaining regional security and stability.
- During TROPEX-25, the Vice Chiefs of the Army, Navy, and Air Force came together on INS Vikrant. Their presence emphasised the importance of joint operations. The exercise included coordinated maritime strike missions, showcasing the military's commitment to operational synergy.

- TROPEX-25 strengthens India's alliances, particularly with Quad partners – the United States, Japan, and Australia. The exercise enhances India's capacity for coalition-led maritime defence efforts. It encourages strategic coordination among allies and sends a strong message to potential adversaries.
- The successful execution of TROPEX-25 indicates a shift in India's naval strategy. Joint operations are no longer mere aspirations but are being realised in practice. The exercise sets a precedent for future military engagements, prioritising collaboration and integrated operations.

India extends export ban on de-oiled rice bran till September

- De-oiled rice bran is a major ingredient in the preparation of cattle and poultry feed.
- It was first banned in July 2023 and has been extended from time to time.
- "Export of de-oiled rice bran is prohibited up to September 30, 2025," the Directorate General of Foreign Trade (DGFT) has said in a notification.
- According to experts, a rise in the price of feed is one of the major reasons for increasing milk prices in the country and putting a ban on the exports can help increase the availability of the product in the domestic market, thereby containing rates.
- As per estimates, in cattle feed, about 25% rice bran extraction is used. In a separate notice, the DGFT has revised the wastage permissible and standard input output norms with regard to the export of jewellery and articles. It was earlier revised in November 2024.
- The wastage norms are the permissible amount of gold or silver that can be lost during the manufacturing process of jewellery for export. Standard input-output norms (SION) are rules that define the amount of input/inputs required to manufacture a unit of output for export purposes.
- Input-output norms are applicable for products such as electronics, engineering, chemical, and food products, including fish and marine products, handicrafts, plastic and leather products.

Directorate General of Foreign Trade (DGFT)

- Directorate General of Foreign Trade (DGFT) is an attached office of the Ministry of Commerce and Industry. Right from its inception till 1991, when liberalisation in the economic policies of the government took place, DGFT has been essentially involved in the regulation and promotion of foreign trade.
- Keeping in line with policies of liberalisation and globalisation and the overall objective of increasing exports, DGFT has been assigned the role of a "facilitator". The transition has been from prohibition and control of imports/exports towards promotion and facilitation of exports/imports, keeping in view the interests of the country.

- This Directorate, with headquarters at New Delhi, is headed by the Director General of Foreign Trade.
- It assists the government in formulation of Foreign Trade Policy (FTP) and is responsible for implementing the Policy and schemes under FTP with the main objective of promoting India's exports.
- Further, it is responsible for implementation of Foreign Trade (Development and Regulation) Act, 1992 and Rules and Regulations notified thereunder.
- The DGFT also issues authorisations to exporters and monitors their corresponding obligations through a network of 24 regional offices.

Indian Embassy in Congo asks Indian nationals to depart immediately to safer locations

- The Embassy of India in Kinshasa, Democratic Republic of Congo, on Sunday (February 2, 2025) said it is closely monitoring the security situation in the central African country and asked all the Indian nationals in Bukavu "to immediately depart to safer locations."
- The Embassy issued three advisories during the day and recommended that everyone prepare an emergency plan. There are about 1,000 Indian nationals in Congo. Rwanda-backed M23 rebels captured the eastern Congolese city of Goma and are looking at expanding their area of control.
- "There are reports of M23 being only around 20-25 kms away from Bukavu. Given the security situation, we once again advise all Indian nationals residing in Bukavu to immediately depart to safer locations by whatever means available while the airports, borders and commercial routes are still open. We strongly recommend against any travel to Bukavu,"
- Rwanda-backed M23 rebels captured the eastern Congolese city of Goma and are looking at expanding their area of control.
- There are reports of M23 being only around 20-25 kms away from Bukavu.
- The Embassy of India in Kinshasa is closely monitoring the security situation in eastern Congo.

Crisis in DR Congo:

- The crisis in eastern Democratic Republic of Congo (DRC), especially in Goma, is worsening.
- The M23 armed group is capturing towns and villages, leading to more deaths and displacement.
- The rebel group has taken control of most of Goma since entering the city last week in the biggest escalation of a decades-long conflict springing from the Rwandan genocide against the Tutsis, and a continuing struggle for control of rich mineral resources in the region among a plethora of armed groups.
- The UN Security Council has called for immediate and coordinated international action to address the escalating situation.
- Peacekeepers with (MONUSCO) have launched the second phase of an operation called Horizon of Peace in Djugu territory, aiming to contain an escalation of violence by armed groups.

- The region is overwhelmed with displaced people, and humanitarian organisations like the World Food Programme (WFP) are highlighting the dire conditions in the camps.
- This crisis reflects a complex mix of local conflicts, regional factors, and the need for global intervention. The international community is urged to act swiftly to help bring peace and stability to the area.
- The World Health Organisation (WHO), International Committee of the Red Cross (ICRC), and Médecins Sans Frontières (Doctors Without Borders,) are urgently working to bolster healthcare services, but with supply chains disrupted and facilities at capacity, response efforts are severely strained.
- Additionally, health authorities warn of an increasing risk of disease outbreaks, including cholera, measles and mpox, due to mass displacement, unsafe water sources and inadequate sanitation.
- The UN Security Council convened emergency meetings to address the escalating crisis in Goma – the regional capital of the eastern Democratic Republic of the Congo (DRC).
- Officials highlighted the dire humanitarian situation and the need for urgent and coordinated international action to stop the fighting between Rwanda-backed M23 rebels and Congolese forces, as they battle for control of the city.
- M23 rebels captured Goma, a city of two million people early this week.
- The eight countries of **the East African Community** held an emergency summit and called for an immediate ceasefire in eastern Congo and for Congo to negotiate with M23. **Congo and Rwanda are both members of the East Africa** bloc along with Kenya, Tanzania and other countries.
- Armed groups have long vied for control of eastern Congo, which is rich in minerals critical to much of the world's technology, and has been the scene of proxy battles between Congo and neighboring Rwanda, as well as other powers.
- Before M23 fighters closed in on Goma, more than seven lakh internally displaced people lived around the provincial capital. But hundreds of thousands fled in anticipation of clashes between the Rwanda-backed rebels and DRC troops, prompting renewed alarm about the further spread of deadly disease.
- The mass influx of IDPs, separation of families, and escape of prisoners from Goma prison have increased the vulnerability of women and children to sexual and gender-based violence.
- The M23 and Rwandan forces' capture of Goma's international airport and their advance from multiple directions have heightened the risk of weapons proliferation, as combatants blend into the civilian population.
- Repeated mass displacement in DRC has created ideal conditions for the spread of many endemic diseases in camps and surrounding communities.

- Beyond the health risks, there has been a surge in the number of children separated from their parents, making them vulnerable to kidnapping, recruitment by armed groups, and sexual violence.

Root cause of the conflict

- Armed groups have long vied for control of eastern Congo, which is rich in minerals critical to much of the world's technology, and has been the scene of proxy battles between Congo and neighboring Rwanda, as well as other powers.
- The chaotic situation has its roots in ethnic conflict. M23 says it is defending ethnic Tutsis in Congo. Rwanda has claimed the Tutsis are being persecuted by Hutus and former militias responsible for the 1994 genocide of 800,000 Tutsis and others in Rwanda. Many Hutus fled into Congo after the genocide.
- Analysts say the real fight is for control over the Congo's vast mineral deposits, estimated to be worth \$24 trillion, and critical to much of the world's technology.
- While Rwandan leaders, mostly Tutsis, have denied backing the rebels, UN officials say some 4,000 Rwandan troops are in the Congo.

Key facts about Democratic Republic of Congo (DRC):

- **Location**
- Situated in Central Africa, the second-largest country in Africa by land area.
- Shares borders with nine countries: Republic of the Congo, Central African Republic, South Sudan, Uganda, Rwanda, Burundi, Tanzania, Zambia, and Angola.

Capital

- **Kinshasa** – the largest city and the economic & administrative center of the country.
- **Geographical Features**
- **Congo River:** The second-longest river in Africa, vital for transport, agriculture, and hydroelectric power.
Mountains: Albertine Rift Mountains in the east, including the Virunga Mountains and Mount Nyiragongo, an active volcano.
- **Lakes:** Home to large lakes like Lake Kivu, Lake Tanganyika, and Lake Edward.

Historical Context

- **Independence from Belgium:** Gained independence in 1960 but faced persistent political instability.
- **First Congo War (1996-1997):** Led to the overthrow of Mobutu Sese Seko.
- **Second Congo War (1998-2003):** One of the deadliest conflicts, involving multiple African nations and leading to millions of deaths.

- **Mineral Wealth:** Rich in cobalt, copper, coltan, and other minerals, leading to both economic potential and conflict over resource exploitation.

Strengthening alliances and building movements to end female genital mutilation

- “Female genital mutilation is a violation of human rights that inflicts deep and lifelong physical, emotional, and psychological scars on girls and women. This harmful practice affects more than 230 million girls and women today. An estimated 27 million more girls could endure this violation of their rights and dignity by 2030 if we do not take action now.
- The UN observes International Day of Zero Tolerance for Female Genital Mutilation on February 6.
- This year’s theme is ‘Stepping up the pace: Strengthening alliances and building movements to end female genital mutilation’.
- Female genital mutilation is a violation of human rights that inflicts deep and lifelong physical, emotional, and psychological scars on girls and women.
- The UN sexual and reproductive health agency (UNFPA), the UN Children’s Fund (UNICEF) and World Health Organization reaffirmed that **FGM has no health benefits, with lifelong consequences including severe infections, complications in childbirth, chronic pain and psychological trauma.**
- This harmful practice affects more than 230 million girls and women today. An estimated 27 million more girls could endure this violation of their rights and dignity by 2030 if we do not take action now.

Female genital mutilation

- Female genital mutilation (FGM) is defined by the World Health Organisation (WHO) as “the partial or total removal of the female external genitalia or other injury to the female genital organs for non-medical reasons”.
- FGM, a practice that involves altering or injuring the female genitalia for non-medical reasons, is internationally recognised as a **violation of fundamental human rights.**
- It is a global issue, reported in 92 countries across all continents, with **over 230 million girls and women** having survived it in the world.
- Girls who undergo female genital mutilation face short-term complications such as severe pain, shock, excessive bleeding, infections, and difficulty in passing urine, as well as long-term consequences for their sexual and reproductive health and mental health.
- It is recognised internationally as a violation of the human rights, the health and the integrity of girls and women.
- Many countries have seen a decline in the prevalence of female genital mutilation.

- Progress is witnessed in countries like Kenya and Uganda, where collaborative action and community-led initiatives are proving that by strengthening alliances and building movements, we can accelerate change.

Progress and challenges

- Since the launch of the UNFPA-UNICEF Joint Programme on the Elimination of Female Genital Mutilation in 2008, and in collaboration with WHO, close to seven million girls and women access prevention and protection services.
- Additionally, 48 million people have made public declarations to abandon the practice, and 220 million individuals were reached by mass media messaging on the issue.
- In the last two years, close to 12,000 grassroots organisations and 112,000 community and frontline workers galvanized to effect change at this critical juncture.
- Yet the fragility of progress made has also become starkly evident.
- Of the 31 countries in which data on prevalence are collected nationally, only seven countries are on track to meet the Sustainable Development Goal of ending female genital mutilation by or before 2030. The current rate of progress must accelerate urgently to meet this target.
- In Gambia, for example, attempts to repeal the ban on female genital mutilation persist, even after an initial proposal to do so was rejected by its parliament last year.
- Such efforts could gravely undermine the rights, health, and dignity of future generations of girls and women, jeopardizing the tireless work over decades to change attitudes and mobilise communities.

The way ahead

- Eliminating female genital mutilation is a critical step towards realising other Sustainable Development Goals, which focus on gender equality, good health and well-being, safe motherhood, quality education, inclusive societies and economic growth.
- There is a need for strengthening alliances among leaders, grassroots organisations, and across sectors spanning health, education, and social protection — as well as sustained advocacy and expanded social movements with girls and survivors at the centre.
- • It demands greater accountability at all levels to ensure commitments to human rights are upheld and policies and strategies are implemented to protect girls at risk and provide care, including justice, for survivors.
- • It also requires increased investment in scaling up proven interventions. We are indebted to generous donors and partners who are supporting this life-changing work and call on others to join them.

What is UNFPA?

- United Nations Population Fund (UNFPA) is the United Nations sexual and reproductive health agency. UNFPA's mission is to deliver a world where every pregnancy is wanted, every childbirth is safe and every young person's potential is fulfilled.
- UNFPA calls for the realization of reproductive rights for all and supports access to a wide range of sexual and reproductive health services, including voluntary family planning, quality maternal health care and comprehensive sexuality education.

Explained: What Does USAID Do And Fund

- The Trump administration's attempt to fold the USAID humanitarian agency into the State Department calls into question the future of tens of billions of dollars in financial support to some of the world's poorest countries.
- The United States is the world's largest provider of official development assistance, according to the Organization for Economic Cooperation and Development (OECD).
- Most of its support is channeled through the United States Agency for International Development, an independent government agency established by Congress in 1961.

What does USAID do?

- USAID is by far the largest humanitarian and development arm of the US government, with a workforce of approximately 10,000 people around the world and an annual budget of tens of billions of dollars.
- Congress approves USAID's funding each year. The humanitarian agency then works with Congress and the White House to set its investment priorities, while the State Department provides it with foreign policy guidance.
- The money is paid out through grants, contracts and "cooperative agreements," according to USAID.
- In the 2023 fiscal year, USAID managed more than \$40 billion in combined appropriations, a recent report from the Congressional Research Service (CRS) noted.
- That was more than a third of the overall budget approved for the State Department, foreign operations and related programs.
- Nevertheless, it only represented around 0.7 percent of the US government's \$6.1 trillion in spending during that period.

What is USAID?

- The US Agency for International Development (USAID) is the lead international humanitarian and development arm of the US government.
- It was established in 1961 to implement the Foreign Assistance Act of 1961.
- It provides assistance to strategically important countries and countries in conflict.
- It leads US efforts to alleviate poverty, disease, and humanitarian need.

- The USAID assists US commercial interests by supporting developing countries' economic growth and building countries' capacity to participate in world trade.
- In FY2023, USAID managed more than \$40 billion in combined appropriations, representing more than one-third of the funds provided in the FY2023 Department of State, Foreign Operations, and Related Programs (SFOPS) appropriation and international food aid provided in the agriculture appropriation.
- USAID's workforce totals more than 10,000, with approximately two-thirds serving overseas. The reported workforce level does not include institutional support contractors. The agency maintains more than 60 country and regional missions that design and manage a range of projects, most intended to meet specific development objectives as outlined in a Country Development Cooperation Strategy.
- Most projects are implemented through a grant, cooperative agreement, or contract — by one of thousands of foreign and US development partners, including non-profit organisations, for-profit contractors, universities, international organisations, and foreign governments.
- In FY2023, USAID provided assistance to approximately 130 countries.
- The top 10 recipients of USAID-managed funds in FY2023 were Ukraine, Ethiopia, Jordan, Democratic Republic of Congo, Somalia, Yemen, Afghanistan, Nigeria, South Sudan, and Syria.
- Reflecting USAID's poverty reduction mandate, 70 of the 77 World Bank-determined low and lower-middle income countries received USAID assistance in FY2023.
- USAID programmed 40 per cent of its funds in Europe and Eurasia in FY2023, the majority of which were for Ukraine.
- From the early 1990s, health was consistently the largest USAID sector by funding, bolstered since 2004 by billions of dollars in transfers from State's President's Emergency Plan for AIDS Relief (PEPFAR) and since 2020 by emergency assistance to combat the COVID-19 pandemic.
- In FY2022, humanitarian assistance surpassed health as the largest sector.

USAID's contributions to India

- For decades, USAID has partnered with India to address the country's most pressing health challenges, including maternal and child mortality, and the fight against polio, HIV, and tuberculosis.
- It has provided nearly \$3 billion in total assistance to India over the last 20 years.
- USAID has helped India save millions of lives through TB interventions.
- USAID has supported India in achieving its development goals, supporting clean energy and environmental reform, combating climate challenges, improving health, encouraging inclusive economic growth, and bolstering the COVID-19 response.

- It supported the country to advance transition to a green, renewable, energy-secure economy by making clean energy cheaper and more accessible. Between 2015 and 2018, USAID helped improve access to modern, clean energy for more than 1.8 million people across nine states, reducing the amount of toxins in the air.
- With USAID support, India launched Green Bond market, allowing investors to focus their funds in activities linked to clean energy and climate resilience.

Other countries receiving its support?

- USAID had projects in around 130 countries in 2023, the most recent year for which full data was available, according to CRS.
- The top three recipients of aid are Ukraine, Ethiopia and Jordan respectively.
- The scale of USAID's funding for Ukraine is significant, with the war-torn European country receiving more than \$16 billion in macroeconomic support, according to US government data.
- In 2023, 70 of the 77 countries the World Bank determined to be low- and lower-middle income countries received USAID assistance, the CRS report noted.
- Other top recipients of aid include the Democratic Republic of Congo, Afghanistan, South Sudan, and Syria.

What is the International Criminal Court and how will Trump's sanctions impact it?

- U.S. President Donald Trump's executive order imposing sanctions on the International Criminal Court could jeopardize trials and investigations at the world's only permanent global tribunal for war crimes and genocide.
- The order Trump signed Thursday accuses the ICC of "illegitimate and baseless actions targeting America and our close ally Israel." It cites the arrest warrant the ICC issued last year for Israeli Prime Minister Benjamin Netanyahu and his former defense minister, Yoav Gallant, over alleged war crimes in Gaza.
- The Hague-based court condemned the move. "The Court stands firmly by its personnel and pledges to continue providing justice and hope to millions of innocent victims of atrocities across the world," the court said in a statement.

What is the International Criminal Court?

- The **court was created in 2002** to be a last stop for the most serious international crimes: war crimes, crimes against humanity, genocide and aggression.
- The **United States and Israel are not members**, but 125 other countries have signed the court's foundational treaty, the Rome Statute.
- The ICC becomes involved when nations are unable or unwilling to prosecute crimes on their territory.
- The court's newest member, Ukraine, formally joined in January.

What will these sanctions do?

- The exact impact is unclear. Trump's executive order invokes emergency powers from several different laws to allow the U.S. Treasury Department and the U.S. State Department to issue specific sanctions.
- The court's chief prosecutor, Karim Khan, is a likely target, as is anyone involved in the Netanyahu investigation, including the three judges who issued the arrest warrants. The sanctions could also target the court itself, grinding its operations to a halt

Do these sanctions jeopardize current trials?

- The court is currently without a single trial ahead for the first time since it arrested its first suspect in 2006.
- It has issued 33 unsealed arrest warrants. Those named range from Netanyahu and Russian President Vladimir Putin to Ugandan rebel leader Joseph Kony and Gamlet Guchmazov, a former government member of the breakaway region of South Ossetia in Georgia. Kony is accused of war crimes and crimes against humanity. Guchmazov is accused of torture.
- Three verdicts are pending. Former CAR football federation president Patrice-Edouard Ngaïssona and Alfred Yekatom, alleged leaders of a predominantly Christian rebel group in the Central African Republic, are accused of multiple counts of war crimes and crimes against humanity.
- The trial of Ali Mohammed Ali Abdul Rahman Ali, who is accused of committing atrocities as the leader of the Janjaweed militia in Sudan, wrapped up last year.
- For a few hours last month, the court appeared poised to take a Libyan warlord into custody. Instead, member state Italy sent Ossama Anjiem home. Also known as Ossama al-Masri, Anjiem heads the Tripoli branch of the Reform and Rehabilitation Institution, a notorious network of detention centers run by the government-backed Special Defense Force

International Criminal Court (ICC)

- The **International Criminal Court (ICC)** is an **independent judicial** body with jurisdiction over persons charged with genocide, crimes against humanity and war crimes.
- Situated in The Hague, Netherlands, the ICC is governed by the Rome Statute adopted by the UN in 1998. It entered into force in 2002 upon ratification by 60 States.
- In addition, the Rome Statute also sets new standards for victims' representation in the courtroom, and ensures fair trials and the rights of the defence. The court seeks global cooperation to protect all people from the crimes codified in the Rome Statute.
- Currently, 125 countries are State Parties to the Rome Statute of the ICC.
- India has not signed the Rome Statute as it is not a member of the ICC.

- The court's founding treaty, called the Rome Statute, grants the ICC jurisdiction over four main crimes.
- **i) Crime of genocide:** It is characterised by the specific intent to destroy in whole or in part a national, ethnic, racial or religious group by killing its members or by other means: causing serious bodily or mental harm to members of the group.
- **ii) Crimes against humanity:** Serious violations committed as part of a large-scale attack against any civilian population. The 15 forms of crimes against humanity listed in the Rome Statute include offences such as murder, rape, imprisonment, enforced disappearances, enslavement - particularly of women and children — sexual slavery, torture, apartheid and deportation.
- **iii) War crimes:** They are grave breaches of the Geneva conventions in the context of armed conflict and include, for instance, the use of child soldiers, the killing or torture of persons such as civilians or prisoners of war, intentionally directing attacks against hospitals, historic monuments, or buildings dedicated to religion, education, art, science or charitable purposes.
- **iv) The crime of aggression:** It is the use of armed force by a state against the sovereignty, integrity or independence of another state.
- **Functioning of the ICC**
- The ICC is composed of 18 judges, who are elected for terms of office of nine years by the Assembly of States Parties to the Rome Statute.
- As a judicial institution, the ICC does not have its own police force or enforcement body. Thus, it relies on cooperation with countries worldwide for support, particularly for making arrests, transferring arrested persons to the ICC detention centre in The Hague, freezing suspects' assets and enforcing sentences.
- While not a UN organisation, the ICC has a cooperation agreement with the UN. When a situation is not within the court's jurisdiction, the UN Security Council can refer the situation to the ICC granting it jurisdiction.
- The ICC actively works to build understanding and cooperation in all regions, for example, through seminars and conferences worldwide. The court cooperates with both states parties and non-states parties. The Court does not replace national courts. It is a court of last resort. States have the primary responsibility to investigate, try and punish the perpetrators of the most serious crimes.
- The Court will only step in if the State in which serious crimes under the Court's jurisdiction have been committed is unwilling or unable to genuinely address those. The Court's resources remain limited and it can only deal with a small number of cases at the same time. The Court works hand in hand with national and international tribunals.

How is ICC different from ICJ?

- The International Criminal Court (ICC) is established to investigate, prosecute and try individuals accused of committing the most serious crimes of concern to the international community.
- ICC is not part of the United Nations but they have a cooperative and complementary relationship.
- International Court of Justice (ICJ) is the principal judicial organ of the United Nations for the settlement of disputes between States.
- The International Court of Justice and the International Residual Mechanism for Criminal Tribunals also have their seats in The Hague.

Argentina plans to withdraw from WHO

- President Javier Milei has ordered Argentina's withdrawal from the World Health Organisation (WHO) due to "deep differences with the UN agency".
- Milei's action echoes that of his ally, US President Donald Trump, who began the process of pulling the United States out of WHO with an executive order on his first day back in office on January 20.

World Health Organisation

- The WHO is an agency of the United Nations set up in 1948 to improve health globally. It has more than 8,000 people working in 150 country offices, six regional offices and its Geneva headquarters.
- The WHO has 194 Member States.
- Its director general is elected for a five-year term.
- Since its inception in 1948, WHO has been hosted by the Swiss Federation. Its main building was inaugurated in Geneva in 1966.
- The WHO's stated aim is "to promote health, keep the world safe and serve the vulnerable".
- It has no power to impose health policies on national governments, but acts as an adviser and offers guidance on best practice in disease prevention and health improvement.
- It has three main strands of work:
 - i) Aiming for universal health coverage in every country.
 - ii) Preventing and responding to acute emergencies.
 - iii) Promoting health and well-being for all.

How is WHO funded?

- WHO gets its funding from two main sources: Member States paying their assessed contributions (countries' membership dues), and voluntary contributions from Member States and other partners.
- Assessed contributions are a percentage of a country's gross domestic product (the percentage is agreed by the United Nations General Assembly). Member States approve them every two years at the World Health Assembly. They cover less than 20 per cent of the total budget.

- The remainder of WHO's financing is in the form of voluntary contributions, largely from Member States as well as from other United Nations organisations, inter-governmental organisations, philanthropic foundations, the private sector, and other sources.

US is the top donor to the WHO

- The United States is the top donor and partner to WHO, contributing through assessed contributions and voluntary funding.
- The US contributed \$1.28 billion during the 2022–2023 biennium, enabling work by WHO, the US and other countries and partners to identify and respond to emergencies, stop disease threats from spreading across borders and advance other key global health priorities.
- The US and WHO share a long-standing partnership, delivering life-saving humanitarian assistance to communities devastated by conflict, natural disasters, and disease outbreaks.
- The US and WHO are advancing global health security through their renewed five-year partnership, extending the Global Health Security Agenda (GHSa) to 2028, in support of accelerating implementation of the International Health Regulations (IHR).
- Leadership from the US has been instrumental in protecting vulnerable populations — such as in Africa during the fight against deadly diseases like Ebola — and in ensuring health systems remain strong and responsive during crises.
- By supporting WHO's emergency health efforts, the US drives global health security, from preventing and preparing for future threats to delivering rapid response and recovery when it matters most.

US exit from WHO: A crisis or opportunity for global health governance?

- The world health community has been rocked by the Trump administration's decision to pull the US out of the World Health Organization (WHO), especially in the Global South, where many countries depend on WHO financing and knowledge to address public health issues.
- The action calls into doubt both the ability of developing nations to continue vital health programmes and the viability of global health governance.
- With over \$958 million allocated in 2024 to support immunisation drives, disease eradication initiatives, and pandemic preparedness, the United States has long been one of WHO's biggest donors.
- A multibillion-dollar void could result from the abrupt removal of this financing, which could interfere with important health programmes in low- and middle-income countries.
- Given the interconnected nature of global health, experts warn that reduced funding could slow responses to pandemics and infectious disease outbreaks, posing a risk to global stability.

A change of guard in global health?

- Despite these challenges, it is plausible that the US departure will pave the way for other countries in the Global South to come up with their own strategies in addressing global health issues.
- The G7 and G20, along with regional health organisations like the African CDC and the European Centre for Disease Prevention and Control (ECDC) could step up to fill the gap and maintain the continuity of global health efforts.
- India, a major player in vaccine production, is in a good position to push for fair healthcare policies that are important for other developing nations.
- Moreover, countries may have to look for funding from other sources, including public-private partnerships and philanthropic organisations like the Bill & Melinda Gates Foundation, which is still the second biggest contributor to the WHO.
- Some experts have suggested the creation of independent global health funds to sustain funding of important programmes.

Strengthening regional and local health systems

- Nations that depend on the World Health Organization (WHO) have the opportunity to improve local healthcare systems and develop regional health governance. In order to address issues like antibiotic resistance, guarantee vaccination equity, and get ready for future pandemics, it will be crucial to include indigenous research and development into this effort.
- It is anticipated that the development of open-access platforms for cross-border data sharing will encourage international cooperation and innovation even more. Countries may more effectively share vital health data by utilizing these platforms, which will improve overall health outcomes and crisis response.

The road ahead

- Although the US exit from the WHO brings many risks to global health security, it is also a critical turning point—whether emerging economies and multilateral partnerships can step up or if global health governance will erode.
- The coming months will be critical as policymakers, researchers, and international organisations navigate this shifting landscape to ensure a robust and resilient global health response.
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Israel and the US Withdraw from UNHRC.

- Israel has announced that it will follow the United States and withdraw from the United Nations Human Rights Council (UNHRC). This decision came shortly after US President Donald Trump signed an executive order for America's exit from the council. Israeli Foreign Minister Gideon Saar confirmed the news on Wednesday, praising the US decision as the right one.

- "Israel welcomes President Trump's decision not to participate in the UN Human Rights Council. Israel joins the United States and will not participate in the UNHRC."
- Israel has long criticized the UNHRC, accusing it of bias against the country. Saar claimed that the council unfairly targets Israel while allowing human rights abusers to avoid scrutiny.
- US withdrawal from the UNHRC also includes leaving the United Nations Relief and Works Agency (UNRWA), a move linked to the US concerns about alleged ties between UNRWA and the militant group Hamas. Council members have frequently raised allegations of Israeli human rights violations in the Gaza war, while a UN inquiry it set up found last year that the immense scale of killings amounted to a crime against humanity.
- Israel rejected the finding and says it takes care to avoid civilian casualties. It has long criticised the Geneva-based body and has disengaged in the past.

United Nations Human Rights Council

- The Human Rights Council is an inter-governmental body within the United Nations system responsible for strengthening the promotion and protection of human rights around the globe and for addressing situations of human rights violations and making recommendations on them.
- It has the ability to discuss all thematic human rights issues and situations that require its attention throughout the year.
- The Council was created by the United Nations General Assembly on March 15, 2006.
- It replaced the former United Nations Commission on Human Rights.
- The Human Rights Council meets for at least 10 weeks per year at the United Nations Office in Geneva, Switzerland, in regular sessions usually taking place in March, June and September. The Council can also convene urgent meetings on short notice to respond to emerging human rights crises.

Membership of the Human Rights Council

- The Council is made of 47 Member States, which are elected by the majority of members of the General Assembly of the United Nations through direct and secret ballot. The General Assembly takes into account the candidate States' contribution to the promotion and protection of human rights, as well as their voluntary pledges and commitments in this regard.
- The Council's membership is based on equitable geographical distribution.

Seats are distributed as follows:

- **African States:** 13 seats
- **Asia-Pacific States:** 13 seats
- **Latin American and Caribbean States:** 8 seats
- **Western European and other States:** 7 seats
- **Eastern European States:** 6 seats.

- Members of the Council serve for a period of three years and are not eligible for immediate re-election after serving two consecutive terms.
- Membership is limited to two consecutive terms.
- Rotating membership of the Council reflects the UN's diversity and gives it legitimacy when speaking out on human rights violations in all countries.

International Big Cat Alliance comes into force as a treaty-based inter-governmental international organisation

- The IBCA is now a full-fledged treaty-based inter-governmental international organisation and international legal entity, the statement added.
- The development comes even as five countries — Republic of Nicaragua, Kingdom of Eswatini, Republic of India, Federal Republic of Somalia, and Republic of Liberia — have ratified the Framework Agreement under Article VIII (1), formalising their membership in IBCA.
- **Twenty-seven countries, including India, have consented to join the IBCA.**
- The IBCA serves as a collaborative platform, fostering partnerships among big cat range and non-range countries, conservation organisations, and international stakeholders to reverse the decline of 7 major big cat populations — lion, tiger, leopard, cheetah, snow leopard, puma and jaguar — and restore their habitats
- "With this milestone, #IBCA is poised to unite conservation efforts on a global scale, ensuring the long-term survival of these magnificent predators and securing our ecological future," .
- 'Big Cat' is a term that is used in informal speech to apply to any large species of the family *Felidae*. Usually, it applies to the members of the genus *Panthera*. These include:
 - 1. Tiger (*Panthera tigris*)
 - 2. Lion (*Panthera leo*)
 - 3. Jaguar (*Panthera onca*)
 - 4. Leopard (*Panthera pardus*)
 - 5. Snow Leopard (*Panthera uncia*)
- All these cats can usually make vocalisations known as 'roars'. The lion has the loudest roar, which can be heard 8-10 kilometres away. The snow leopard, at one time, was not included in this group. It was classified as *Uncia uncia*. Later, it was re-classified as part of *Panthera*.
- Two other cats — Puma (*Puma concolor*) and Cheetah (*Acinonyx jubatus*) — are not part of *Panthera*. But they are usually included in most listings of 'big cats'.
- The Indian subcontinent has been historically home to the Bengal tiger, Asiatic lion, Indian leopard, Indian/Asiatic cheetah as well as Snow leopard. The cheetah was declared extinct in 1952.

In 2022, the Government of India embarked on an ambitious programme to introduce African cheetahs to the Kuno National Park in Madhya Pradesh.

What is IBCA?

- The IBCA was launched by the Prime Minister Shri Narendra Modi on April 9, 2023, during the event 'Commemorating 50 years of Project Tiger'.
- The Union Cabinet, in its meeting held on February 29, 2024, approved the **establishment of IBCA with headquarters in India.**
- It was launched with the aim of conservation of seven big cats — tiger, lion, leopard, snow leopard, cheetah, jaguar and puma — with membership of all UN countries/the range countries harbouring the said species and non-range countries where historically these species are not found but interested to support big cat conservation.
- The IBCA was established by the government of India, through the nodal organisation National Tiger Conservation Authority (NTCA).
- The primary objective of IBCA is to facilitate collaboration and synergy among stakeholders, consolidating successful conservation practices and expertise to achieve a common goal of conservation of big cats at global level.
- This unified approach, bolstered by financial support, aims to bolster the conservation agenda, halt the decline in big cat populations, and reverse current trends.
- IBCA envisages synergy through a collaborative platform for increased dissemination of gold standard big cat conservation practices, provides access to a central common repository of technical know-how and corpus of funds, strengthens the existing species-specific intergovernmental platforms, networks and transnational initiatives on conservation and protection and assists securing our ecological future and mitigate adverse effects of climate change.

Meds platform launch gives children with cancer a fighting chance

- The World Health Organisation (WHO) and St. Jude Children's Research Hospital have commenced distribution of critically-needed childhood cancer medicines in Uzbekistan and Mongolia, through the 'Global Platform for Access to Childhood Cancer Medicines'.
- Four other countries that are part of the pilot phase are Ecuador, Jordan, Nepal and Zambia. Within days, El Salvador, Moldova, Senegal, Pakistan, Ghana and Sri Lanka will join the programme too.

What is the significance of this global platform?

- Around 400,000 children are diagnosed with cancer every year and most of them live in low-income countries where medicines are either unaffordable or unavailable, resulting in an overwhelming 70 per cent death rate.

- The majority of these children, living in resource-limited settings, are unable to consistently obtain or afford cancer medicines. It is estimated that 70 per cent of the children from these settings die from cancer due to factors such as lack of appropriate treatment, treatment disruptions or low-quality medicines.
- This is in stark contrast to high-income countries, where survival rates exceed 80 per cent.
- The needs of a child suffering from cancer are complex and demanding, ranging from qualified professionals to pharmaceutical companies and communities that are ready to support a family through the traumatic process of diagnosis.
- An effective market for childhood cancer medicines is constrained by complex, interrelated systemic factors, resulting in market fragmentation, lack of availability of essential medicines, low-quality products, and high purchasing costs.
- A number of initiatives for improving access to cancer medicines have been developed over the past decade.
- St. Jude and WHO announced the platform in 2021 to ensure children around the world have access to lifesaving treatments.
- The platform brings together governments, the pharmaceutical industry and non-governmental organisations in a unique collaborative model focused on creating solutions for children with cancer. The co-design approach addresses the broader needs of national stakeholders, with a focus on capacity building and long-term sustainability.
- Countries in the pilot phase will receive an uninterrupted supply of quality-assured childhood cancer medicines at no cost.
- The WHO's goal – working with leading US paediatric facility St. Jude Children's Research Hospital – is to reach 50 countries where needs are greatest, providing medicines to treat 120,000 children with cancer in the next five to seven years.
- The platform provides comprehensive end-to-end support, from consolidating global demand to shaping the market, assisting countries with medicine selection and developing treatment standards.
- It represents a transformative model for the broader global health community working together to tackle health challenges, in particular for children and non-communicable diseases.
- The initiative also draws on the experience of the UN Children's Fund (UNICEF) and the Pan American Health Organisation Strategic Fund, which procure and distribute the medicines.

PM Modi co-chairs AI Action Summit in Paris

- The AI Action Summit in Paris underscored the need to reinforce a diverse AI ecosystem, emphasising a human-centric, rights-based, and ethical approach to artificial intelligence.

- With a focus on safety, and security, the summit called for urgent action to address inequalities and support capacity-building in developing countries.
- A total of 58 countries, in addition to the European Union and African Union, are the signatories of the joint statement released following the Action Summit co-chaired by India and France. It is pertinent to note that two big names who refused to sign the statement are the United States and the United Kingdom.
- The statement on 'Inclusive and Sustainable Artificial Intelligence for People and the Planet' released after the Paris AI Summit stated, "This Summit has highlighted the importance of reinforcing the diversity of the AI ecosystem.
- It has laid an open, multi-stakeholder and inclusive approach that will enable AI to be human rights-based, human-centric, ethical, safe, secure and trustworthy while also stressing the need and urgency to narrow the inequalities and assist developing countries in artificial intelligence capacity-building so they can build AI capacities."
- The summit also acknowledged the significance of current initiatives on AI, such as the **UN General Assembly Resolutions, the Global Digital Compact, and the work of organisations like UNESCO, the G7, and G20.**
- "Acknowledging existing multilateral initiatives on AI, including the United Nations General Assembly Resolutions, the Global Digital Compact, the UNESCO Recommendation on Ethics of AI, the African Union Continental AI Strategy, and the works of the Organization for Economic Cooperation and Development (OECD), the Council of Europe and European Union, the G7 including the Hiroshima AI Process and G20," .
- The summit also set some priorities, including — promoting AI accessibility, ensuring ethical development of AI, innovation, and making AI sustainable.
- "We have affirmed the following main priorities: Promoting AI accessibility to reduce digital divides; Ensuring AI is open, inclusive, transparent, ethical, safe, secure and trustworthy, taking into account international frameworks for all; Making innovation in AI thrive by enabling conditions for its development and avoiding market concentration driving industrial recovery and development; Encouraging AI deployment that positively shapes the future of work and labour markets and delivers opportunity for sustainable growth; Making AI sustainable for people and the planet; and Reinforcing international cooperation to promote coordination in international governance," the statement added.
- The High-Level Segment of the Summit commenced with a dinner hosted by Macron at the Elysee Palace, bringing together Heads of State and government, leaders of international organisations, CEOs of major AI companies and other distinguished participants.
- PM Modi offered to host the next AI Action Summit in India.

AI Action Summit in Paris

- Artificial intelligence (AI) is more than just an industrial and technological revolution. It has the potential to bring about a profound paradigm shift in our societies, in how we relate to knowledge, work, information, culture and even language.
- This technological revolution knows no borders.
- The AI has incredible potential and could resolve a great many very complex problems, seeking new therapies, predicting climate hazards and discovering new scientific correlations through analysis of large datasets.
- At the right scale and with the right governance, AI can help develop, for example, tailored and effective education models that support both learners and teachers.
- The use of AI can be advanced in many sectors, including health, science and, more generally, fields where it can boost productivity considerably.
- In this sense, AI is a scientific, economic, cultural, political and civic issue requiring intense international dialogue involving the governments, researchers, businesses, creative professionals and civil society, to ensure the science, solutions and standards that shape AI of the society we want to build for tomorrow are developed collaboratively.
- Building on the important milestones reached during the Bletchley Park (November 2023) and Seoul (May 2024) summits, this gathering will focus on concrete actions to ensure that the global AI sector can drive beneficial social, economic and environmental outcomes in the public interest.

The Summit addresses five primary themes:

- i) Public interest AI
- ii) Future of Work
- iii) Innovation and Culture
- iv) Trust in AI
- v) Global governance of AI.

Highlights of PM Modi's address

- In his address, PM Modi noted that the world was at the dawn of the AI age where this technology was fast writing the code for humanity and re-shaping our polity, economy, security and society.
- Emphasizing that AI was very different from other technological milestones in human history in terms of impact, he called for collective global efforts to establish governance and standards that uphold shared values, address risks and build trust.
- He further added that governance was not just about managing risks but also about promoting innovation and deploying it for the global good. In this regard, he advocated for ensuring access to AI for all, especially the Global South.

- PM Modi called for democratising technology and its people-centric applications so that achieving the Sustainable Development Goals becomes a reality.
- Talking about India's AI Mission, PM Modi noted that India, considering its diversity, was building its own Large Language Model for AI.

Public Interest AI Platform, AI Paris Summit launches platform to bridge digital divides

- The founding members of the AI Action Summit in Paris have launched a Public Interest AI Platform and Incubator aimed at bridging gaps between public and private efforts and reducing digital divides. The initiative was announced in a joint statement titled **"Inclusive and Sustainable Artificial Intelligence for People and the Planet,"** released on February 11 at the summit co-chaired by India and France.
- The statement emphasizes the importance of promoting AI accessibility while ensuring trust and safety in its deployment. It highlights the need for a global effort to support, amplify, and decrease fragmentation among existing public and private initiatives focused on Public Interest AI.
- So far, 60 signatories have endorsed the initiative, which aims to sustain digital public goods and provide technical assistance in areas such as data, model development, transparency, audits, compute power, talent, financing, and collaboration to create a trustworthy AI ecosystem.
- Discussions at the summit addressed various aspects of AI, including its impact on energy, the job market, and governance. Participants engaged in a first-of-its-kind multi-stakeholder discussion on AI and energy, sharing knowledge to foster investments in sustainable AI infrastructure, models, and hardware.
- The discussions also welcomed an observatory on AI's energy impact in collaboration with the International Energy Agency and showcased energy-efficient AI innovations.
- The summit recognized the need for enhanced knowledge-sharing on AI's influence in the job market, leading to the creation of a network of observatories to better anticipate its implications on workplaces, training, education, productivity, skill development, and working conditions.
- The discussions also underscored the necessity of inclusive, multi-stakeholder cooperation on AI governance, integrating aspects of safety, sustainable development, innovation, international law, human rights, gender equality, linguistic diversity, consumer protection, and intellectual property rights.
- Looking ahead, the summit identified key milestones in AI development, including the Kigali Summit, the third Global Forum on the Ethics of AI hosted by Thailand and UNESCO, the 2025 World AI Conference, and the AI for Good Global Summit 2025. The commitments made in Paris will be followed up in these upcoming events to ensure continued progress on sustainable and inclusive AI initiatives.

- The Élysée Palace confirmed that 58 countries, along with the European Union and the African Union Commission, have signed the joint statement.
- Notable signatories include Australia, Belgium, Brazil, Canada, China, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, India, Indonesia, Italy, Japan, Mexico, New Zealand, Poland, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, the Netherlands, the UAE, Ukraine, and the Vatican.
- The summit outlined key priorities, including promoting AI accessibility to reduce digital divides, ensuring AI remains open, inclusive, transparent, ethical, safe, secure, and trustworthy in line with international frameworks, fostering AI innovation while preventing market concentration, encouraging AI deployment that benefits labor markets and sustainable growth, and reinforcing international cooperation to coordinate AI governance.
- Indian Prime Minister Narendra Modi, during his visit to France from February 10-12, co-chaired the AI Action Summit with French President Emmanuel Macron in Paris on Tuesday.

PM Modi Chhattisgarh's illustrious 'Dokra' artwork

- Prime Minister Narendra Modi, during his meeting with French President Emmanuel Macron on the sidelines of the AI Action Summit in Paris, presented him with a Dokra artwork—an exquisite metal-casting piece from Chhattisgarh.
- During the summit, PM Modi also met US Vice President J.D. Vance, along with his wife, Indian-born Second Lady Usha Vance, and two of their three children, presenting them with specially curated gifts.
- The following were the gifts presented by PM Modi:

Gift to French President Emmanuel Macron – Dokra Artwork Depicting Musicians :

- Dokra art, a revered metal-casting tradition from Chhattisgarh, is crafted using the ancient lost-wax technique. This artwork, featuring traditional musicians in dynamic poses, highlights the cultural significance of music in Indian heritage.
- Made from brass and copper, the piece is adorned with fine detailing and enhanced with lapis lazuli and coral, adding a striking contrast. The labor-intensive casting process reflects the artisans' deep skill and dedication. More than a decorative piece, this Dokra artwork embodies India's rich cultural legacy, celebrating tribal traditions and artistic excellence.

Gift to the First Lady of France – Exquisite Silver Hand-Engraved Table Mirror

- PM Modi gifted an intricately designed silver hand-engraved table mirror from Rajasthan, showcasing the region's masterful craftsmanship. The mirror's ornate frame features delicate floral and peacock motifs, symbolizing beauty, nature, and grace.

- Meticulously engraved and polished to brilliance, the piece reflects Rajasthan's rich metalworking tradition. Crafted by skilled artisans, this mirror is not just functional but also a decorative heirloom, embodying timeless elegance and artistic excellence.

Gift to Vivek Vance, Son of US Vice President – Wooden Railway Toy Set

- This handcrafted wooden railway toy is a nostalgic yet sustainable creation, combining traditional craftsmanship with child-friendly design.
- Made from natural wood and painted with eco-friendly vegetable dyes, it ensures child safety while promoting environmental consciousness. The dyes, derived from turmeric (yellow), beetroot (red), indigo (blue), and neem or spinach (green), create an earthy and vibrant color palette. This toy set reflects India's rich wooden toy-making heritage, emphasizing creativity, heritage, and sustainability.

Gift to Ewan Blaine Vance, Son of US Vice President – Jigsaw Puzzle Featuring Indian Folk Paintings

- This jigsaw puzzle is a celebration of India's diverse artistic traditions, featuring renowned folk painting styles such as:
 - Kalighat Pat (West Bengal): Recognized for bold outlines, vibrant colors, and depictions of gods, myths, and social themes.
 - Santhal Painting: Created by the Santhal tribe, characterized by earthy tones and natural pigments that illustrate tribal life, rituals, and nature.
- Gift to Mirabel (Bihar): Known for intricate patterns, bright colors, and themes inspired by mythology and nature.
- This puzzle serves as both an artistic and educational experience, offering a glimpse into India's rich cultural heritage.

Gift to Mirabel Rose Vance, Daughter of US Vice President – Wooden Alphabet Set:

- Designed as a durable and engaging learning tool, this eco-friendly wooden alphabet set enhances motor skills and cognitive abilities. Unlike plastic alternatives, it is free from harmful chemicals and supports environmental conservation.
- Encouraging interactive learning, the set fosters a love for reading and language development while promoting sustainability.
- PM Modi's thoughtfully curated gifts reflect India's cultural richness and artistic traditions, strengthening diplomatic and cultural ties with France and the United States.

India and UK announce second phase of ASPIRE programme

- Government officials from India and UK recently held their fourth dialogue, wherein they launched phase two of the two countries' Accelerating Smart Power & Renewable Energy in India (ASPIRE) programme.

- In a statement, the Ministry of Power said this new phase aims to provide technical support for ensuring round-the-clock power supply, expanding renewable energy initiatives, and accelerating industrial energy efficiency and decarbonisation.
- Authorities also announced the establishment of a UK-India Offshore Wind Taskforce, which will focus on advancing offshore wind ecosystem development, supply chains, and financing models in both countries.
- India and the United Kingdom launched the phase-2 of Accelerating Smart Power & Renewable Energy in India (ASPIRE) programme.
- Under the programme, collaboration is on areas such as smart meters, electricity distribution reforms, industrial energy efficiency and electric mobility.
- The programme mainly focuses on following themes:
 - Theme 1: Electricity distribution sector.
 - Theme 2: Energy Efficiency.
- It includes two sub-themes:
 - a) Industrial Energy Efficiency
 - b) Electric mobility charging infrastructure.
- The phase-2 will aim to provide technical support for ensuring round-the-clock power supply, expanding renewable energy initiatives, and accelerating industrial energy efficiency and decarbonisation, in collaboration with the Ministry of Power and Ministry of New and Renewable Energy (MNRE).
- This was announced during the Fourth India-UK Energy Dialogue held in New Delhi on February 10.
- The dialogue focused on reviewing progress made in the energy sectors of both nations, including power and renewable energy, and reaffirming the commitment to a sustainable, resilient, and inclusive energy future.
- Both sides underscored the importance of ensuring that the energy transition and economic growth proceed together, while maintaining affordable and clean energy access for all.
- During the meeting, establishment of a UK-India Offshore Wind Taskforce was also announced. It will focus on advancing offshore wind ecosystem development, supply chains, and financing models in both countries.
- Both sides also agreed to further strengthen their collaboration through the Comprehensive Strategic Partnership and are looking forward to the fifth UK-India Energy Dialogue in 2026.

What is happening in the DRC? | Explained

- The crisis in the Democratic Republic of Congo (DRC) is back in the spotlight after the M23 militia, backed by eastern neighbour Rwanda, captured the mineral-rich city of Goma, which lies on the border between the two countries.
- UN estimates suggest that the fighting, which began in January, has taken the lives of more than 2,900 people, displaced close to 7,00,000 and injured many more.
- Since then, clashes have spread to the south of the border with the rebels eyeing Bukavu, the capital of the South Kivu province — another resource-rich region that is situated in the east of the DRC.

What is the history of the region?

- While the root cause of the crisis is generally attributed to the 1994 Rwandan genocide, the region has been beset with conflict between the Hutus and Tutsis since colonial times; so much so that some 1,50,000 Tutsis had migrated to neighbouring countries even before Rwanda's independence from Belgium in 1962.
- Imperialist powers such as Germany and Belgium ruled over Rwanda through a Tutsi monarchy in which local administrative roles were occupied by members of the Tutsis, who were a minority there, ensuring better prospects for the group.
- This did not sit well with the Hutus who eventually called for a 'revolution' in 1959, costing the lives of some 20,000 Tutsis. Consequently, King Kigeli V fled, and a Hutu regime came to power. Further solidifying the group's grip on power were the elections of 1960 conducted by Belgian officials, in which Hutus emerged victorious in local communes. Two years later, the country proclaimed independence and got its first President in Grégoire Kayibanda.

What is the Rwandan genocide?

- With Hutus at the helm, there was systematic repression of the Tutsis. This led to the formation of the Tutsi rebel group, the Rwandan Patriotic Front (RPF), which launched a civil war in 1990.
- The war reached its inflection point in April 1994, when an aircraft carrying Rwandan President Juvenal Habyarimana and his Burundi counterpart Cyprien Ntaryinira — two Hutus — was shot down.
- Blaming the RPF for the attack, the Rwandan military and the Hutu Interahamwe militia went on a rampage, murdering almost 8,000 people per day. By the time the campaign ended 100 days later, some 8,00,000 Tutsis and a moderate number of Hutus had been killed. The genocide ended only after an RPF reprisal emerged victorious in July 1994. Paul Kagame, one of the leaders of the uprising, was elected President of Rwanda in 2000 and has occupied the post ever since.

What was the aftermath of the genocide?

- As a result of the killings, some two million Hutus, including the perpetrators, crossed into the eastern region of the DRC, then called Zaire. Today, the region comprises more than 120 armed

groups such as the Democratic Forces for the Liberation of Rwanda (FDLR), claiming to fight for the Hutus, and the M23, which claims to represent the interests of the Tutsis.

- After the genocide, Rwandan troops invaded Congo, first in 1996 and then in 1998 — dubbed Africa's World Wars. The war of 1996, called the First Congo War, resulted in the country being renamed the Democratic Republic of Congo and witnessed the overthrow of longtime ruler Mobutu Sese Seko.
- The next battle, known as the Second Congo War, came about as President Laurent-Désiré Kabila turned against allies Rwanda and Uganda. The fighting eventually ballooned into one of the biggest battles on the continent after nine countries and 25 armed groups joined in. It ended only in 2003 after having killed five million from battle, disease and starvation.
- From then on, the DRC has been marked by disarray while Rwanda, under Mr. Kagame, has been identified as a force of stability in Africa. With ample help from Western nations, the President lifted the country out of poverty. Yet, Mr. Kagame's government has been accused of helping the M23 rebels.

Who are the M23 rebels?

- Formed in 2012, the M23 stands for Mouvement du 23 Mars — an abortive agreement signed on March 23, 2009, between the DRC government and the Tutsi-led National Congress for the Defence of the People (CNDP).
- According to the pact, the CNDP, which fought the government forces between 2006 and 2009, was to take the form of a political party and its fighters were to be absorbed into the DRC Army.
- These soldiers broke off from the Congolese Army and came together to form the M23. It is led by Sultani Makenga and is based in the North Kivu province. Claiming to protect Tutsis, the group managed to capture Goma for the first time in 2012.
- Following a series of setbacks at the hands of the Congolese Army and UN forces, the group retreated after it was assured the protection of the Tutsis. A decade later, it resurfaced in 2022 citing failure to meet the promises. The group stands accused of war crimes by the UN.

Is the conflict only about ethnic tensions?

- Ethnic strife forms only one part of the story. The mineral-rich regions in the DRC's east, coveted by nations and armed groups alike, form the other part. The DRC is home to Coltan, the ore from which Tantalum is produced.
- This blue-grey metal is used in smartphones and other electronic devices for it can hold a high charge over a range of temperatures, making it conducive for the manufacturing of capacitors that store energy.
- While Coltan is also mined in Brazil, Nigeria, and Rwanda, almost 40% of the global supply comes from the DRC.

- And the capture of Goma, a key trading and transport hub, will help M23 to a great degree.

How have regional players responded to the crisis?

- DRC President Felix Tshisekedi called the capture of Goma “an act of war”. The winner of the 2023 election, which has been decried by activists, the loss of Goma leaves him on shaky ground.
- Mr. Kagame, while never admitting to complicity in the M23’s actions, has issued remarks time and again, that hint at the M23’s legitimacy. The Rwandan leader wants the militant group to be made part of discussions.
- The Tutsi-led country’s actions are in the interest of the group living across the border and to prevent the spillover of a civil war, he says.
- Neighbouring Burundi, a Hutu-majority country that shares hostile relations with Rwanda, has warned the Kagame administration about the M23’s advance further south. “If Rwanda continues to make conquests,” he wrote, “I know that war will even arrive in Burundi... One day he [Kagame] wants to come to Burundi — we’re not going to accept that. The war will spread,” President Evariste Ndayishimiye said.
- Uganda is toeing a middle line by helping the Congolese troops hunt down militants with Ugandan origins tied to the Islamic State. It also allows the M23 to use its territory as a base, reports the UN.

India-US trust initiative to boost national critical minerals mission

- The India-US TRUST (Transforming Relationship Utilizing Strategic Technology) initiative will help in giving a push to the government's National Critical Mineral Mission, which encourages public and private sector companies to acquire critical mineral assets abroad.
- The National Critical Mineral Mission (NCMM), approved by the government for a period of seven years till 2030-31, at an outlay of Rs 34,300 crore, proposes development of stockpiles of critical minerals within the country.
- Prime Minister Narendra Modi and US President Donald Trump have agreed on the TRUST initiative, to emphasis on creating strong supply chains of critical minerals, advanced materials and pharmaceuticals.
- As per a joint statement issued after the Trump-Modi meeting in Washington, both the countries have decided to launch a recovery and processing initiative for strategic minerals like lithium and rare earth.
- The National Critical Mineral Mission (NCMM) aims to build a resilient value chain encompassing mineral exploration, mining, beneficiation, processing and recovery from end-of-life products.
- NCMM also seeks to encourage Indian public sector undertakings and private companies to acquire critical mineral assets abroad and enhance trade with resource-rich countries. TRUST will greatly

help to achieve the objectives of NCMM," said R K Sharma, Special Advisor at Federation of Indian Mineral Industries (FIMI).

- The two sides will also work together on economic corridors and connectivity infrastructure Under the IMEC (India-Middle East-Europe Economic Corridor) and I2U2 frameworks.
- The US-India TRUST initiative will catalyze government-to-government, academia and private sector collaboration to promote application of critical and emerging technologies in areas like defense, artificial intelligence, semiconductors, quantum, biotechnology, energy and space.
- India-US TRUST (Transforming Relationship Utilizing Strategic Technology) will pave the way for economic and technological cooperation between the two countries, while focus on the IMEC framework will deepen collaboration in infrastructure and economic corridors, according to industry experts.
- As a central pillar of the TRUST initiative, the leaders committed to work with US and Indian private industry to put forward a 'US-India Roadmap on Accelerating AI Infrastructure' by the end of the year.
- It will identify constraints to financing, building, powering, and connect large-scale US-origin AI infrastructure in India with milestones and future actions.
- The US and India will work together to enable industry partnerships and investments in next generation data centers, cooperation on development and access to compute and processors for AI, for innovations in AI models and building AI applications for solving societal challenges while addressing the protections and controls necessary to protect these technologies and reduce regulatory barriers.
- Part of the TRUST initiative, the leaders also committed to build trusted and resilient supply chains, including for semiconductors, critical minerals, advanced materials and pharmaceuticals.
- Both countries plan to encourage public and private investments to expand Indian manufacturing capacity, including in the US, for active pharmaceutical ingredients for critical medicines.
- These investments will create good jobs, diversify vital supply chains, and reduce the risk of life-saving drug shortages in both India and the US.

New 10-year agreement seeks to deepen India-US defence strategic ties

- India and the United States have agreed to deepen strategic ties with a new 10-year agreement on defence cooperation, which will be signed later this year.
- The joint statement, released by the Ministry of External Affairs, does not mention F-35, although it says the US is announcing a review of its policy on releasing fifth-generation fighters and undersea systems to India.

- Lockheed Martin, the US company that makes F-35, unveiled the supersonic single-engine plane in India at Aero India 2023. India has started its own programme to make stealth fighters, with mass production planned for 2035-36.
- India needs fifth-generation aircraft, but developing them at home would be the ideal solution," the former vice chief of air staff at the Indian Air Force, said.
- One F-35 could cost \$80 million.
- Other than the ongoing sales of American-made fighters and attack helicopters, the US will sell anti-tank guided missiles (Javelin) and infantry combat vehicles (Stryker) to India this year. The US is also expected to complete the sale of six more P-8I maritime patrol aircraft. India has spent more than \$20 billion in defence procurement from the US since 2008.
- The **US recognises India as a "major defence partner", which means while India is technically not an "ally" (unlike, say, NATO)**, given India's strategic autonomy, the US can consider transferring some technology, for instance.
- The joint statement says the US and India will review the respective arms-transfer regulations in order to streamline defence trade, technology exchange and maintenance, spare supplies and in-country repair, and overhaul of US-provided defence systems.
- The leaders welcomed the significant integration of U.S.-origin defense items into India's inventory to date, including C-130J Super Hercules, C-17 Globemaster III, P-8I Poseidon aircraft; CH-47F Chinooks, MH-60R Seahawks, and AH-64E Apaches; Harpoon anti-ship missiles; M777 howitzers; and MQ-9Bs.
- The leaders determined that the U.S. would expand defense sales and co-production with India to strengthen interoperability and defense industrial cooperation.
- They announced plans to pursue this year new procurements and co-production arrangements for "Javelin" Anti-Tank Guided Missiles and "Stryker" Infantry Combat Vehicles in India to rapidly meet India's defense requirements. They also expect completion of procurement for six additional P-8I Maritime Patrol aircraft to enhance India's maritime surveillance reach in the Indian Ocean Region following agreement on sale terms.
- Recognizing that India is **a Major Defense Partner with Strategic Trade Authorization-1 (STA-1)** authorization and a key Quad partner, the U.S. and India will review their respective arms transfer regulations, including International Traffic in Arms Regulations (ITAR), in order to streamline defense trade, technology exchange and maintenance, spare supplies and in-country repair and overhaul of U.S.-provided defense systems.
- The leaders also called for opening negotiations this year for a Reciprocal Defense Procurement (RDP) agreement to better align their procurement systems and enable the reciprocal supply of defense goods and services.

- The leaders pledged to accelerate defense technology cooperation across space, air defense, missile, maritime and undersea technologies, with the U.S. announcing a review of its policy on releasing fifth generation fighters and undersea systems to India
- Building on the U.S.-India Roadmap for Defense Industrial Cooperation and recognizing the rising importance of autonomous systems, the leaders announced a new initiative - the Autonomous Systems Industry Alliance (ASIA) - to scale industry partnerships and production in the Indo-Pacific.
- The leaders welcomed a new partnership between Anduril Industries and Mahindra Group on advanced autonomous technologies to co-develop and co-produce state-of-the-art maritime systems and advanced AI-enabled counter Unmanned Aerial System (UAS) to strengthen regional security, and between L3 Harris and Bharat Electronics for co-development of active towed array systems.
- The leaders also pledged to elevate military cooperation across all domains – air, land, sea, space, and cyberspace – through enhanced training, exercises, and operations, incorporating the latest technologies.
- The leaders welcomed the forthcoming "Tiger Triumph" tri-service exercise (first inaugurated in 2019) with larger scale and complexity to be hosted in India.
- Finally, the leaders committed to break new ground to support and sustain the overseas deployments of the U.S. and Indian militaries in the Indo-Pacific, including enhanced logistics and intelligence sharing, as well as arrangements to improve force mobility for joint humanitarian and disaster relief operations along with other exchanges and security cooperation engagements.

AI, nuclear energy, and startups: Key outcomes of PM Modi's 3-day France visit

- Prime Minister **Narendra Modi's three-day visit to France** has resulted in several important agreements and declarations aimed at strengthening bilateral cooperation between the two nations in the coming years.
- The Prime Minister's visit highlighted the strengthening Indo-French partnership across key areas, including technology, nuclear energy, sustainability, and cultural ties.
- At the invitation of French President Emmanuel Macron, Prime Minister Narendra Modi paid a visit to France from February 10 to 12.
- This was Prime Minister Modi's sixth visit to France, and follows President Macron's visit to India in January 2024 as the Chief Guest for the 75th Republic Day of India.
- The leaders held bilateral discussions on the entire gamut of the exceptionally strong and multifaceted bilateral cooperation and on global and regional matters.

- This was followed by delegation level talks after arrival in Marseille. The leaders reaffirmed their strong commitment to the India-France Strategic Partnership, which has steadily evolved into a multifaceted relationship over the past 25 years.

Highlights of the discussions:

KEY OUTCOMES OF PM'S FRANCE VISIT

- **India-France declaration on Artificial Intelligence (AI):** Both nations committed to enhancing collaboration in AI research and applications, emphasising ethical and responsible AI development.
- **Launch of India-France Year of Innovation 2026 logo:** The two countries unveiled the official logo for the upcoming initiative, signifying their commitment to fostering innovation and scientific collaboration.
- **Indo-French Center for Digital Sciences:** A Letter of Intent was signed between India's Department of Science and Technology (DST) and France's Institut National de Recherche en Informatique et en Automatique (INRIA) to establish a dedicated center for digital sciences, furthering research and development.
- **Support for Indian startups:** In a bid to boost entrepreneurship, an agreement was signed to host 10 Indian startups at the renowned French startup incubator, Station.
- **Partnership on advanced modular and small modular reactors:** A Declaration of Intent was signed to enhance collaboration on next-generation nuclear reactor technologies.
- **Renewal of MoU on nuclear energy cooperation** – The agreement between India's Department of Atomic Energy (DAE) and France's Commissariat à l'Energie Atomique et aux Energies Alternatives (CEA) was renewed, strengthening the nuclear energy partnership.
- **Cooperation between nuclear research institutions:** A new implementing agreement was signed between DAE and CEA to foster collaboration between India's Global Center for Nuclear Energy Partnership (GCNEP) and France's Institute for Nuclear Science and Technology (INSTN).
- **Triangular development cooperation:** India and France issued a joint declaration of intent to collaborate on development projects in the Indo-Pacific region, focusing on sustainability and economic growth.
- **India's consulate in Marseille:** PM Modi and French officials jointly inaugurated India's new consulate in Marseille, further strengthening people-to-people ties and diplomatic presence.
- **Environmental partnership:** A Declaration of Intent was signed between India's Ministry of Environment, Forest and Climate Change and France's Ministry for the Ecological Transition to enhance cooperation in biodiversity conservation, climate action, and sustainable development.
- **Strengthening the India-France Strategic Partnership:** Both leaders reaffirmed their shared vision for bilateral cooperation and international partnership, outlined in the Joint Statement.

issued following President Macron's State Visit to India in January 2024 and in the Horizon 2047 Roadmap published during the visit of PM Modi to France in July 2023 as the Chief Guest of the Bastille Day Celebrations on the occasion of the 25th anniversary of the Strategic Partnership. They commended the progress achieved in their bilateral cooperation and committed to accelerating it further across its three pillars.

- **Technology and Innovation:** In light of the recent AI Action Summit and the upcoming India-France Year of Innovation 2026, discussions focused on expanding cooperation in digital sciences, artificial intelligence, and startup incubation.
- **Trade and Investment:** The leaders welcomed the 14th India-France CEOs Forum report and emphasized strengthening economic ties.
- **Indo-Pacific Engagement:** They reiterated their commitment to regional security, sustainability, and global cooperation. They lauded the launching of the India-France Indo-Pacific Triangular Development Cooperation, aiming to support climate- and SDG-focused projects from third countries in the Indo-Pacific region.

MoUs/Agreements/Amendments:

- 1) Declaration on AI – Strengthening collaboration in Artificial Intelligence (AI).
- 2) Launch of India-France Year of Innovation 2026 Logo – Showcasing future cooperation in technology.
- 3) Indo-French Center for Digital Sciences – Agreement between DST (India) and INRIA (France) to boost research.
- 4) Startup Incubation – Hosting 10 Indian startups at Station F, France's leading startup hub.
- 5) Advanced Modular & Small Modular Reactors – Strengthening cooperation in nuclear technology.
- 6) Renewed MoU on Civil Nuclear Cooperation – Between India's DAE and France's CAE.
- 7) Global Nuclear Energy Partnership – New agreement between India's GCNEP and France's INSTN.
- 8) Triangular Development Cooperation – Strengthening Indo-Pacific partnerships.
- 9) Inauguration of India's Consulate in Marseille – Expanding diplomatic and cultural ties.
- 10) Environmental Cooperation – Agreement between India's Ministry of Environment and France's Ministry for Ecological Transition.

India showcases food industry strength at Gulfood 2025

- Gulfood 2025, one of the world's largest food and beverage trade exhibitions, has commenced at the Dubai World Trade Centre, featuring over 5,500 exhibitors from 129 countries.
- Spanning 24 halls and 1.3 million square feet, the event highlights more than one million products, reinforcing Dubai's role as a global food trade hub.

- India has a significant presence at the event, with 370 companies participating, including 122 under six key industry associations and 248 independent exhibitors. Leading organizations such as the Agricultural and Processed Food Products Export Development Authority (APEDA), Marine Products Export Development Authority (MPEDA), the Cashew Export Promotion Council of India, Assocham, the Federation of Indian Export Organisations (FIEO), and the Indian Oilseeds & Produce Export Promotion Council (IOPEPC) are spearheading India's representation.
- "Under the visionary leadership of Hon'ble Prime Minister Narendra Modi, India is fostering global collaborations in the food processing sector, encouraging investments, and integrating digital technologies to develop a future-ready food ecosystem," he stated during his keynote address at the Leadership Summit in Dubai.
"India's presence at Gulfood 2025 is a testament to our commitment to becoming a global leader in food processing and agri-exports. This event will showcase India's strengths in food processing and value addition while fostering new collaborations and innovative food solutions.
Our participation will help expand India's footprint in new markets and establish sustainable supply chains that benefit both producers and consumers worldwide."
- Highlighting India's growing role in the global food industry, Consul General Satish Kumar Sivan remarked, "India's strengthened trade ties are reflected in its expanding role in global food supply chains. The country's leadership in pulses, cereals, and grains is a testament to its ability to meet rising global demand for sustainable and nutritious food."
- This year, India's participation at Gulfood 2025 emphasizes sustainability, technology-driven supply chains, and product diversification. With the Gulf region being a key market, the Indian Consulate in Dubai has actively supported Indian businesses by facilitating B2B meetings, networking events, and trade delegations.
- **The Indian Mission, in collaboration with NAFED, APEDA, and FIEO, provides exhibitors with branding** support, market insights, regulatory guidance, and access to buyers and distributors. Additionally, interactive knowledge sessions with business delegations, including the Mahratta Chamber of Commerce and IGTD Exim Chamber of Commerce, aim to enhance market understanding for Indian producers.
- The demand for specific Indian products in the Gulf region continues to grow, driven by the large Indian diaspora and strong bilateral trade relations.
- Spices, rice, ready-to-eat meals, and Ayurvedic products remain highly sought after, alongside textiles, jewelry, and emerging sectors like electronics and IT.
- **The India-UAE Comprehensive Economic Partnership Agreement (CEPA) has further boosted trade flows, with** e-commerce platforms such as Amazon UAE and Noon expanding market access for Indian brands.

- In 2023, India exported \$1.61 billion worth of processed food and agricultural products to the UAE, underscoring the strong trade relationship between the two nations.
- With India's dynamic presence at Gulfood 2025, the country is poised to further strengthen its footprint in the global food industry.

India, Japan joint military exercise to begin at Mount Fuji from Feb 25

- The sixth **edition of Joint Military Exercise Dharma Guardian**, between India and Japan, is scheduled at Mount Fuji, Japan from February 25 to March 9, the Indian Army said on Sunday.
- The exercise aims to enhance interoperability between the two forces while undertaking joint urban warfare and counter-terrorism operations under UN mandate, said the Additional Directorate General of Public Information, IHQ of MoD (Army) in a social media post.
- "Building on the momentum of the Chief of the Army Staff's (COAS) successful visit to Japan from October 14 to 17, 2024, Exercise Dharma Guardian 2025 will further strengthen the bilateral defence cooperation between India and Japan," it said.
- Earlier on February 11, special forces of India and Egypt commenced the 'Cyclone III' exercise at Mahajan Field Firing Ranges in Rajasthan. An official said that the exercise would conclude on February 23.
- "**Exercise 'Cyclone' is an annual** event conducted alternatively in India and Egypt. The last edition of the same exercise was conducted in Egypt in January 2024," said the official.
- The Indian contingent comprising 25 personnel is represented by troops from two Special Forces Battalions. Egypt contingent also comprising 25 personnel will be represented by the Special Forces Group and Task Force of Egyptian Special Forces.
- The official said that the exercise aims to promote the military-to-military relationship between the two countries through the enhancement of interoperability, jointness and mutual exchange of special operations tactics.
- "The exercise will focus on a high degree of physical fitness, joint planning and joint tactical drills.
- Drills to be rehearsed during the exercise include advanced special forces skills and various other tactics, techniques and procedures as per the current operational paradigm," he said.
- The official said the exercise will culminate with a 48-hour-long validation to rehearse the tactical drills for counterterrorism operations in desert and semi-desert terrain.
- "The exercise will also include a display of indigenous military equipment and an overview of the defence manufacturing industry for the Egyptian side," the official added.
- He said that the exercise will enable the two sides to share their best practices in tactics, techniques and procedures of conducting tactical operations.

Is BRICS Dead? Here's why it's far from over

- Despite growing tension and recent provocations from the U.S., the BRICS grouping — Brazil, Russia, India, China, and South Africa is far from 'dead.' While US President Donald Trump has repeatedly threatened tariffs and criticized the group's potential push for a common currency, experts argue that these concerns do not signal the collapse of the multilateral alliance.

Trump's Rhetoric and BRICS Future

- Trump has been vocal about the growing efforts of BRICS nations to challenge the global dominance of the U.S. Dollar. The possibility of BRICS adopting a common currency, often referred to as part of a 'dedollarization' agenda, has raised alarms in Washington.
- Trump has gone so far as to threaten a 100 percent tariff on BRICS member nations should they move forward with this plan, accusing the group of attempting to undermine the US Dollar's supremacy in global trade.

BRICS Currency: A Non-Starter?

- While a common BRICS currency has been a point of debate within the group, it's not an issue that has widespread support among its members. As reportedly previously by FinancialExpress.com, India, for instance, has constantly expressed unwillingness toward the idea of a BRICS currency, fearing potential disruptions to its own economic interests.
- Moreover, countries within the bloc already engage in a significant amount of trade using the Chinese Yuan, especially China's bilateral relations with BRICS members. However, this doesn't indicate that BRICS is on the brink of collapse. "Even without a common currency, BRICS continues to serve its purpose as a platform for economic cooperation among developing nations," Dr Pandey noted.
- BRICS, much like its early years, continues to be a forum for member countries to discuss and advocate for their collective interests, even if the currency discussion falters. The New Development Bank (NDB), established by BRICS to fund infrastructure projects in emerging markets, remains a significant part of the group's ongoing work

Why BRICS Still Matters to India

- For India, BRICS is not just about economic cooperation but also part of its broader strategy to assert its influence in a rapidly changing world order. While some Western analysts perceive BRICS as an anti-Western coalition, it's important to note that the group is fundamentally non-Western, not necessarily hostile to the West.
- "BRICS is about securing the economic interests of non-Western countries. It offers India access to strategic markets, including Central Asia, the Middle East, and Africa," said an expert on Indian foreign policy. As India positions itself as a leader of the Global South, BRICS serves as a valuable

platform to challenge the dominance of Western powers and institutions that have historically shaped global economic and political systems.

- Moreover, the growing presence of nations like Egypt, Iran, and the UAE in BRICS underscores the group's role as a significant player in global trade and diplomacy. India sees BRICS as a valuable economic gateway, offering access to diverse markets and opportunities.
- The expansion of BRICS to include new members, like Saudi Arabia, which is still in the process of joining, further enhances the grouping's relevance.

Is BRICS Really on the Verge of Collapse?

- While a shared currency may not materialize anytime soon, BRICS remains a vital platform for promoting the interests of its member states, including India.
- The key takeaway is that BRICS is not about to collapse just because of failed currency discussions or external pressures. In fact, it serves as an essential pillar of India's broader multilateral strategy. As the US focuses on bilateral agreements and moves away from multilateral frameworks, BRICS and other international coalitions become increasingly important for India to secure its economic and strategic interests.

Heartfulness Lord Buddha Trination Tri-Services Motorcycle Expedition to Cover Key Buddhist Sites Across Nepal, India, and Sri Lanka

- The Heartfulness Lord Buddha Trination Tri-Services Motorcycle Expedition is a historic and unique initiative uniting Nepal, India, and Sri Lanka in a journey through their shared Buddhist heritage.
- Under the leadership of Convener Shri Rahul Laxman Patil, the expedition is organized in association with the International Buddhist Confederation (IBC) along with other partners.
- **The journey will commence on 16th February 2025 from Lumbini, Nepal, the birthplace of Lord Buddha**, symbolizing the historical spread of Buddhism and reinforcing the deep-rooted cultural and spiritual connections among these countries.
- The expedition will cover significant Buddhist heritage sites across Nepal, India, and Sri Lanka.
- The Indian chapter of the expedition is being organized with the support of the Land Port Authority of India (under the Ministry of Home Affairs) and Nalanda University, Rajgir (under the Ministry of External Affairs), with BIMSTEC as the strategic partner and IBC as the guiding institution.

The route will include key Buddhist landmarks such as:

- **Sarnath, Uttar Pradesh – The site of Buddha's first sermon**
- Bodhgaya, Bihar – The place of Buddha's enlightenment
- Nalanda, Bihar – The renowned ancient Buddhist university
- Nagarjuna Sagar, Andhra Pradesh – An important Buddhist learning center
- Udayagiri, Odisha – A significant Buddhist monastic site

- Karnataka – Various Buddhist sites reflecting India's rich Buddhist legacy
- The official flag-off will take place at Bodhgaya on 19th February 2025, led by Shri Ram Nath Kovind, Former President of India, at this iconic Buddhist pilgrimage site. The expedition will then proceed to Sri Lanka, where it will receive a ceremonial welcome in Jaffna, marking the culmination of this historic journey.
- The Sri Lankan leg of the event will highlight the enduring Buddhist ties between the three nations and further promote cultural diplomacy.
- The Heartfulness Lord Buddha Trination Tri-Services Motorcycle Expedition aims to:
 - Promote peace and harmony through the teachings of Buddha
 - Enhance cultural and heritage tourism across South Asia
 - Raise awareness on environmental conservation and sustainable development
 - Strengthen people-to-people and defence ties between India, Nepal, and Sri Lanka
- This initiative is a testament to the unifying power of Buddhism, fostering goodwill and cooperation between the three nations while celebrating their common spiritual and historical heritage.

Highlights of India - US Joint statement

- India - U.S. Joint Statement during the visit of Prime Minister of India to US
- The President of the United States of America, The Honorable Donald J. Trump hosted the Prime Minister of India, Shri Narendra Modi for an Official Working Visit in Washington, DC on February 13, 2025.
- As the leaders of sovereign and vibrant democracies that value freedom, the rule of law, human rights, and pluralism, President Trump and Prime Minister Modi reaffirmed the strength of the India-U.S. Comprehensive Global Strategic Partnership, anchored in mutual trust, shared interests, goodwill and robust engagement of their citizens.
- President Trump and Prime Minister Modi launched a new initiative – **the "U.S.-India COMPACT (Catalyzing Opportunities for Military Partnership, Accelerated Commerce & Technology) for the 21st Century"** – to drive transformative change across key pillars of cooperation. Under this initiative, they committed to a results-driven agenda with initial outcomes this year to demonstrate the level of trust for a mutually beneficial partnership

Defense

- Highlighting the deepening convergence of U.S.-India strategic interests, the leaders reaffirmed their unwavering commitment to a dynamic defense partnership spanning multiple domains.
- To advance defense ties further, the leaders announced plans to sign this year a new ten-year Framework for the U.S.-India Major Defense Partnership in the 21st Century.

- The leaders welcomed the significant integration of U.S.-origin defense items into India's inventory to date, including C-130J Super Hercules, C-17 Globemaster III, P-8I Poseidon aircraft; CH-47F Chinooks, MH-60R Seahawks, and AH-64E Apaches; Harpoon anti-ship missiles; M777 howitzers; and MQ-9Bs. The leaders determined that the U.S. would expand defense sales and co-production with India to strengthen interoperability and defense industrial cooperation.
- They announced plans to pursue this year new procurements and co-production arrangements for "Javelin" Anti-Tank Guided Missiles and "Stryker" Infantry Combat Vehicles in India to rapidly meet India's defense requirements. They also expect completion of procurement for six additional P-8I Maritime Patrol aircraft to enhance India's maritime surveillance reach in the Indian Ocean Region following agreement on sale terms.
- **Recognizing that India is a Major Defense Partner with Strategic Trade Authorization-1 (STA-1)** authorization and a key Quad partner, the U.S. and India will review their respective arms transfer regulations, including International Traffic in Arms Regulations (ITAR), in order to streamline defense trade, technology exchange and maintenance, spare supplies and in-country repair and overhaul of U.S.-provided defense systems.
- The leaders also called for opening negotiations this year for a Reciprocal Defense Procurement (RDP) agreement to better align their procurement systems and enable the reciprocal supply of defense goods and services.
- The leaders pledged to accelerate defense technology cooperation across space, air defense, missile, maritime and undersea technologies, with the U.S. announcing a review of its policy on releasing fifth generation fighters and undersea systems to India.
- Building on the U.S.-India Roadmap for Defense Industrial Cooperation and recognizing the rising importance of autonomous systems, the leaders announced a new initiative - the **Autonomous Systems Industry Alliance (ASIA)** - to scale industry partnerships and production in the Indo-Pacific.
- The leaders welcomed a new partnership between Anduril Industries and Mahindra Group on advanced autonomous technologies to co-develop and co-produce state-of-the-art maritime systems and advanced AI-enabled counter Unmanned Aerial System (UAS) to strengthen regional security, and between L3 Harris and Bharat Electronics for co-development of active towed array systems.
- The leaders also pledged to elevate military cooperation across all domains – air, land, sea, space, and cyberspace – through enhanced training, exercises, and operations, incorporating the latest technologies.
- The leaders welcomed the forthcoming "Tiger Triumph" tri-service exercise (first inaugurated in 2019) with larger scale and complexity to be hosted in India.

- Finally, the leaders committed to break new ground to support and sustain the overseas deployments of the U.S. and Indian militaries in the Indo-Pacific, including enhanced logistics and intelligence sharing, as well as arrangements to improve force mobility for joint humanitarian and disaster relief operations along with other exchanges and security cooperation engagements.

Trade and Investment

- The leaders resolved to expand trade and investment to make their citizens more prosperous, nations stronger, economies more innovative and supply chains more resilient.
- They resolved to deepen the U.S.-India trade relationship to promote growth that ensures fairness, national security and job creation. To this end, the leaders set a bold new goal for bilateral trade – "Mission 500" – aiming to more than double total bilateral trade to \$500 billion by 2030.
- Recognizing that this level of ambition would require new, fair-trade terms, the leaders announced plans to negotiate the first tranche of a mutually beneficial, multi-sector Bilateral Trade Agreement (BTA) by fall of 2025.
- The leaders committed to designate senior representatives to advance these negotiations and to ensure that the trade relationship fully reflects the aspirations of the COMPACT To advance this innovative, wide-ranging BTA, the U.S. and India will take an integrated approach to strengthen and deepen bilateral trade across the goods and services sector, and will work towards increasing market access, reducing tariff and non-tariff barriers, and deepening supply chain integration.
- The leaders welcomed early steps to demonstrate mutual commitment to address bilateral trade barriers.
- The United States welcomed India's recent measures to lower tariffs on U.S. products of interest in the areas of bourbon, motorcycles, ICT products and metals, **as well as measures to enhance market access for U.S. agricultural products, like alfalfa hay and duck meat, and medical devices.**
- India also expressed appreciation for U.S. measures taken to enhance exports of Indian mangoes and pomegranates to the United States. Both sides also pledged to collaborate to enhance bilateral trade by increasing U.S. exports of industrial goods to India and Indian exports of labor-intensive manufactured products to the United States. The two sides will also work together to increase trade in agricultural goods.

Energy Security

- The leaders agreed that energy security is fundamental to economic growth, social well-being and technical innovation in both countries. They underscored the importance of U.S.-India collaboration to ensure energy affordability, reliability, and availability and stable energy markets.

- Realizing the consequential role of the U.S. and India, as leading producers and consumers, in driving the global energy landscape, the leaders re-committed to the U.S.-India Energy Security Partnership, including in oil, gas, and civil nuclear energy.
- The leaders underscored the importance of enhancing the production of hydrocarbons to ensure better global energy prices and secure affordable and reliable energy access for their citizens.
- The leaders also underscored the value of strategic petroleum reserves to preserve economic stability during crises and resolved to work with key partners to expand strategic oil reserve arrangements. In this context, the U.S. side affirmed its firm support for India to join **the International Energy Agency as a full member**.
- The leaders announced their commitment to fully realize the U.S.-India 123 Civil Nuclear Agreement by moving forward with plans to work together to build U.S.-designed nuclear reactors in India through large scale localization and possible technology transfer.
- Both sides **welcomed the recent Budget announcement by Government of India to take up amendments to the Atomic Energy Act and the Civil Liability for Nuclear Damage Act (CLNDA)** for nuclear reactors, and further decided to establish bilateral arrangements in accordance with CLNDA, that would address the issue of civil liability and facilitate the collaboration of Indian and U.S. industry in the production and deployment of nuclear reactors.
- This path forward will unlock plans to build large U.S.-designed reactors and enable collaboration to develop, deploy and scale up nuclear power generation with advanced small modular reactors.

Technology and Innovation

- The leaders announced the **launch of the U.S.-India TRUST ("Transforming the Relationship Utilizing Strategic Technology") initiative**, which will catalyze government-to-government, academia and private sector collaboration to promote application of critical and emerging technologies in areas like defense, artificial intelligence, semiconductors, quantum, biotechnology, energy and space, while encouraging the use of verified technology vendors and ensuring sensitive technologies are protected.
- As a central pillar of the **"TRUST" initiative, the leaders committed to work with U.S. and Indian private industry to put forward a U.S.-India Roadmap** on Accelerating AI Infrastructure by the end of the year, identifying constraints to financing, building, powering, and connecting large-scale U.S.-origin AI infrastructure in India with milestones and future actions.
- The U.S. and India will work together to enable industry partnerships and investments in next generation data centers, cooperation on development and access to compute and processors for AI, for innovations in AI models and building AI applications for solving societal challenges while addressing the protections and controls necessary to protect these technologies and reduce regulatory barriers.

- The leaders announced the launch of INDUS Innovation, a new innovation bridge modeled after the successful INDUS-X platform, that will advance U.S.-India industry and academic partnerships and foster investments in space, energy, and other emerging technologies to maintain U.S. and India leadership in innovation and to meet the needs of the 21st century. The leaders also reinforced their commitment to **the INDUS-X initiative, which facilitates partnerships between U.S. and Indian defense companies, investors and universities to produce critical capability for our militaries, and welcomed the next summit in 2025.**
- The leaders also committed, **as part of the TRUST initiative, to build trusted and resilient supply chains, including for** semiconductors, critical minerals, advanced materials and pharmaceuticals.
- These investments will create good jobs, diversify vital supply chains, and reduce the risk of life-saving drug shortages in both the United States and India.
- Recognizing the strategic importance of critical minerals for emerging technologies and advanced manufacturing, India and the United States will accelerate collaboration in research and development and promote investment across the entire critical mineral value chain, as well as **through the Mineral Security Partnership, of which both the United States and India are members.**
- To this end, the leaders announced the launch of **the Strategic Mineral Recovery initiative, a new U.S.-India program to recover and process critical minerals (including lithium, cobalt, and rare earths) from heavy industries like aluminum, coal mining and oil and gas.**
- The leaders hailed 2025 as a pioneering year for U.S.-India civil space cooperation, with plans for a NASA-ISRO effort through AXIOM to bring the first Indian astronaut to the International Space Station (ISS), and early **launch of the joint "NISAR"** mission, the first of its kind to systematically map changes to the Earth's surface using dual radars.
- The leaders called for more collaboration in space exploration, including on long duration human spaceflight missions, spaceflight safety and sharing of expertise and professional exchanges in emerging areas, including planetary protection.
- The leaders underscored the value of deepening ties between the U.S. and Indian scientific research communities, announcing a new partnership between the U.S. National Science Foundation and the Indian Anusandhan National Research Foundation in researching critical and emerging technologies.
- This partnership builds on ongoing collaboration between the U.S. National Science Foundation and several Indian science agencies to enable joint research in the areas of semiconductors, connected vehicles, machine learning, next-generation telecommunications, intelligent transportation systems, and future biomanufacturing.

- The leaders also resolved to work together to counter the common challenge of unfair practices in export controls by third parties seeking to exploit overconcentration of critical supply chains.

Multilateral Cooperation

- The leaders reaffirmed that a close partnership between the U.S. and India is central to a free, open, peaceful and prosperous Indo-Pacific region.
- As Quad partners, the leaders reiterated that this partnership is underpinned by the recognition of ASEAN centrality; adherence to international law and good governance; support for safety and freedom of navigation, overflight and other lawful uses of the seas; and unimpeded lawful commerce; and advocacy for peaceful resolution of maritime disputes in accordance with international law.
- The leaders plan to convene partners from the India-Middle East-Europe Corridor and the I2U2 Group within the next six months in order to announce new initiatives in 2025.
- The US appreciates India's role as a developmental, humanitarian assistance and net security provider in the Indian Ocean Region. In this context, the leaders committed to deepen bilateral dialogue and cooperation across the vast Indian Ocean region and launched the Indian Ocean Strategic Venture, a new bilateral, whole-of-government forum to advance coordinated investments in economic connectivity and commerce.
- Supporting greater Indian Ocean connectivity, the leaders also welcomed Meta's announcement of a multi-billion, multi-year investment in an undersea cable project that will begin work this year and ultimately stretch over 50,000 km to connect five continents and strengthen global digital highways in the Indian Ocean region and beyond. India intends to invest in maintenance, repair and financing of undersea cables in the Indian Ocean, using trusted vendors.
- The leaders recognized the need to build new plurilateral anchor partnerships in the Western Indian Ocean, Middle East, and Indo-Pacific to grow relationships, commerce and cooperation across defense, technology, energy and critical minerals. The leaders expect to announce new partnership initiatives across these sub-regions by fall of 2025.
- The leaders also resolved to advance military cooperation in multinational settings to advance global peace and security. The leaders applauded India's decision to take on a future leadership role in the Combined Maritime Forces naval task force to help secure sea lanes in the Arabian Sea.

People to People Cooperation

- President Trump and Prime Minister Modi noted the importance of advancing the people-to-people ties between the two countries. In this context, they noted that the more than 300,000 strong Indian student community contributes over \$8 billion annually to the U.S. economy and helped create a number of direct and indirect jobs.

- They recognized that the talent flow and movement of students, researchers and employees, has mutually benefitted both countries. Recognizing the importance of international academic collaborations in fostering innovation, improving learning outcomes and development of a future-ready workforce, both leaders resolved to strengthen collaborations between the higher education institutions through efforts such as joint/dual degree and twinning programs, establishing joint Centers of Excellence, and setting up of offshore campuses of premier educational institutions of the U.S. in India.
- The leaders also committed to strengthen law enforcement cooperation to take decisive action against illegal immigration networks, organized crime syndicates, including narco-terrorists human and arms traffickers, as well as other elements who threaten public and diplomatic safety and security, and the sovereignty and territorial integrity of both nations.
- President Trump and Prime Minister Modi pledged to sustain high-level engagement between our governments, industries, and academic institutions and realize their ambitious vision for an enduring India-U.S. partnership that advances the aspirations of our people for a bright and prosperous future, serves the global good, and contributes to a free and open Indo-Pacific.

India , Srilanka look forward to Mineral Exploration and mining.

- Union Minister of State for Coal and Mines Shri Satish Chandra Dubey held a productive meeting today with Shri Sunil Handunnetti, Minister of Industry and Entrepreneurship Development, Government of Sri Lanka, at Shastri Bhawan, New Delhi.
- The discussions focused on fostering bilateral cooperation in mineral exploration and mining, **particularly in securing critical minerals essential for both nations' economic and industrial growth.**
- A key focus was placed on Sri Lanka's vast graphite and beach sand mineral resources, which hold immense potential in supporting the global shift towards clean energy, advanced battery technologies, and high-tech industries.
- Shri Dubey emphasized that India's National Critical Mineral Mission is aimed at securing a steady supply of **essential raw materials like lithium, graphite, nickel, cobalt, and copper** to meet the country's ambitious renewable energy target. He stated that India is actively working towards granting mining rights for critical minerals, forging international partnerships, and encouraging Indian companies to acquire mineral assets globally.
- Both sides engaged in in-depth discussions on exploration opportunities, technological collaboration, and investment prospects in these sectors. The possibility of **mineral exploration on a Government-to-Government (G2G) basis** was also discussed, with the Geological Survey of India (GSI) expressing its interest in conducting mineral assessments in Sri Lanka.

- Additionally, Sri Lanka requested India to encourage Indian companies to participate in the exploration and development of its beach sand and graphite resources.
- The finalization of the Memorandum of Understanding (MoU) on "Cooperation in the Field of Geology and Mineral Resources" between India's Ministry of Mines and Sri Lanka's Geological Survey & Mines Bureau was also discussed. Shri Dubey expressed confidence that this MoU, once concluded, will provide a strong framework for deepening collaboration in capacity building, mining exploration, and advanced mineral processing.
- He reiterated India's commitment to supporting Sri Lanka in skill development, knowledge exchange, and modernizing its mining industry through technological and financial assistance.
- "India and Sri Lanka share a long-standing partnership, and our cooperation in the mining sector will further strengthen our economic ties. By working together, we can harness the full potential of our mineral resources, ensuring mutual growth and sustainability."

India leading global growth, energy sector at the core: PM Modi

- India is actively negotiating a Free Trade Agreement (FTA) with the Gulf Cooperation Council (GCC) and exploring a similar pact with Qatar, aiming to deepen bilateral ties and boost cooperation in trade, energy, investment, and security.
- The development was announced during a special briefing on the state visit of the Amir of Qatar to India. Ministry of External Affairs (MEA) said, "India and the Gulf Cooperation Council (GCC) are currently negotiating a free trade agreement. As for Qatar, both sides are exploring the possibility of signing a similar agreement in the future, which was part of the discussions during this round of talks."
- India shares deep historical and economic ties with the Gulf region. Qatar, one of India's closest allies in the Gulf, plays a pivotal role in India's energy security, **accounting for 41% of the country's total natural gas imports**. The Gulf region is also home to millions of Indian expatriates whose remittances significantly contribute to India's economy.
- According to a Reserve Bank of India (RBI) report, remittances from the UAE alone amounted to USD 15.40 billion in the financial year 2020-21, representing 18% of India's total inward remittances.
- The GCC, comprising Saudi Arabia, the UAE, Qatar, Kuwait, Oman, and Bahrain, is India's largest trading partner bloc, with bilateral trade reaching over USD 154 billion in FY 2021-22.
- Negotiations for an India-GCC FTA, which began in 2004 with a Framework Agreement on Economic Cooperation, had stalled but have now resumed with renewed momentum.
- During the visit, India and Qatar signed an agreement to elevate their bilateral ties to a strategic partnership and exchanged multiple Memorandums of Understanding (MoUs) covering trade, energy, investment, innovation, technology, food security, culture, and people-to-people ties.

- The two leaders also reviewed the landmark agreement signed in February 2024 between Qatar Energy and Petronet LNG Limited, under which Qatar will supply 7.5 million metric tonnes per annum of liquefied natural gas (LNG) to India from 2028 for 20 years. "India and Qatar share a vibrant energy partnership, and both leaders discussed ways to broaden this partnership, including exploring mutual investments," Chatterjee said.
- Prime Minister Narendra Modi thanked the Amir of Qatar for his support to the large Indian community in Qatar, especially during the COVID-19 pandemic. "India and Qatar enjoy deep-rooted, friendly relations anchored in historic trade and people-to-people ties," .
- The Amir of Qatar, Sheikh Tamim Bin Hamad Al Thani, arrived in India on a two-day visit and received a ceremonial welcome with a Guard of Honour at Rashtrapati Bhavan.
- The Agreement on the Establishment of a Strategic Partnership between India and Qatar was exchanged in the presence of Prime Minister Modi and the Amir at Hyderabad House in the national capital.
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India and Indonesia deepen naval ties: INS Shardul sails to Bali for IFR 2025

- India's maritime relations with Asean nation Indonesia have been growing rapidly, with a series of high-level engagements and joint exercises. The Indian Navy is participating in the prestigious Indonesia International Fleet Review (IFR) 2025, taking place in Bali.
- The presence of the Indian Navy's warship INS Shardul and the Long-Range Maritime Patrol Aircraft P-8I at the event underscores the growing strategic partnership between the two nations.
- The International Fleet Review, scheduled from February 15 to February 22, 2025, is a major multinational naval event, where the Indonesian President will review naval forces from around the world. The participation of the Indian Navy at this event highlights India's deepening maritime ties with Indonesia, a key player in Southeast Asia.
- Alongside the IFR, both INS Shardul and the P-8I will join the Maritime Exercise Komodo, a multilateral naval exercise aimed at enhancing maritime cooperation and promoting regional security.

Bilateral Naval Cooperation

- This visit is not the first sign of India's robust naval engagements with Indonesia. The Indian Navy has increasingly prioritized strengthening ties with Southeast Asian nations, with Indonesia being a focal point in its strategy for regional maritime security.
- The **deployment of INS Shardul and the P-8I for the IFR 2025**, alongside participation in Exercise Komodo, is a clear display of India's commitment to ensuring maritime peace and security in the Indo-Pacific region.

- Earlier in January 2025, India's INS Mumbai and P-8I aircraft also participated in the LA PEROUSE exercises in Indonesia, further cementing this relationship. These activities align with India's broader vision under the Security and Growth for All in the Region (SAGAR) initiative, aimed at fostering stronger maritime cooperation across the Indo-Pacific.

Indonesia's Interest in BrahMos Missile

- One of the key drivers of the growing India-Indonesia defence ties is the potential **purchase of India's advanced BrahMos missile system**. During his visit to India, Indonesian Navy Chief Admiral Mohammad Ali visited BrahMos Aerospace in Delhi to explore further collaboration in defence and strategy.
- The **BrahMos missile, a supersonic cruise missile co-developed by India** and Russia, is considered one of the most advanced and lethal strike weapons in the world.
- The talks according to sources in an advanced stage for the expected deal which is approximately worth \$ 450 million.
- This development is significant, especially given Indonesia's rising tensions with China over territorial disputes in the South China Sea.
- Like the Philippines, which bought three BrahMos batteries in 2024, Indonesia's decision to procure this advanced missile is a strategic move to boost its defence capabilities.
- The Indonesian President Prabowo Subianto, had also closely observed the BrahMos missile during the Republic Day celebrations in India, reinforcing the strengthening defence ties between the two nations.
- As both nations work towards strengthening their defence partnerships, the Indian Navy's ongoing presence in Indonesia and the potential defence deals set the stage for a promising future in bilateral maritime cooperation.
- Indian Navy's INS Shardul and Long Range Maritime Surveillance P8I aircraft are participating in the International Fleet Review (IFR) 2025 in Bali, Indonesia.
- It began on February 15 and will conclude on February 22.
- The IFR, a prestigious multinational naval event, will be reviewed by the President of Indonesia and will witness participation of naval forces from various countries.
- The International Fleet Review celebrates the 80th anniversary of the formation of the Indonesian Navy.
- The Indian Navy will also take part in various high-level engagements including International Maritime Security Symposium, and tactical floor games.
- Following the International Fleet Review, both INS Shardul and the P8I will participate in exercise Komodo, a multilateral naval exercise aimed at enhancing maritime interoperability and regional

security cooperation. Exercise Komodo 2025 will bring together 15 nations for multilateral maritime training. It will include a collaborative maritime search and rescue scenario.

- India's bilateral exercises with Indonesia
- Garuda Shakti - Army exercise
- Samudra Shakti - Naval exercise.

Keynote Address by EAM Dr. S. Jaishankar at Indian Ocean Conference 2025

- Changes in the global order may be expressed through new ideas and concepts. But they are also reflected in the evolving landscape.
- The Indian Ocean region is no exception to that rule. And this matters not just to us as inhabitants of this community, but given our salience in so many dimensions, to other regions and nations as well. After all, as we heard from previous speakers, the Indian Ocean is veritably a global lifeline.
- It's production, consumption, contribution and connectivity is central to the manner in which the world runs today.
- At the two ends of the ocean, this churn is at its sharpest today. In the Middle East/West Asia, there is a serious conflict underway with the potential for further escalation and complication.
- At the same time, longstanding issues are being revisited, sometimes with a radically different approach. Its maritime consequence is visible in a serious disruption of global shipping, with considerable cost to our economies. There are questions which arise from our ability and willingness to respond, as indeed from the partnerships relevant to that task.
- At the other end, the Indo-Pacific has been witnessing deeper tensions and sharper contestations. The scenario is intrinsically maritime in nature, involving respect for and observance of international law. There are other concerns, some related and some autonomous.
- Stronger assertions of interests is one issue; concern about unilateral changes to the status quo another. From India's own experience, we can say that adhering to agreements and understandings is a central element to ensuring stability and predictability.
- The region in between is where most of us come from, being littoral states or island nations of the Indian ocean. Each country has its individual challenge, but nevertheless, there are some general trends worth noting.
- Many are developmental in character but do, in some form or the other, impinge on maritime behaviour. Like other parts of the Global South, the Indian Ocean nations too face resource constraints and economic headwinds.
- Many of them are struggling to meet their SDG targets. In quite a few cases, debt is a serious concern. Some of that arises from stresses of the international economy, but in certain cases, from imprudent borrowing and unviable projects.

- Another common issue is that of rebuilding connectivity in the region, after decades of colonial – era disruption.
- To make this a truly shared endeavor, it is vital to ensure that connectivity initiatives are consultative and transparent, not unilateral and opaque. Yet another widespread concern is the challenge faced by Indian Ocean states to monitor their EEZ and secure their fishing interests.
- Nor can they be impervious to illegal trafficking of various kinds and the specter of terrorism. Each of these dimensions – and certainly their cumulative impact – has a strong maritime implication. Our journey to new horizons must necessarily focus on addressing these challenges.

How is India contributing to those endeavors?

- Obviously, by rapidly strengthening its own capabilities and forging partnerships with Indian Ocean neighbours, near and far. But also, by shouldering responsibilities, stepping up in times of trouble and providing leadership where required. Let me underline this by providing 10 relevant examples :
- One, Stabilising economies and societies under stress would surely rank among the most important. As the impact of COVID and conflict unfolded, India was the source of vaccines, medicines, food, fuel and fertilizer for many others. The biggest commitment it made was to Sri Lanka – a financial package of USD 4 billion to stabilize its economy that had slid into a crisis.
- Two, the India – Middle East – Europe Economic Corridor (IMEC) and the India Myanmar Thailand Trilateral Highway (IMTT) would be among the two key collaborative connectivity initiatives under consideration.
- The International North South Transport Corridor (INSTC) is another significant example. India is obviously the common element in all of them. IMEC and INSTC have an explicit maritime segment, while the IMTT would provide a land link between India and the Pacific.
- Three, we have increasingly been active in a First Responder mode in the Indian Ocean region. This could be the conflict in Yemen, natural disasters in Mozambique, Sri Lanka or Myanmar, earthquake in Nepal and Turkiye or a water crisis in the Maldives. Both off Mauritius and Sri Lanka, India has responded to significant oil spills.
- Four, recognizing that an institutional response is required for disaster situations, India has been active in encouraging plurilateral cooperation. The most notable of these is the Quad initiative that encourages interoperability and cooperation for such contingencies. Similarly, the ReCAAP centre at Singapore to which India contributes helps address the challenge of piracy.
- Five, in a world of increasing traditional and non – traditional threats in the maritime domain, it is essential that there is a common operating picture as well as shared platforms. The International Fusion Centre located outside Delhi aims to do just that. By establishing coastal surveillance radars

and partnering on White Shipping agreements, maritime traffic is made safer and more secure for our collective benefit.

- Six, it is unfortunately not just enough to prepare or even prevent. Extreme situations sometimes require a robust countering, including through the deployment of naval forces. For more than a year now, India has been doing precisely that in the Northern Arabian Sea and Gulf of Aden. Today, we are seeing some improvement in maritime safety and security as a result of such coordinated responses.
- Seven, training and equipping other navies and coast guards is a natural extension of this approach. India has such collaboration with a range of countries, from Vietnam to Mauritius and Mozambique to Sri Lanka.
- Eight, ensuring trusted communication in a digital era is a crucial national security objective for many of us. This is a task too big to be attempted by most individual nations. Participating in consortiums is therefore an inevitable outcome. Both as government and as vendor, India is contributing its fair share and more in this regard. The visit just concluded of PM Modi to the US highlighted this particular dimension.
- Nine, in a globalized world, there is a growing realization that distance cannot be a justification for agnosticism on matters key to global welfare. As a result, the Indo – Pacific is experiencing activity of both resident and non – resident powers. Harmonizing them is a challenge that India, in particular, is well placed to address. It has the confidence of the Global South as well as the credentials to engage major powers. We strive to ensure that agendas alien to our ethos and outlook are not inserted in the region. And equally encourage respect for UNCLOS in both spirit and letter.
- And finally tenth, India has been energetic in institution - building in the Indian Ocean region. We have the Indian Ocean Rim Association (IORA) whose current Secretary General is a senior Indian diplomat.
- We have BIMSTEC, whose SG is here today. We look forward to the BIMSTEC Summit soon. There is the Indian Ocean Naval Symposium (IONS), which is a productive conclave of naval representatives.
- There is the Colombo Security Conclave and there is the India Indo-Pacific Oceans Initiative. And of course, we have the Indian Ocean Conference itself, which brings together so many stakeholders at various levels.

What is the Indian Ocean Conference?

- The Indian Ocean Conference was started by India Foundation in 2016 at Singapore, with participation from 30 countries.

- Over the years, the Conference has emerged as the flagship consultative forum for countries over regional affairs.
- The Conference endeavours to bring critical states and principal maritime partners of the region together on a common platform to deliberate upon the prospects of regional cooperation for Security and Growth for All in the Region (SAGAR).
- This year's theme is 'Voyages to New Horizons of Maritime Partnership'.

The Indian Ocean

- As the third largest ocean woven together by trade routes, commands control of major sea-lanes carrying half of the world's container ships, one third of the world's bulk cargo traffic and two thirds of the world's oil shipments, the Indian Ocean remains an important lifeline to international trade and transport.
- The ocean lies at the heart of the economic and civilisational impulses that stretch from the eastern and southern shores of Africa all the way up to Australia.
- The natural construct of the region has left behind global romanticism enveloping alliances of the past. The Indian Ocean Region (IOR) has emerged as a microcosm of partnerships, collaborations, and bilateral and multilateral dependence.
- Home to nearly 2.7 billion people, member states whose shores are washed by the ocean are rich in cultural diversity and richness in languages, religions, traditions, arts and cuisines.
- They vary considerably in terms of their areas, populations and levels of economic development. They may also be divided into a number of sub-regions (Australasia, Southeast Asia, South Asia, West Asia and Eastern & Southern Africa), each with their own regional groupings (such as ASEAN, SAARC, GCC and SADC, to name a few). Despite such diversity and differences, these countries are bound together by the Indian Ocean.
- India, being strategically located in the Indian Ocean Region with an extensive coastline and presence of several islands, has a long maritime tradition. This has helped the country to forge deep rooted commercial, cultural and religious ties with countries in the region over centuries and evolve a vision that encompasses the interests of all.

Security and Growth for All in the Region (SAGAR)

- In March 2015, Prime Minister Narendra Modi put forward the concept of 'Security and Growth for All in the Region' (SAGAR), proposing a holistic vision for India's engagement with this region.
- In its implementation, this approach includes:
 - a) Projects to promote hinterland linkages and strengthen regional connectivity.
 - b) Linking South Asia to Southeast Asia (Act East) and to the Gulf (Think West).
 - c) Playing an active and constructive role in strengthening regional maritime security.

India negotiating FTA with GCC and Qatar: MEA

- India is in the process of negotiating a Free Trade Agreement (FTA) with the Gulf Cooperation Council (GCC) and is also considering an FTA with Qatar. This move aims to strengthen bilateral relations and deepen cooperation in various fields such as trade, energy, investment, security, and regional and international affairs.
- "India and Gulf Cooperation Council (GCC), we are at this moment negotiating about having a free trade agreement. As far as Qatar is concerned, both sides are exploring the possibility of signing a free-trade agreement in future and that was one of the discussions that took place in this round of talks," said Chatterjee.
- India has enjoyed centuries of good relations with countries like Iran, while smaller gas-rich nation Qatar is one of India's closest allies in the region. India shares good relations with most of the countries in the Gulf.
- The two most important reasons for the relationship are oil and gas, and trade. Qatar accounts for 41% of India's total natural gas imports. Two additional reasons are the huge number of Indians who work in the Gulf countries, and the remittance they send back home.
- As per a research paper published by the Reserve Bank of India, in the financial year 2020-21, remittances from the UAE to India were USD 15.40 billion, which is 18% of India's total inward remittances.
- Overall, these agreements have the potential to significantly boost India's economic and strategic ties with the GCC and Qatar and could have far-reaching implications for the country's trade, energy, and security policies.
- "As far as strategic partnership agreement is concerned, it actually elevates the present state of bilateral relations to a strategic level. What we are looking at is deepening the cooperation in the fields of trade, energy, investment, security as well as in the regional and international flora...".
- According to MEA, Prime Minister Narendra Modi and the Amir of Qatar held discussions on wide-ranging topics including FTA, technology, energy and people-to-people ties.
- GCC is a union of six countries in the Gulf region -- Saudi Arabia, the UAE, Qatar, Kuwait, Oman and Bahrain. The council is the largest trading bloc of India. A free trade agreement between India and the GCC has been in the works since 2004 when a Framework Agreement on Economic Cooperation was signed.

What is the Gulf Cooperation Council?

- The Gulf Cooperation Council (GCC) was established by an agreement concluded on May 25, 1981 in Riyadh among Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE in view of their special relations, geographic proximity and similar political systems.
- GCC comprises some of the fastest growing economies in the world, mainly due to an increase in oil and natural gas revenues coupled with a building and investment boom backed by reserves, etc.

The GCC Charter states that the basic objectives are to:

- i) Have coordination, integration and inter-connection between Member States in all fields.
- ii) Strengthen ties between their peoples.
- iii) Formulate similar regulations in various fields such as economy, finance, trade, customs, tourism, legislation, administration.
- iv) Foster scientific and technical progress in industry, mining, agriculture, water and animal resources.
- v) Establish scientific research centres.
- vi) Set up joint ventures.
- vii) Encourage cooperation of the private sector.

The structure of the GCC consists of:

- • The Supreme Council which comprises the Heads of State of the six member countries.
- • The Ministerial Council which comprises the foreign ministers of the six member countries.
- • The Secretariat General which prepares reports, studies, accounts and budgets for the GCC.
- • The Secretariat is located in Riyadh.

India and GCC

- • The Gulf constitutes the “extended” neighborhood of India separated only by the Arabian Sea. India has a long standing historic deep-rooted relationship with GCC countries.
- • The GCC countries are home to 8.7 million strong Indian expatriate community and cultural and people-to-people ties between India and Gulf are bedrock of the bilateral relations.
- • The GCC is a major trade and investment partner for India.
- • The GCC's substantial oil and gas reserves are of vital importance for India's energy security while defence and security cooperation with GCC has also been increasing.
- There are various institutional mechanism between India and GCC, including:
 - i) Political dialogue at the level of Foreign Ministers.
 - ii) MoU on Mechanism for Consultations.
 - iii) India-GCC Senior Officials Meeting at Secretary level.
 - iv) India-GCC Industrial Conference.
- **Way Forward for India's Gulf Engagement**
 - • Fast-tracking FTA negotiations with GCC by addressing trade barriers.
 - • Strengthening energy cooperation with long-term LNG and oil supply agreements.
 - • Enhancing investment partnerships in renewable energy, technology, and startups.
 - • Expanding workforce agreements to protect and enhance the rights of Indian expatriates.
 - • Leveraging diplomatic ties to balance relations between Gulf nations and rival geopolitical powers.

WHO releases 2025 update to International Classification of Diseases (ICD-11)

- The World Health Organisation (WHO) has released the 2025 edition of the International Classification of Diseases 11th Revision (ICD-11).
- The update includes a new module covering traditional medicine conditions of Ayurveda and related traditional medicine systems, including Siddha and Unani, will enable systematic tracking of traditional medicine services, enhancing global research, reporting and evidence-based policymaking.
- ICD-11 enhances global health communication by providing a standardised classification and terminology for seamless integration across health information systems, languages and settings.

What is ICD?

- The ICD is a flagship WHO product that serves as the basis for identifying health trends and statistics at country level and worldwide. ICD is at the foundation of WHO's Fourteenth General Programme of Work efforts to accelerate progress towards health-related Sustainable Development Goals (SDGs), addressing inequalities and achieving relevant national health targets.
- Every day, vital and life-saving decisions in clinical, administrative, policy and research settings are guided by the common terminology defined in ICD-11.
- ICD-11 also influences the availability of financial protection and social insurance, as health insurers' reimbursements depend on ICD coding.
- Moreover, the classification of diseases has an immeasurable impact on how society's views and behaviours towards diseases and health conditions are shaped; how people seek and receive health care; how providers respond; and what policies surround the provision of care.
- For example, when diseases of the immune system were re-classified and given more focus in ICD-11, it helped health practitioners address autoimmune disorders based on the most current knowledge and evidence.
- The International Classification of Diseases and Related Health Problems (ICD) is a classification system developed and copyrighted by the WHO.
- It is a tool that standardises the language used by health professionals worldwide in diagnosing, reporting and monitoring diseases, injuries and causes of death.
- ICD serves as the foundation for identifying health trends and statistics worldwide.
- The tenth version (ICD-10) was used for this purpose from January 1993 until January 2022.
- The WHO began development of the eleventh version (ICD-11) in 2007. Experts from over 90 countries participated in the Joint Task Force and Topic Advisory Groups to develop ICD-11's structure and content.

- Over 270 institutions, health workers, epidemiologists, allied health care, health information managers, patients and statisticians from all continents provided extensive input to ICD-11.
- WHO published ICD-11 for review in 2018, and the World Health Assembly adopted ICD-11 in May 2019. It came into effect from January 1, 2022.
- The ICD is a flagship WHO product that serves as the basis for identifying health trends and statistics at country level and worldwide.
- Health conditions and accidents are assigned ICD-11 codes, resulting in data that can be used by governments to design effective public health policies, and measure their impact, or used for clinical recording.
- Today, it includes approximately 17,000 diagnostic categories and more than 130,000 clinical terms for injuries, diseases and causes of death, code combinations enable documentation of any clinical detail, with automated software support up to two million terms. It is at the foundation of WHO's Fourteenth General Programme of Work efforts to accelerate progress towards health-related Sustainable Development Goals (SDGs), addressing inequalities and achieving relevant national health targets.
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India advances carbon market reforms following COP 29

- **India, already a leader in renewable energy, reinforced its commitment to climate action by proposing a unified carbon market**
- The 29th Conference of the Parties (COP 29) under the United Nations Framework Convention on Climate Change (UNFCCC) concluded in Baku, Azerbaijan, on November 24, 2024. While key expectations regarding climate finance remained unmet, significant progress was achieved in carbon market regulations.
- A landmark agreement on carbon trading rules was reached, aiming to accelerate climate action by enabling countries to meet their emission reduction goals efficiently and cost-effectively.

- Under its Nationally Determined Contributions (NDCs), the country initially aimed to reduce greenhouse gas (GHG) emission intensity by 33-35 per cent from 2005 levels by 2030, later revising this target to 45 per cent in 2022.
- India has launched multiple initiatives to combat climate change.
- On the supply side, renewable energy generation helps mitigate carbon footprints, while demand-side initiatives **like Perform-Achieve-Trade (PAT), star labeling**, energy conservation building codes, and improved lighting solutions further reinforce India's climate commitments.
- Existing frameworks, including Renewable Energy Certificates (**RECs**) and Energy Saving Certificates (**ESCerts**), serve as a foundation. These were introduced under the National Action Plan on Climate Change (**NAPCC**) in 2008 and have been successfully traded on Indian power exchanges.
- **RECs** drive renewable energy adoption by allowing obligated entities to purchase either renewable energy or its certificates.
- One REC equates to 1 MWh of renewable energy generated from sources like solar, wind, hydro, and biogas. This system benefits both electricity generators and buyers, ensuring environmental compliance.
- Similarly, **ESCerts promote energy efficiency by** enabling designated energy-intensive industries to either enhance energy savings or buy corresponding certificates.
- One ESCert represents a reduction of 1 million tonnes of oil equivalent energy. Currently, 13 key industrial sectors, including aluminum, cement, power distribution, and railways, participate in this program, covering nearly 50 per cent of India's primary energy consumption.
- Since their inception, RECs and ESCerts have driven significant emissions reductions, saving over 73 million tonnes of CO₂ through REC trading and preventing 106 million tonnes of CO₂ emissions via ESCerts. Recognising the need for a unified carbon market, India proposed a comprehensive system merging RECs and ESCerts into a single, internationally aligned framework.
- The **regulatory foundation was set with the amendment of the Energy Conservation Act in January 2023**, followed by the notification of the Carbon Credit Trading Scheme, 2023.
- The **scheme designates the Central Electricity Regulatory Commission as the market regulator and power exchanges as trading platforms**, while the Bureau of Energy Efficiency oversees compliance mechanisms.
- India's carbon market will consist of two segments: a compliance market and an offset market.
- The compliance market will impose emission caps on obligated entities, allowing overachievers to sell surplus carbon credits to underachievers. The offset market will enable voluntary participation by non-obligated entities aiming to reduce their carbon footprints.

- **Carbon credit certificates will be traded through a regulated bidding process.** The transition from existing REC and ESCert markets to a unified carbon trading system is expected to be seamless, given India's well-established power exchanges and transaction mechanisms.
- With this development, India moves closer to integrating its climate action efforts into global carbon markets, reinforcing its commitment to reducing emissions and achieving long-term sustainability goals..

Reinforcing Global Order: Jaishankar calls for multilateralism and diplomacy at G20 FM meeting

Ahead of the G20 Summit in November, India's External Affairs Minister, S Jaishankar, has underscored the growing strain on the global order due to ongoing conflicts.

During his address at the G20 session in Johannesburg, South Africa, Jaishankar highlighted the need for an inclusive and multilateral approach to address these challenges and urged nations to prioritize international law and peaceful solutions.

A Call for Multilateralism

- His remarks on Friday (Feb 21, 2025) at the G20 session, titled 'Discussion on the Global Geopolitical Situation,' brought attention to the current state of global geopolitics, which is increasingly defined by multiple unresolved conflicts. These conflicts, he noted, are threatening the fabric of the global order and underscoring the urgency for respect for international law
- A Global governance cannot be confined to the interests of a few nations," Jaishankar stated, emphasizing the importance of plurilateralism as a means to address global deficits in cooperation. His call for broader collaboration reflects India's advocacy for a more equitable global system where the voices and concerns of developing countries are not sidelined.

The Middle East

- Jaishankar welcomed the ceasefire agreement between Israel and Hamas and the release of hostages. He reiterated India's firm stance against terrorism and its support for a two-state solution to the Israeli-Palestinian conflict. He also highlighted the importance of maintaining peace in Lebanon and finding a solution for Syria that is led by the Syrians themselves. Jaishankar emphasized the need for stability in the region, stressing that global peace and security depend on it.

On Maritime Security:

- He noted the significance of maritime security in the region and India's role in ensuring safe and open sea lanes. Jaishankar mentioned that the Indian navy has contributed to security efforts in critical areas like the Arabian Sea and the Gulf of Aden, with the goal of ensuring uninterrupted global maritime trade.

The Russia-Ukraine Conflict

- The minister reiterated India's consistent position on the Russia-Ukraine conflict, emphasizing the importance of resolving it through dialogue and diplomacy. He stressed that global expectations are for the parties involved to come together and work towards ending the war peacefully. At the same time, he expressed concern that other ongoing conflicts, such as those in the Democratic Republic of Congo and Sudan, are often overlooked and deserve more attention.

On the Indo-Pacific and International Law:

- In the runup to the G20 Summit to be held on November 22-23 this year, during the foreign ministers' meeting Jaishankar firmly stated that international law, especially the United Nations Convention on the Law of the Sea (UNCLOS) of 1982, must be respected.
- He called for the observance of international agreements and emphasized that coercion should not be tolerated in resolving disputes. Jaishankar warned against unilateral actions that undermine the global order and urged for multilateral solutions to regional challenges.
- The minister's remarks came close on the heels of china's participation in Pakistan's multinational AMAN-2025 naval exercise. Other countries including Malaysia, Italy, Japan, Indonesia the US and observers from 32 other nations participated.
- While Beijing has said its focus was on anti-piracy and maritime security, overseas interests and protecting sea lanes, its participation in the drill aligned with its naval expansion.
- India remains cautious of China's "String of Pearls" strategy, which includes construction of military bases and alliances across the region. According to reports, earlier this month sent two research vessels to the Indian Ocean, this caused concerns in New Delhi.
- A In his address the minister underlined India's commitment to safeguarding maritime security, particularly in the Arabian Sea and the Gulf of Aden. And highlighted the need to restore normal maritime commerce, which has been disrupted due to geopolitical tensions.

On Multilateralism and UN Reform:

- Jaishankar pointed out the deteriorating state of multilateralism, noting that the United Nations and its Security Council are often paralyzed by gridlocks. He stressed that it is not enough to simply restore the functionality of these institutions; there needs to be a comprehensive overhaul to ensure that they are more inclusive, effective, and representative of the modern world order.

A More Inclusive Approach

- His address also called for the urgent reform of global institutions, especially the United Nations and its Security Council, which, according to him, have often been paralyzed by gridlocks. "Multilateralism itself lies deeply damaged," he said, urging for greater representation and more effective functioning of global institutions. His vision for the future of global governance includes less opaque and unilateral decision-making, with a stronger emphasis on cooperation among nations, particularly in the face of shared global challenges.

From Energy to Disaster Resilience

- The minister's address at the G20 also touched on various global issues, including food, energy, and health security. He reaffirmed India's commitment to promoting sustainable development, disaster resilience, and financing for a just energy transition, while balancing the growth needs of developing countries with climate action.
- Additionally, Jaishankar underlined India's support for debt sustainability frameworks that balance development needs with fiscal responsibility, especially for low-income nations.

A Divided G20: Tensions with the United States

- While India has called for greater collaboration, the US has expressed tensions regarding South Africa's approach to international issues. Earlier this month US Secretary of State Marco Rubio announced that he would not attend the G20 Summit in Johannesburg, citing disagreements over South Africa's domestic land expropriation policies and its foreign policy stances, particularly regarding Israel and Iran.

Russia-Ukraine war: How the US position has changed on UN resolutions

The United States joined Russia to vote against a UN General Assembly resolution condemning Russia's war against Ukraine Monday in a stunning shift from years of US policy.

- The vote against the Ukrainian and European-backed resolution saw the US at odds with its longtime European allies and instead aligned with the aggressor in the war on the three-year anniversary of Moscow's full-scale invasion of Ukraine.
- The US again voted the same way as Russia later Monday on a US-proposed UN Security Council resolution that did not call the Kremlin the aggressor or acknowledge Ukraine's territorial integrity. The resolution passed without the support of five European members of the Security Council.
- The US' shocking alignment with Russia at the United Nations came as the Trump administration has pursued discussions with Moscow about ending the war. President Donald Trump has ratcheted up his rhetoric towards Ukrainian President Volodymyr Zelensky.
- Three years to the day since Russia's full-scale invasion of Ukraine, the UN General Assembly adopted two resolutions on resolving the conflict, one initiated by the United States and the other by Ukraine — a sign of strategic differences within the transatlantic alliance over the way forward for peace.
- Since the Russian forces stormed across the border on February 24, 2022, the General Assembly has approved half a dozen resolutions that have condemned the invasion and demanded the immediate pullout of Russian troops.

- In a dramatic policy shift under President Donald Trump, the United States split with its European allies by refusing to blame Russia for its invasion of Ukraine in votes on UN resolutions seeking an end to the three-year war.

Here are six previous UNGA resolutions that passed:

- **March 3, 2022** – 141 countries, including the US, voted in favour of a resolution condemning Russia's declaration on February 24, 2022, of a "special military operation" and reaffirming that territorial acquisition by force is illegal. The resolution demanded that Russia cease its use of force against Ukraine and withdraw its troops from the territory. Five countries voted against it.
- **March 24, 2022** – the US joined 139 countries and voted in favour of a resolution which reaffirmed its "commitment to the sovereignty, independence, unity and territorial integrity of Ukraine", calling on Russia to withdraw its troops.
- **April 2022** – 93 countries, including the US, voted in favour of an UNGA resolution suspending Russia's membership in the Human Rights Council.
- **October 2022**, Washington supported an UNGA resolution that won with 143 condemning the Russian annexation of Ukrainian territory.
- **November 2022** – the US voted in favour of an UNGA resolution that won 94-14 calling on Russia to pay reparations to Ukraine, while also calling on Russia to cease use of force and withdraw troops.
- **February 23, 2023** – A resolution calling territorial acquisition by force illegal and asking Russia to withdraw its troops from Ukraine passed by 141-7. Washington voted in favour of this resolution.

What could be the impact of change in US policy?

- The US-drafted resolution avoids taking a clear stance against Russia, unlike the Biden administration's strong pro-Ukraine approach.
- Trump's less confrontational stance on Russia suggests a possible attempt at resetting US-Russia relations.
- France and Britain's insistence on a "just and lasting peace" signals that Europe will continue advocating for Ukraine's position even if the US steps back.
- The fear among NATO allies is that the US could push for a peace deal favoring Russia, rather than ensuring Ukraine's sovereignty and security.
- With Trump reducing direct US commitment to Ukraine, NATO allies may feel pressured to fill the gap in military aid and diplomatic support.

How will Trump's move affect Ukraine?

- If Trump weakens NATO's support for Ukraine, it could embolden Russia to push further militarily or diplomatically in Eastern Europe.

- Russia may intensify its attacks in Ukraine before entering negotiations, hoping to secure a better position in peace talks.
- If the US pushes for a ceasefire without clear security guarantees, Ukraine could face long-term instability, with Russia retaining control over occupied territories.
- If European allies do not compensate for declining US military aid, Ukraine may struggle to sustain its defence against Russian forces.
- Ukraine will likely push back against a US-brokered deal if it does not guarantee full sovereignty and territorial restoration.
- European allies may step up diplomatic and military support to compensate for the US withdrawal.

Polity

Right To Die: All You Need To Know About Karnataka's Supreme Court Implemented Policy

- The Karnataka Health Department has implemented the Supreme Court's order granting terminally ill patients the right to die with dignity. The policy applies to those with incurable illnesses or no chance of recovery while on life support.
- Under the new rules, a two-step medical review process will decide each case. A primary board of three doctors will assess the patient's condition.
- A secondary board, with three doctors and one government-appointed doctor, will review the findings before sending the report to court.
- This move is in line with the **Supreme Court's 2023 ruling**, which affirmed that the **Right to Life** under **Article 21 of the Constitution** also includes the **right to die with dignity (Withdrawal of Life-Sustaining Therapy (WLST))**.
- Supreme Court has held that if a patient is terminally ill and is undergoing prolonged medical treatment with no hope of recovery and cure of the ailment, and does not have decision-making capacity, then WLST may be appropriate, in accordance with the prescribed procedure.
- In response to this, the Karnataka government has taken proactive steps to implement a system that formalizes the process of **passive euthanasia** through **Advance Medical Directives (AMD)**, also known as **living wills**.

What is Withdrawing Life-Sustaining Treatment?

- Withholding or withdrawing life-sustaining treatment refers to stopping medical interventions such as **ventilators, feeding tubes**, and other artificial means that help maintain vital bodily functions.
- This decision is made when these treatments no longer improve the patient's condition or when they only serve to prolong suffering.

Difference Between Withdrawing Life Support and Euthanasia

- **Withdrawing Life-Sustaining Treatment (Passive Euthanasia)**: This involves stopping treatment when it is no longer beneficial, and the patient is in a terminal state. The patient is allowed to die naturally, with pain relief and comfort care provided.
- **Euthanasia**: This is the intentional act of ending a patient's life to relieve suffering, typically administered by a doctor. It is not legal in India unless passive euthanasia is followed as per the defined guidelines.

What is an Advance Medical Directive (AMD)?

- An **Advance Medical Directive (AMD)**, or **living will**, is a legal document in which a person outlines their wishes regarding medical treatment in case they become terminally ill or are unable to communicate.
- This allows individuals to express their desires about life-sustaining treatments, such as whether or not they wish to be kept alive through artificial means in the event of severe illness or injury.
- The Karnataka order enables individuals to execute an AMD and register it with the local government or the healthcare establishment to ensure that their medical wishes are known and respected when the time comes.
- While **living wills** are **legal in India**, their adoption has been slow.
- The **Supreme Court** had allowed **passive euthanasia** in 2018, but with strict guidelines.

Implications of the Karnataka Order

- **Dignified End-of-Life Care:** The decision allows terminally ill patients to choose a **dignified death** by having their **life-sustaining treatments withdrawn** if there is no hope of recovery. This will provide much-needed relief for patients who may be suffering from debilitating conditions.
- **Legal and Humane Framework:** The Karnataka order establishes a **humane, legally sanctioned process** for passive euthanasia, which **balances medical ethics and the patient's autonomy**. It also ensures **legal oversight** to prevent misuse and to safeguard the rights of the patient.
- **Progressive Step for Healthcare:** By becoming the first state to implement such a framework, Karnataka is leading the way in **upholding human rights and healthcare values**, offering individuals greater control over their healthcare decisions.

CICs: A need for stronger safeguards

- The fintech and digital revolutions have transformed how Indians transact, transfer money, and access financial products and services. Aadhaar-based KYC (know your customer), centralised credit information databases, Unified Payments Interface and Unified Lending Interface have enabled seamless money transfers and quick credit disbursements.
- However, as the industry expands, concerns regarding data misuse and identity theft have intensified. Additionally, errors in credit history can often go unnoticed, leading to significant consequences for consumers.

RBI's direction on credit information reporting

- On January 6, the Reserve Bank of India (RBI) issued a master direction on credit information reporting.
- The RBI observed that credit information companies (CICs) have been sharing credit information based on individual consent with entities that are not specified users, through agreements with such entities. Given the sensitivity of the information and the risk of misuse, CICs must implement

appropriate mechanisms to ensure responsible data-sharing. Among other measures, the RBI has mandated that:

- CICs must establish robust due diligence and control mechanisms while sharing credit information with non-specified user entities.
- The evaluation of such entities must include comprehensive scrutiny of available data to mitigate risks.
- Currently, four CICs are registered with the RBI: CRIF High Mark; Equifax; Experian; and TransUnion CIBIL

Importance of credit information & CICs' role

- Credit information plays a crucial role in decision-making for individual and institutional credit data and decisions. Accurate, reliable, and secure credit data is essential for risk assessment, economic planning, and financial stability. CICs aggregate data from diverse sources — including banks, non-banking financial companies, and utility providers — to create detailed credit reports that influence loan approvals, interest rates, and even employment opportunities.
- However, increased reliance on such data also necessitates stringent data privacy measures.
- Financial reporting bureaus handle vast amounts of sensitive data, including individuals' loan histories, repayment behaviours, and credit scores. If compromised, this data can lead to identity theft, financial fraud, and reputational damage.
- While India has introduced the Digital Personal Data Protection Act of 2023, its enforcement mechanisms remain unclear compared to global standards like the General Data Protection Regulation.
- This regulatory gap exposes vulnerabilities in financial data handling, making CICs prime targets for cyberattacks. Data breaches not only compromise sensitive financial details but also erode public trust in the financial system.

Parliamentary concerns and regulatory action

- Concerns about the reliability and accountability of credit scores maintained by the CICs have been raised in Parliament. More than 11 crore Indians accessed their credit scores on CIBIL as of August 2024, with a 70% growth in women tracking their scores.
- The RBI has emphasised the need for CICs to safeguard data privacy and reduce the reliance on a limited number of players in the market. The central bank has previously imposed penalties on CICs for non-compliance.
- CICs have very high profit margins, and are held significantly by foreign parent companies. For example, TransUnion CIBIL had revenues of Rs 1,430 crores and a profit after tax of Rs 656 crores in FY23.

- Consequently, CICs must ensure higher accountability, transparency, and data protection in line with Indian regulations to justify their profitability and social responsibility.

Limited redress mechanisms for consumers

- A significant challenge in India's financial data ecosystem is the lack of an efficient grievance redress mechanism for consumers facing credit report inaccuracies. Errors such as misreported defaults, outdated credit histories, and incorrect loan accounts are not uncommon.
- However, disputing and correcting such errors remains cumbersome, opaque, and time-consuming. Many individuals are unaware of their rights regarding credit data and the procedures for rectifying discrepancies.
- Though the RBI has outlined a framework for compensation to customers for delayed updation/rectification of credit information to address this issue, more can be done as suggested below:
- The RBI must strengthen its oversight of CICs to ensure strict compliance with grievance redress norms.
- Efficient, transparent, and time-bound processes for resolving disputes should be implemented to empower consumers.
- Financial literacy initiatives should educate individuals on credit data rights and how to rectify inaccuracies.
- Ensuring fair and error-free financial data is fundamental to building trust in India's financial ecosystem, and more importantly in credit information companies that handle sensitive data.
- As digital and financial landscapes evolve, prioritising robust data protection, regulatory oversight, and consumer redressal mechanisms will be crucial in safeguarding individual rights and strengthening the economy.

Supreme Court slams Tamil Nadu Governor: Can't sit on bills without communicating

- The Supreme Court on Friday flagged the creation of an "impasse" if the Governor withheld his assent on the bills passed by legislative assembly without any communication to the state government and wondered how the deadlock would be resolved.
- A bench of Justices J B Pardiwala and R Mahadevan said Tamil Nadu Governor R N Ravi couldn't simply sit over the bills based on perception of repugnancy with the Central law, without communicating his opinion.
- The top court was hearing two petitions filed by the Tamil Nadu government highlighting the prolonged confrontation between the state assembly and the Governor over his refusal to assent to bills passed by the legislature.

- Article **200 of the Constitution gives the Governor the power to** approve or withhold approval of bills passed by the state legislature. The Governor can also send a bill back to the legislature for reconsideration or suggest changes.
- The bench said the issue related to Article 200 and if the arguments of the attorney general were to be accepted then the Governor did not require to communicate any message to withhold his assent.
- Venkataramani said everything depended on facts of each case and the Governor in the present case did not act in a malafide manner.
- Justice Pardiwala said if there was repugnancy then the Governor could straight away decline assent but the question was why did he withhold the assent.

What is the process of granting assent?

- **Assent of the Governor or the President** is necessary for a Bill passed by the legislature to become law. After a Bill is passed by both Houses of the State Legislature, it is presented to the Governor for assent.
- **Governor's Options (Article 200):** The Governor has the power to:
- **Grant Assent:** The Bill becomes law.
- **Withhold Assent:** The Governor can withhold assent, but it must be returned to the Legislative Assembly for reconsideration.
- **Return for Reconsideration (except Money Bills):** If the Governor returns the Bill, the Legislature can amend it. If re-passed, the Governor must assent.
- Money Bills are automatically deemed assented to by the Governor.

Key Constitutional Provisions

- **Article 200:** Governor's discretion in assenting to Bills.
 - **Article 201:** Governor can reserve Bills for the President.
 - **Article 163:** Governor's discretionary powers are limited by the advice of the Council of Ministers, except in specific cases.
 - **Article 361:** Immunity for the Governor, but actions may be reviewed for mala fide conduct.
- **Reserve for President's Consideration (Article 201):** If the Governor believes the Bill affects the Constitution or has national importance, it can be reserved for the President's consideration.

- **Discretionary Powers:** The Governor can withhold assent if the Bill is against national interests, violates the Constitution, or conflicts with Union laws, though this power is not absolute.
- **Article 167:** The Governor may require the Chief Minister to communicate decisions of the Council of Ministers, including Bills pending for assent.
- **No Timeline for Decision:** There is no specified timeline within which the Governor must act, often leading to delays or a "pocket veto."
- The **Sarkaria Commission (1988)** and the **National Commission to Review the Working of the Constitution (2000)** recommended time limits for **granting assent (e.g., 6 months for assent, 3 months for President's decision)**. There are ongoing debates on enforcing such timelines.
- **Judicial Review:** The Supreme Court has held that if the Governor's decision to withhold assent is found to be mala fide (in bad faith), it can be subject to judicial scrutiny and struck down. Courts can review such actions for constitutionality (Rameshwar Prasad, 2006).

A Cabinet approves extension of National Commission for Safai Karamcharis' tenure until 2028

- The Union Cabinet, chaired by Prime Minister Narendra Modi, has approved the extension of the tenure of the National Commission for Safai Karamcharis (NCSK) for three years beyond March 31, 2025, extending it until March 31, 2028.
- According to the Cabinet, the total financial implication for the extension will be approximately ₹50.91 crore.
- An official release stated that the extension aims to facilitate the socio-economic upliftment of sanitation workers, improve working conditions in the sanitation sector, and work toward achieving zero fatalities during hazardous cleaning.
- The mandate of the NCSK includes recommending specific programs to the central government to eliminate inequalities in status, facilities, and opportunities for Safai Karamcharis. It also evaluates the implementation of programs and schemes related to their social and economic rehabilitation.
- Additionally, the commission investigates specific grievances, takes suo-motu notice of non-implementation of programs or schemes for Safai Karamcharis, and assesses measures aimed at their social and economic advancement.
- The NCSK also monitors the working conditions of Safai Karamcharis, including health, safety, and wages, and submits reports to the central or state government regarding their concerns.
- Under the Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013 (MS Act 2013), the commission is responsible for monitoring the Act's implementation, investigating complaints regarding its violation, advising central and state governments on effective enforcement, and taking suo-motu notice of non-compliance.
- The National Commission for Safai Karamcharis Act, 1993, was enacted in September 1993, leading to the establishment of a statutory commission in August 1994.

National Commission for Safai Karamcharis (NCSK)

- The National Commission for Safai Karamcharis (NCSK) was constituted on August 12, 1994 as a statutory body by an Act of Parliament — National Commission for Safai Karamcharis Act, 1993 — for a period of three years.
- The validity of the Act was extended with amendment Acts passed in 1997 and 2001 respectively. With the lapsing of the The National Commission for Safai Karamcharis Act, 1993 in 2004, the Commission is acting as a non-statutory body of the ministry of social justice and empowerment whose tenure is extended from time to time through government resolutions, with approval of the Cabinet.
- The Commission consists of a chairperson, vice chairman and five other members (including one lady member). The chairman and the members of the commission are appointed by the central government.
- National Commission for Safai Karamcharis Act, 1993 defined the term “Safai Karamchari” as follows: “Safai Karamchari” means a person engaged in, or employed for, manually carrying human excreta or any sanitation work.
- As per the “Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013”, “manual scavenger” means a person engaged or employed, at the commencement of this Act or at any time thereafter, by an individual or a local authority or an agency or a contractor, for manually cleaning, carrying, disposing of, or otherwise handling in any manner, human excreta in an insanitary latrine or in an open drain or pit into which the human excreta from the insanitary latrines is disposed of, or on a railway track or in such other spaces or premises, as the central government or a state government may notify, before the excreta fully decomposes in such manner as may be prescribed, and the expression “manual scavenging” shall be construed accordingly.
- The government monitors various interventions and initiatives for welfare of Safai Karamcharis to achieve the goal of complete mechanisation of sewer/septic tanks cleaning in the country and rehabilitation of manual scavengers.

Key Functions and Responsibilities:

- **i) Recommendations and Programmes:** The NCSK recommends specific programs and policies to the central government aimed at eliminating inequalities faced by Safai Karamcharis in terms of status, opportunities, and facilities. It evaluates the implementation of various social and economic rehabilitation schemes.
- **ii) Grievance Redressal:** It investigates specific grievances of Safai Karamcharis and takes suo-motu action if it notices non-implementation or violation of welfare schemes meant for them.

- **iii) Monitoring Health, Safety, and Wages:** The commission monitors the working conditions of Safai Karamcharis, including their health and safety standards, and evaluates whether their wages are fair. It submits reports to the central or state governments regarding these concerns.
- **iv) Prohibition of Manual Scavenging:** Under the Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013, the NCSK is tasked with monitoring the enforcement of this law. The Act aims to abolish manual scavenging and rehabilitate those involved in this hazardous work. The NCSK investigates violations of the Act, advises both central and state governments on enforcement, and works to ensure compliance.
- **iv) Social and Economic Advancement:** The commission plays a role in assessing and recommending steps for the social and economic advancement of Safai Karamcharis, aiming to uplift them from a marginalized status in society.

TB Mukht Bharat campaign screens 5.63 crore people, notifies 1.59 lakh new TB patients: Nadda

- The Health Ministry's 100-day intensified TB Mukht Bharat campaign has screened 5.63 crore vulnerable people and notified 1.59 lakh new TB patients from 347 districts, said Union Health Minister JP Nadda in Parliament on Friday.
- The 100-day campaign, which started on December 7, 2024, and will continue till March 24, aims to end TB five years ahead of the global target. The campaign targets 347 high-priority districts across 33 States/UTs.
- "Since the launch of the 100-day intensified TB elimination campaign in 347 districts, 4.94 lakh Ni-kshay Shivirs (screening camps) have been held, 5.63 crore vulnerable individuals have been screened, and 1.59 lakh new TB patients have been notified," Nadda said in a written response in Lok Sabha.
- He informed that 86,748 new Ni-kshay Mitras have been registered and 1.12 lakh food baskets have been disbursed to TB patients and their family members.
- Ni-kshay Mitras can be individuals, NGOs, cooperative societies, faith-based organizations, corporates, political parties, and others. A Mitra can adopt at least one consenting TB patient undergoing treatment for a minimum period of six months to provide any kind of support they choose.
- Further, the Union Health Minister said that 38 of the total campaign districts are tribal, 27 are mining districts, and 46 are aspirational districts.
- "The campaign follows a renewed approach to finding missing TB cases, reducing TB deaths, and preventing new cases," he said.
- Nadda added that the government has also organized special outreach camps to screen vulnerable populations and offer X-ray and Nucleic Acid Amplification Test (NAAT) tests, either through

mobile medical vans or by mobilizing them to the nearest health facility equipped with X-ray services.

- All TB-related services have been decentralized to the Ayushman Arogya Mandirs to ensure equitable access, Nadda said.
- Campaign-specific information, education, and communication (IEC) materials have been developed and disseminated to educate the public and raise awareness about TB symptoms, prevention, and the importance of timely treatment in the campaign states and UTs, including Himachal Pradesh, Chhattisgarh, and Madhya Pradesh.
- Jan Bhagidari activities are being implemented with the involvement of schools, Panchayati Raj institutions, self-help groups, Anganwadis, local NGOs, and civil society organizations, the minister said, adding that 22 government departments have been sensitized to actively support the implementation of campaign activities.
- In addition, the ministry has sensitized MPs, Chief Ministers, and state health ministers on the campaign, Nadda stated.
- "The 100-day TB Mukht Bharat Abhiyan in priority districts is fully aligned with the long-term TB elimination strategies of prevention, early detection, prompt treatment, and reduction of TB-related mortality," Nadda said.
- The long-term strategies for TB elimination include mapping vulnerable populations, screening with highly sensitive tools like chest X-rays, upfront NAAT tests for all presumptive TB cases, and differentiated TB care for managing high-risk TB cases.

Key facts about Tuberculosis:

- Tuberculosis is caused by bacteria (*Mycobacterium tuberculosis*) that most often affect the lungs. It can spread when people who are sick with TB expel bacteria into the air – for example, by coughing.
- Every year, 10 million people fall ill with TB. Despite being a preventable and curable disease, 1.5 million people die from TB each year.
- TB is the leading cause of death of people with HIV and also a major contributor to antimicrobial resistance. Most people who develop the disease are adults.
- TB is preventable and curable. About 85 per cent of people who develop TB disease can be successfully treated with a 4/6-month drug regimen. Treatment has the added benefit of curtailing onward transmission of infection.
- Economic and financial barriers can affect access to health care for TB diagnosis and completion of TB treatment; about half of TB patients and their households face catastrophic total costs due to TB disease.

- Progress towards universal health coverage (UHC), better levels of social protection and multisectoral action on broader TB determinants are all essential to reduce the burden of TB disease.
- As per the World Health Organisation's Global TB Report 2024, India contributed to 26 per cent of the global TB burden of cases in 2023.
- The National TB Elimination Programme (NTEP) is implemented under the aegis of the National Health Mission (NHM). NTEP has made significant efforts to make India TB free.
- The incidence rate of TB in India has shown a 17.7 per cent decline from 237 per 100,000 population in 2015 to 195 per 100,000 population in 2023.
- TB deaths have reduced by 21.4 per cent from 28 per lakh population in 2015 to 22 per lakh population in 2023.

Govt's initiatives for early screening

- The steps taken by the government to ensure early detection, better access to treatment and community participation, particularly in rural and tribal areas, are:
- Targeted interventions in high TB burden areas through State and District Specific Strategic plans. Provision of free drugs and diagnostics to TB patients.
- Active TB case-finding through campaigns in key vulnerable and co-morbid populations. Integration of Ayushman Arogya Mandir with TB screening and treatment services.
- Private sector engagement with incentives for notification & management of TB cases. Scale up of molecular diagnostic laboratories to sub-district levels.
- Introduction of all oral, shorter, safer and more efficacious treatment for drug resistant TB.
- Enhancement of incentives to Rs 1,000 per month per patient through direct benefit transfer (DBT), under Ni-kshay Poshan Yojana for nutritional support.
- Provision of additional nutritional, diagnostic and vocational support to TB patients and household contacts under Ni-kshay Mitra initiative.
- Provision of TB Preventive Treatment to contacts of TB patients and vulnerable populations. Tracking of notified TB cases through Ni-kshay portal.
- Intensified Information, Education & Communication interventions to reduce stigma, enhance community awareness and improve health seeking behaviour.

Centre reviews PM-AJAY scheme, focuses on inclusive growth for SCs

- The Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PMJAY) is aimed at reducing poverty among the SC communities through various initiatives like the generation of additional employment and improving socio-economic indicators in SC dominated villages.

- PM-AJAY plays a crucial role in addressing socio-economic disparities. Through focused interventions and collaborative efforts, we are working towards empowering SC individuals and promoting inclusive growth.
- Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY), a Centrally Sponsored Scheme was launched in 2021-22 by merging three existing schemes namely Adarsh Gram, Special Central Assistance to Scheduled Castes Sub Plan and Babu Jagjivan Ram Chhatrawas Yojana.

The objectives and role of the Scheme are:

- To improve socio-economic developmental indicators by ensuring adequate infrastructure and requisite services in the SC dominated villages.
- To reduce poverty of the SC communities by generation of additional employment opportunities through skill development, income generating schemes and other initiatives.
- To increase literacy and encourage enrolment of SCs in schools and higher educational institutions by providing adequate residential facilities in quality institutions, as well as residential schools where required, especially in the aspirational districts/ SC dominated blocks and elsewhere in India.

Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY)

- Scheduled Castes(SCs), who constitute 16.6 per cent of our population as per 2011 Census, have historically suffered social and educational disabilities and economic deprivation arising therefrom.
- Accordingly, special provisions have been enshrined in the Constitution for advancement of their interests. These provisions range from measures to remove any kind of social disabilities imposed on them to ensure equality of opportunity in every sphere, to measures of positive discrimination to bring them at par with the rest of the population.
- Article 46 of Part-IV (Directive Principles of State Policy) of the Constitution enjoins upon the State to promote with special care the educational and economic interests of the weaker sections of the people, in particular, of the Scheduled Castes and the Scheduled Tribes.
- Article 38(2) in the same Part also enjoins upon the State to minimise inequities in income, and to endeavour to eliminate inequalities in status, facilities and opportunities, not only amongst individuals but also amongst groups of people residing in different areas or engaged in different vocations.
- The government, including state governments, had taken a number of initiatives for development of SCs, which have yielded positive outcomes, and have also resulted in narrowing the gaps between Scheduled Castes and the rest of the population.
- • These initiatives were for the social integration of the vulnerable groups and to provide them the necessary ecosystem for educational and economic upliftment.

- The Department of Social Justice & Empowerment introduced the Centrally Sponsored Scheme of 'Special Central Assistance (SCA) to Scheduled Castes Sub Plan (SCSP)' in 1980, in order to ensure that states/UTs prepare the Scheduled Caste Sub Plan (SCSP) and this scheme provided the necessary catalyst in the form of financial support from the central government. Under the scheme, grant is given to state governments/UTs administrations as an additive to their Scheduled Caste Sub Plan (SCSP).
- In 2009-10, the government of India started implementation of new Centrally Sponsored Scheme of Pradhan Mantri Adarsh Gram Yojana (PMAGY) to enable an area based developmental approach for integrated development of SC dominated villages, that is villages having SC population more than 50 per cent.
- The scheme was further expanded in 2014-15 and since 2018-19, it is being implemented as a continuous scheme.
- Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY) was launched in 2021-22 by merging three schemes — Adarsh Gram, Special Central Assistance to Scheduled Castes Sub Plan and Babu Jagjivan Ram Chhatrawas Yojana.

Broadly, the scheme has following three components:

- i) Development of SC dominated villages into an 'Adarsh Gram'.
- ii) 'Grants-in-aid' for district/state-level projects for socio-economic betterment of SCs that may include creation of infrastructure in SC dominated villages including those elected under Adarsh Gram component, construction of hostels/residential schools, Comprehensive Livelihood Projects which may include components such as skill development, related infrastructure development, financial assistance towards loans taken by beneficiaries for acquisition/creation of assets required for livelihood generation, etc.
- iii) Construction of hostels in higher educational institutions which are top-ranked as per the National Institutional Ranking Framework (NIRF) of government of India and are funded by the Centre/state/UT governments either fully or partially. Similarly, construction of hostels in schools which are either fully or partially funded by the Centre/state/UT governments and recommended by the Ministry of Education.

Funding pattern

- The scheme is 100 per cent funded by the central government. However, the states/UTs are free to provide additional funds from their own resources if they so desire.
- After completion of the infrastructure projects under the scheme, their upkeep and operations shall be taken care of by state governments/implementing agencies, as the case may be. Sufficient provisions shall be kept in states' SCSP allocation for taking up the maintenance, upkeep or operations of all such projects.

Home Ministry asks State governments to prevent misuse of State Emblem of India

- The Union Home Ministry has asked State governments to prevent the misuse and improper depiction of the State Emblem Of India emphasising that the Lion Capital logo is incomplete without the motto — Satyamev Jayate — in Devanagari script.
- It may be noted that the State Emblem is incomplete without the motto 'Satyameva Jayate' inscribed (in Devanagari script) below the profile of the Lion Capital. Incomplete display of the State Emblem is a violation of the aforesaid Act, the Ministry said in the letter.
- The Ministry further said that the State Emblem is the official seal of the Government of India, an adaptation from the Sarnath Lion Capital of Asoka. The Emblem consists of the profile of the Lion Capital showing three Lions mounted on the abacus, with a Dharma Chakra in the Centre, a bull on the right, a galloping horse on the left and outlines of Dharma Chakras on the extreme right and left with the motto 'Satyameva Jayate' - written in Devanagari script below the profile of the Lion Capital.
- The government said various individuals/authorities who are not authorised to use the Emblem are using the same on the stationery, vehicles, etc. "It may be noted that the use of the State Emblem of India is restricted to the authorities/purposes specified in the State Emblem of India (Prohibition of Improper Use) Act, 2005 and the State Emblem of India (Regulation of Use) Rules, 2007.
- Strict action should be taken against concerned officials (for incomplete display of the State Emblem of India) and individuals/organisations (who are using State Emblem of India unauthorisedly)," the Ministry said.
- The **State Emblem of India** is an adaptation of the **Lion Capital of Ashoka**, originally erected at **Sarnath** by Emperor Ashoka in the 3rd century BCE.
- It symbolizes national integrity, strength, and sovereignty.
- The inclusion of the motto "**Satyameva Jayate**" (Truth Alone Triumphs) highlights the nation's commitment to truth and justice.

Cabinet Approves Continuation and Restructuring of Skill India Programme

- The Union Cabinet approved the continuation and restructuring of Central Sector Scheme 'Skill India Programme' till 2026 with an overlay outlay of Rs 8,800 crore.
- The three key components — Pradhan Mantri Kaushal Vikas Yojana 4.0 (PMKVY 4.0), the Pradhan Mantri National Apprenticeship Promotion Scheme (PM-NAPS), and the Jan Shikshan Sansthan (JSS) Scheme — are now combined under the composite Skill India Programme.
- The allocation towards PMKVY 4.0 is Rs 6,000 crore, PM-NAPS Rs 1,942 crore and JSS Rs 858 crore.
- There are more than 2.27 crore beneficiaries till date under these three flagships schemes.

- S The Union Cabinet, chaired by Prime Minister, Shri Narendra Modi, today approved the continuation and restructuring of the Central Sector Scheme 'Skill India Programme (SIP)' till 2026 with an overlay outlay of Rs.8,800 crore from the period 2022-23 to 2025-26.
- This approval underscores the government's commitment to building a skilled, future-ready workforce by integrating demand-driven, technology-enabled, and industry-aligned training across the country.
- Pradhan Mantri Kaushal Vikas Yojana 4.0 (PMKVY 4.0), the Pradhan Mantri National Apprenticeship Promotion Scheme (PM-NAPS), and the Jan Shikshan Sansthan (JSS) Scheme – the three key components, are now combined under the composite Central Sector Scheme of "Skill India Programme".
- These initiatives aim to provide structured skill development, on-the-job training, and community-based learning, ensuring that both urban and rural populations, including marginalized communities, have access to high-quality vocational education.
- Under the three flagships schemes of Ministry of Skill Development and Entrepreneurship, there are more than 2.27 Crore beneficiaries till date.

Pradhan Mantri Kaushal Vikas Yojana 4.0:

- PMKVY 4.0 scheme provides NSQF aligned skill development training through Short-Term Training (STT) including Special Projects (SP) and reskilling and upskilling through Recognition of Prior Learning (RPL) with its target beneficiary being 15-59 years of age.
- The Pradhan Mantri Kaushal Vikas Yojana 4.0 (PMKVY 4.0) has undergone transformational changes to make skill development training industry oriented, aligned with national priorities with increased accessibility. A key shift under the scheme is the integration of On-the-Job Training (OJT) within short-term skilling programs, ensuring that trainees gain real-world exposure and industry experience.
- To keep pace with evolving industry demands and advent of new age technology, 400+ new courses on AI, 5G technology, Cybersecurity, Green Hydrogen, Drone Technology, have been introduced, focusing on emerging technologies and future skills.
- The blended and flexible learning model now incorporates digital delivery, making training more flexible and scalable. To provide targeted, industry-relevant skills, enabling learners to upskill, reskill, and enhance employability in high-demand job roles, the program introduces micro-credential and National Occupational Standards (NoS)-based courses ranging from 7.5 to 30 hours.
- To maximize cross utilization of existing infrastructure and to expand access to quality training, Skill Hubs have been established across premier academic institutions, including IITs, NITs, and Jawahar Navodaya Vidyalayas (JNVs), Kendriya Vidyalayas, Sainik Schools, Eklavya Model Residential Schools (EMRS), PM Shri Schools, Toolrooms, NILET, CIPET etc.

- PMKVY 4.0 ensures industry-aligned training with curriculum available in multiple regional languages, making skilling more inclusive and accessible.
- Under PMKVY 4.0, a whole-of-government approach has been adopted to drive inter-ministerial convergence, ensuring the seamless execution of skilling initiatives across sectors. The scheme caters to the skilling components of various skill development and entrepreneurship schemes, maximizing impact and resource efficiency.
- Key collaborations include **PM Vishwakarma under the Ministry of Micro, Small & Medium Enterprises**, PM Surya Ghar: Muft Bijli Yojana, and the National Green Hydrogen Mission of the Ministry of New and Renewable Energy, NAL JAL Mitra etc.
- To enhance efficiency, procedural changes have been introduced, including the realignment of the demand assessment strategy to better identify sectoral skill gaps and industry needs.
- A key reform in PMKVY 4.0 is the "Ease of Doing Business" approach, which has significantly reduced the compliance burden, making participation in the scheme more streamlined and efficient.

PM National Apprenticeship Promotion Scheme (PM-NAPS):

- The National Policy on Skill Development and Entrepreneurship, 2015 focuses on apprenticeship as one of the key components for creating skilled manpower in India.
- The Pradhan Mantri National Apprenticeship Promotion Scheme (PM-NAPS) supports seamless transition from education to work, ensuring apprentices gain industry-specific skills through real-world exposure.
- To support both apprentices and establishments in India, 25% of the stipend, up to Rs.1,500 per month per apprentice, will be provided through Direct Benefit Transfer (DBT) during the training period, provided by the Central Government.
- The scheme is designed for individuals aged 14 to 35 years, ensuring inclusive access to skill development opportunities across various demographics.
- NAPS encourages apprenticeship opportunities in prevailing manufacturing including emerging fields such as AI, robotics, blockchain, green energy, and Industry 4.0 technologies.
- This aligns skilling initiatives with futuristic job markets and industry trend. The scheme also encourages enrolment of apprentices in small establishments especially Micro, Small and Medium Enterprises (MSMEs), and those located in the underserved areas such as aspirational districts and North-East Region.

Jan Shikshan Sansthan (JSS) scheme:

- The Jan Shikshan Sansthan (JSS) scheme is a community-centric skilling initiative designed to make vocational training accessible, flexible, and inclusive, particularly for women, rural youth, and economically disadvantaged groups and caters to the age group of 15 -45 years of age.

- By delivering low-cost, doorstep training with flexible schedules, JSS ensures that skilling opportunities reach those who need them the most, fostering both self-employment and wage-based livelihoods.
- Beyond skill development, the program plays a vital role in social empowerment, creating awareness on health, hygiene, financial literacy, gender equality, and education within communities. JSS is linked with key initiatives of the Government like: **PM JANMAN, Understanding of Lifelong Learning for All in Society (ULLAS), etc. to promote inclusive skilling.**
- Aligned with national frameworks, all certifications under the Skill India Program are mapped to the National Skills Qualification Framework (NSQF) and seamlessly integrated with DigiLocker and the National Credit Framework (NCrF), ensuring formal recognition of skills and enabling smooth transitions into employment and higher education.
- With the continuation of the Skill India Programme, the government seeks to reinforce its commitment to lifelong learning, recognizing the importance of continuous upskilling and reskilling in today's rapidly changing employment landscape.
- The initiative will directly contribute to the Periodic Labour Force Survey (PLFS) data, ensuring that workforce development policies remain aligned with economic and industrial trends.
- The **Skill India Programme** plays a crucial role in equipping India's workforce with the skills needed to thrive in a rapidly evolving global economy. By integrating industry-relevant training, emerging technologies, and international mobility initiatives, the program aims to create a highly skilled and competitive workforce.
- As a key driver of economic empowerment, Skill India contributes to employment generation, entrepreneurship, and productivity enhancement across sectors. The Ministry of Skill Development & Entrepreneurship (MSDE) remains committed to strengthening vocational education, expanding apprenticeship opportunities, and fostering lifelong learning, ensuring that India's workforce is future-ready and positioned as a global leader in skill-based employment.

Skill India Mission

- The aim of Skill India Mission is to create an end-to-end implementation framework for skill development, which presents opportunities for life-long learning.
- Under this Mission, the Ministry of Skill Development and Entrepreneurship (MSDE) delivers skilling, re-skilling and upskilling programmes through a comprehensive network of skill development centres/institutes across the country including rural areas under various schemes.

- The programme is designed to meet the growing demand for skilled professionals in various sectors and to promote economic growth by enhancing the skills of individuals, especially youth and marginalized communities.

Objectives of the Skill India Programme:

- **Skilling the Workforce:** Enhance the employability of youth by providing them with skills relevant to the job market.
- **Job Creation and Entrepreneurship:** Encourage self-employment and entrepreneurship among trained individuals.
- **Addressing Skill Gaps:** Bridge the skill gap in various sectors and industries, ensuring that the Indian workforce can meet the growing demands of the economy.
- **Promote Inclusivity:** Ensure that skill development reaches marginalised and rural communities, providing them with equal opportunities for economic advancement.
- **Future-Ready Workforce:** Focus on integrating technology and digital tools into training programmes, making sure that the workforce is prepared for future job markets.

For young people, a digital learning resource to help avoid cannabis use :PRE –CURB.

- A team of researchers from Bengaluru-based NIMHANS have developed 'Pre-CURB', a digital learning resource for young people on preventing cannabis use and promoting responsible behaviour.
- This digital resource, details the adverse health effects of cannabis, busts misconceptions with regard to its use, gives updates on the legal status of cannabis in India, and explains how young people can avoid cannabis use.
- The rising use of cannabis and several of its products has become a global concern. According to the World Health Organization (WHO), this phenomenon has become more closely linked to youth culture, with the age of initiation usually being lower than that of other drugs.
- In India, cannabis (known in the vernacular as *ganja* or *bhang*) holds cultural significance because of its use during festivals and rituals even though its use is illegal.
- Cannabis use rates ranging from 6.8% to 36% have been reported among college students in India, with poor academic performance, dropping-out, and cognitive impairment impacts, NIMHANS.

What Pre-CURB contains

- The Pre-CURB digital resource was developed by Kannan K. from the College of Nursing under the guidance of Prasanthi Nattala, professor and head of the Department of Nursing, Jayant Mahadevan, assistant professor of Psychiatry, and Dr. Meena.
- It is based on inputs from focus group discussions conducted among college students, an extensive review of the literature, and inputs provided by experts working in the area, said Dr. Nattala.

- “Pre-CURB is organised into three sections. The first section details the adverse health effects of cannabis, with specific reference to adverse impact on cognitive functions, driving impairment, and damage to major body systems. It also provides an update on the legal status of cannabis in India,” she said.
- While the second section busts popular misconceptions with regard to cannabis use, such as the belief that cannabis is safer compared to tobacco, cannabis cannot cause addiction, etc., the third section explains how young people can avoid cannabis use by dealing with various use triggers and practising a healthy and responsible lifestyle.
- This can be done through building and nurturing family and social support networks, making positive personality changes, and experiencing pleasure without cannabis,

What are the health effects of cannabis use?

- Cannabis is by far the most widely cultivated, trafficked and abused illicit drug. Half of all drug seizures worldwide are cannabis seizures. The geographical spread of those seizures is also global, covering practically every country of the world.
- About 147 million people, 2.5% of the world population, consume cannabis (annual prevalence). An analysis of cannabis markets shows that low prices coincide with high levels of abuse, and vice versa.
- Cannabis impairs cognitive development (capabilities of learning), including associative processes; free recall of previously learned items is often impaired when cannabis is used both during learning and recall periods.
- Cannabis impairs psychomotor performance in a wide variety of tasks, such as motor coordination, divided attention, and operative tasks of many types.
- Chronic health effects include development of a cannabis dependence syndrome; exacerbating schizophrenia in affected individuals; epithelial injury of the trachea and major bronchi; airway injury, lung inflammation, and impaired pulmonary defence against infection.

Holistic approach

- As health and wellness comprise both physical and mental well-being, the workshop adopted a holistic approach with didactic interactive sessions for the students from a team of multi-disciplinary experts at NIMHANS.
- They addressed a range of topics such as prevention of non-communicable disorders, stress management, physical fitness, sleep and rest, healthy eating, as well as a session on the information-education-communication resources available at NIMHANS

Government plans to amend nuclear liability law

- For an active partnership with the private sector towards this goal, amendments to the Atomic Energy Act and the Civil Liability for Nuclear Damage Act will be taken up,” by Finance Minister ,

had said in the speech highlighting the need for “at least 100 GW” of nuclear energy by 2047, and making an outlay of ₹20,000 crores for the development of five SMRs to be operationalized in India by 2033.

- India at present has a nuclear power capacity of 6780 MW comprising of 22 reactors, and the only foreign operator in India is Russia's Rosatom.
- Government plans to amend the Civil Liability for Nuclear Damage Act (CLNDA) 2010 and the Atomic Energy Act 1962 to address concerns of American and French nuclear power companies.
- Foreign companies have hesitated to invest in India due to strict liability clauses in the CLNDA, which place a high degree of responsibility on suppliers for nuclear accidents.
- The proposed amendments aim to align India's liability laws with international standards, especially the Convention for Supplementary Compensation for Nuclear Damage (CSC), which holds operators liable, not suppliers.

Nuclear projects affected by the current liability laws

- Electricité de France (EDF)'s MoU to build six EPR1650 reactors in Jaitapur, Maharashtra, signed in 2009.
- Westinghouse Electric Company's MoU to build six AP1000 reactors in Kovvada, Andhra Pradesh, signed in 2012.
- Both projects have faced delays due to legal concerns over supplier liability under the CLNDA.

Potential benefits of amending the CLNDA

- Unlock stalled nuclear projects like EDF's Jaitapur plant and Westinghouse's Kovvada project.
- Attract foreign investment in India's nuclear energy sector.
- Expand India's nuclear power capacity, with a target of 100 GW by 2047.
- Facilitate the development of Small Modular Reactors (SMRs), which are cost-effective and gaining popularity globally.

Challenges in amending the CLNDA 2010

- It was passed after intense debates in parliament, and any amendments that dilute supplier liability could face opposition from opponent parties and civil society groups.
- India created a ₹1,500 crore insurance pool in 2019 to cover nuclear damages, however, it failed to attract major investors. The amendments must ensure comprehensive legal protections and compensation frameworks to build investor confidence.
- India plans to leverage Small Modular Reactors (SMRs) by:
 - Allocating ₹20,000 crore in the 2025 Budget for nuclear energy development.
 - Setting a target to operationalize five SMR units by 2033.
- Partnering with the U.S. and France to adopt advanced SMR technologies, which are modular, cost-effective, and align with global trends in nuclear energy.

Government stance on amending the CLNDA

- In 2015, the government stated that there was “no proposal to amend the Act or Rules” and claimed that U.S. officials had reached a “general understanding” that India’s CLNDA was compatible with the international Convention for Supplementary Compensation for Nuclear Damage (CSC). However, this understanding did not result in any significant nuclear contracts.
- The current announcement marks a shift from the 2015 stance, with the government aiming to amend the CLNDA to address foreign companies’ concerns.
- The government has not provided a specific timeline for implementing the amendments.

Proposed amendment align with India’s nuclear energy goals

- The government aims to achieve 100 GW of nuclear power by 2047, up from the current 6,780 MW.
- Nuclear energy will help diversify India’s energy mix and reduce dependency on fossil fuels.
- The focus on SMRs and partnerships with the U.S. and France will enhance India’s technological expertise in nuclear energy

President's Rule In Manipur: A Look At The Provision And Its History | What It Means And Why It Matters ?

- After two years of unrest and violence in Manipur, Chief Minister N. Biren Singh stepped down, leading to the imposition of president's rule in the state.
- Following the Chief Minister's resignation, there were speculations that the state might come under the President's rule if the party failed to choose a new leader.

What is President’s Rule?

- President’s Rule is a provision under Article 356 to be imposed in case of the failure of the constitutional machinery in a State. In such situations, based on a report by the State’s Governor or other inputs, the President can issue a Proclamation taking over the functions of the State’s government and Governor — effectively transferring them to the Union government — and transferring the powers of the State Assembly to Parliament.
- The President cannot, however, assume any of the powers vested in a High Court. The President’s proclamation must be laid before Parliament, and will expire in two months unless both Houses ratify it. It may be renewed by Parliament every six months, for a maximum period of three years. After the first year, renewal can take place under certain conditions, of an Emergency being declared in the country or the State, or the Election Commission declaring that State elections cannot be held.
- Article 356 does not list the various specific circumstances under which President’s Rule can be imposed, leaving it to the judgment of the President (and the Union Council of Ministers advising

her) to satisfy herself that "a situation has arisen in which the Government of the State cannot be carried on in accordance with the Provisions of this Constitution".

- A comprehensive assessment of President's Rule published by the Lok Sabha Secretariat in 2016 listed situations in which it has been imposed, apart from militancy and law and order: defections by MLAs, break-up of coalitions, passing of no-confidence motions, resignations of Chief Ministers, absence of legislatures in newly formed States, and public agitations leading to instability.
- The Supreme Court's judgment in the 1994 *S.R. Bommai vs Union of India* case also listed the circumstances in which President's Rule could and could not be imposed, though it made it clear this was not exhaustive.

President's Rule In Manipur: A Timeline

- Manipur has faced President's Rule a total of 10 times, with the first imposition occurring in 1967. The state has witnessed a significant number of President's Rule impositions, making it one of the states with the highest instances of central rule.

Here's a breakdown of the years when President's Rule was imposed in Manipur:

- 1967 (twice): The first instance was from January 1967 to March 1967, and the second instance was from October 1967 to February 1968.
- 1969: President's Rule was imposed from October 1969 to March 1972.
- 1973: It was imposed from March 1973 to March 1974.
- 1977: President's Rule was in effect from April 1977 to June 1977.
- 1979: It was imposed from February 1979 to June 1979.
- 1981: President's Rule was in effect from February 1981 to June 1981.
- 1992: It was imposed from January 1992 to April 1992.
- 1993: President's Rule was in effect from December 1993 to December 1994.
- 2001: It was imposed from June 2001 to March 2002

President's Rule Or Article 356: How It Works and When It's Imposed

- With the imposition of the President's rule under Article 356, all the functions of the state government are handed over to the Centre and the functions of the state legislature to the Parliament. The only exception to this is the functioning of the High Courts, which remains unchanged.
- The process starts when the President receives a report from the Governor and believes that the state government can no longer function as required by the Constitution. In such a scenario, the President issues a 'proclamation,' which remains effective for two months.
- To extend its validity, both the Lok Sabha and Rajya Sabha must approve it through a resolution within this timeframe.

- If approved, the President's Rule can be prolonged for six months, with Parliament having the option to grant six-month extensions for up to three years.
- When President's Rule is imposed, the President assumes the functions of the state government, and the powers of the state legislature are exercised by Parliament.
- The state legislative assembly may be suspended or dissolved, and the Governor administers the state on behalf of the President.

What does the Constitution say?

- Emergency provisions, inspired by the German Constitution and outlined in Part XVIII of the Indian Constitution, protect India's sovereignty, unity and security. They empower the Central government to address extraordinary crises by temporarily assuming control to ensure stability and safeguard the democratic framework. The Constitution provides for three types of emergencies — national (Article 352), State (Article 356) and financial (Article 360).
- In Manipur, the President has proclaimed a "state emergency" — popularly known as "President's Rule" or "Constitutional Emergency" — by exercising powers under Article 356. This fulfils the Union's obligation under Article 355 to protect States against 'external aggression' and 'internal disturbance' (such as separatist or sectarian violence or calamities beyond a State's control) and to ensure that State governments operate as per the Constitution.
- When a State's "constitutional machinery" fails due to non-performance or malperformance, Article 356(1) empowers the President to issue a proclamation— upon receiving a report from the Governor or otherwise — if she is satisfied that the State government cannot function constitutionally.
- This effectively transfers all executive functions of the State to the Centre and legislative functions to Parliament while leaving the High Court's (HC) powers unaffected. Additionally, Article 365 provides that if a State fails to comply with any Union directions under constitutional provisions, the President may declare a "Constitutional Emergency."
- As per Clause 3 of Article 356, the proclamation must be laid before each House of Parliament, and unless approved by a 'simple majority' in both Houses, it ceases after two months. Once approved, it remains effective for six months from the proclamation date, with further six-month extensions requiring additional Parliamentary approval.
- Renewal beyond one year is allowed only if two conditions are met — an Emergency has been declared in the country or any part of the State, and if the Election Commission certifies that President's rule is necessary due to difficulties in conducting State elections.
- However, in no case can the proclamation remain effective for more than three years, and the President may revoke or vary it at any time by a subsequent proclamation.

How is a 'constitutional emergency' different from a 'national emergency'?

- Article 352 governs the proclamation of a “national emergency,” which has been invoked thrice — during the 1962 India-China war, the 1971-armed conflict with Pakistan, and in 1975 on grounds of “internal disturbance.”
- In 1975, then Prime Minister Indira Gandhi declared the emergency after the Allahabad High Court, in *The State of Uttar Pradesh versus Raj Narain* (1975), found her guilty of “electoral malpractices” and debarred her from holding any elected post.
- Unlike a “State emergency,” proclaiming a “national emergency” requires that the President be satisfied that India’s security — or any part of its territory — is threatened by war, external aggression, or armed rebellion. The 44th Constitutional amendment (1978) introduced multiple safeguards to prevent misuse.
- It replaced “internal disturbance” with “armed rebellion”, mandated a written recommendation from the Cabinet (rather than just the Prime Minister), and shortened the parliamentary approval window from two months to one month. It also clarified that Articles 20 and 21 cannot be suspended, and that the President must revoke the proclamation if the Lok Sabha passes a resolution disapproving it.
- Crucially, the amendment restored judicial review of the President’s satisfaction in proclaiming an emergency, a safeguard removed by the 38th Constitutional amendment (1975).
- Unlike a “constitutional emergency” (which can last up to three years), a “national emergency” has no time limit. Additionally, while the President’s rule (Article 356) requires a ‘simple majority’ for parliamentary approval, a national emergency needs a ‘special majority’.
- In a national emergency, the State executive and legislature continue to function, whereas under President’s Rule, the State executive is dismissed, and the legislature is suspended or dissolved.
- However, the Manipur Assembly, which has a tenure till 2027, has not been dissolved but is placed under “suspended animation”. This means that the Assembly is temporarily “paused”, allowing its revival if ‘political stability’ is restored.

Does it affect fundamental rights?

- President’s rule does not affect citizens’ fundamental rights, unlike a national emergency, where under Article 358, freedoms under Article 19 become inoperative, and the President may suspend other fundamental rights, except Articles 20 and 21.
- Under President’s Rule, the President acquires extraordinary powers, with the Governor, on her behalf, administering the State with assistance from the Chief Secretary or advisers appointed by the President.
- Additionally, Article 357 allows Parliament to confer legislative power on the President and authorise delegation to another authority while also giving the President power to sanction expenditure from the State’s Consolidated Fund.

President's Rule In India: A Timeline Of Key Events

- India has witnessed 134 instances of President's Rule since 1950, with Manipur and Uttar Pradesh being imposed with it the most at 10 times each. President's Rule was first imposed in India in 1951, in the state of Punjab.
- Jammu and Kashmir holds the distinction of being under President's Rule for the longest period, followed closely by Punjab and Puducherry.
- Since India's Constitution came into effect in 1950, Jammu and Kashmir has spent over 12 years under central control, while Punjab has been under President's Rule for more than 10 years.
- In the most recent period, President's rule was imposed in Puducherry when the Congress government lost power after failing a trust vote in 2021.
- In its history, Puducherry has spent more than 7 years under President's rule, a major reason for governments often losing support in the Assembly due to internal strife or defections.

Supreme Court's Stand On Article 356

- The Supreme Court has played a crucial role in shaping the contours of President's Rule in India. A landmark judgement in this regard is the S.R. Bommai v. Union of India case (1994), which laid down significant guidelines for the imposition of President's Rule under Article 356 of the Constitution.
- A nine-judge bench of the Supreme Court decided that the president's power to impose President's Rule under Article 356 can be reviewed by courts. Courts can check if the decision was made wrongly, with bad intentions, or for the wrong reasons.
- The court cannot question the President's decision itself but can check if the information given to the President was relevant to the decision made.
- The court also laid down guidelines to protect the independence of state governments.
- Even if the President's proclamation is valid, the court ruled that only the state legislature would be suspended, while the other branches of the state government would continue to function. However, this is contingent upon approval from both the Lok Sabha and Rajya Sabha within two months. If this approval is not obtained, the court held that the dismissed government would be reinstated.
- Justice B.P. Jeevan Reddy, who was part of the majority, expressed his opinion as follows: The fact that under the scheme of our Constitution, greater power is conferred upon the Centre vis-à-vis the states does not mean that states are mere appendages of the Centre. The courts should not adopt an approach, an interpretation, that has the effect of or tends to have the effect of whittling down the powers reserved to the states.
- Since the Supreme Court's decision in Bommai, the imposition of President's Rule has decreased significantly.

Gyanesh Kumar becomes CEC: How the appointment process has changed

- The government elevated Election Commissioner Gyanesh Kumar as the Chief Election Commissioner (CEC). Kumar is the first CEC to be appointed under the new law on the appointment of the members of the Election Commission.

What is the new selection process for the Chief Election Commissioner?

- **According to The Chief Election Commissioner and Other Election Commissioners Act, 2023, the Chief Election Commissioner and Election Commissioners are appointed by the President upon the recommendation of a selection committee, which consists of:**
 - 1. Prime Minister
 - 2. A Union Cabinet Minister
 - 3. Leader of Opposition or leader of the largest opposition party in the Lok Sabha
- The Act also states that a search committee, headed by the Cabinet Secretary, will propose a panel of names to the selection committee.

How were the Election Commissioners appointed earlier?

- The Election Commission derives its authority from Article 324 of the Constitution, which states: "The Election Commission will comprise the Chief Election Commissioner and such number of Election Commissioners, as the President may decide."
- Earlier, the appointment of Election Commissioners was regulated by the Election Commission (Conditions of Service of Election Commissioners and Transaction of Business) Act, 1991. This Act, however, did not define the selection process. As a result, the President appointed the Election Commissioners on the advice of the Prime Minister and the Council of Ministers.

What has changed under the new Act?

- **Salary:** Under the 1991 Act, the salary of the Election Commissioners was equivalent to that of a Supreme Court judge. However, the new Act defines the salary and conditions of service of the CEC and ECs as equivalent to that of a Cabinet Secretary.
- **Eligibility:** Previously, there were no specific eligibility criteria for the selection of the CEC and ECs. The new Act now specifies that candidates must:
 - 1. Be persons of integrity
 - 2. Have knowledge and experience in the management and conduct of elections
 - 3. Be or have been a Secretary (or equivalent) to the government.

What remains unchanged

- **Term and reappointment:** The Act keeps the tenure conditions unchanged to six years or until the attainment of 65 years of age. Members of the Commission cannot be reappointed.

- Removal: The Act also retains the removal process for CEC and ECs as specified in the Constitution. The CEC may be removed in the same manner as applicable for a Supreme Court judge. ECs may only be removed upon the recommendation of the CEC.
- The Constitution states: "The Chief Election Commissioner shall not be removed from his office except in like manner and on the like grounds as a Judge of the Supreme Court."

Why did the process change?

- In the Anoop Baranwal vs Union of India judgment, the Supreme Court observed that the Election Commission is an independent body and, therefore, the selection process of its commissioners should not be solely determined by the Executive.
- The apex court suggested that Parliament should enact a law defining the selection process. Meanwhile, the court directed that until such a law was in place, appointments should be made by the President based on the recommendation of a Selection Committee.
- The Supreme Court's prescribed Selection Committee consisted of:
 1. Prime Minister
 2. The Leader of Opposition in the Lok Sabha
 3. The Chief Justice of India
- However, the new Act replaced the Chief Justice of India on the Selection Committee with a Union Minister nominated by the Prime Minister, effectively increasing the Executive's control over appointments.

Legal challenge:

- After the new law was passed, multiple petitions were filed in the Supreme Court, challenging its validity. The petitions also sought to put on hold the appointment of two Election Commissioners in March 2024 under The Chief Election Commissioner and Other Election Commissioners Act, 2023.
- The apex court declined to stay the appointments but agreed to hear the matter. A final judgment on the issue is still pending
- Election commissioner Gyanesh Kumar was appointed as the next Chief Election Commissioner.
- In exercise of powers conferred by section 4 of the Chief Election Commissioner and other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, 2023, President Droupadi Murmu has appointed Gyanesh Kumar as Chief Election Commissioner in the Election Commission of India, with effect from February 19.
- He will succeed Rajiv Kumar who will demit the office of Chief Election Commissioner on February 18.
- Rajiv Kumar had joined EC as Election Commissioner on September 1, 2020 and assumed charge as the 25th Chief Election Commissioner on May 15, 2022.

- Gyanesh Kumar is the first CEC to be appointed under the new law on the appointment of the members of the Election Commission. His term will run till January 26, 2029.
- Vivek Joshi, a 1989-batch Haryana cadre Indian Administrative Service (IAS) officer, has been appointed as an election commissioner. Born on May 21, 1966, Joshi (58) will serve in the poll panel till 2031.
- Sukhbir Singh Sandhu is the other election commissioner. He joined the EC on March 14, 2024. He is a 1988-batch IAS officer from Uttarakhand cadre.

Who is Gyanesh Kumar?

- Gyanesh Kumar is a 1988-batch Kerala cadre IAS officer.
- After completing his B.Tech in Civil Engineering from the Indian Institute of Technology (IIT), Kanpur, he studied Business Finance in ICFAI, India and Environmental Economics in HIID, Harvard University, US.
- He has worked in the government of Kerala as the assistant collector of Ernakulam, sub-collector of Adoor, managing director of the Kerala State Development Corporation for SC/ST, municipal commissioner of the Corporation of Cochin, besides holding other posts.
- • As a secretary to the government of Kerala, Kumar handled diverse departments, such as finance resources, fast-track projects and the public works department.
- • In the central government, he has rich experience of working as the joint secretary in the Ministry of Defence, joint secretary and additional secretary in the Ministry of Home Affairs, secretary in the Ministry of Parliamentary Affairs and secretary in the Ministry of Cooperation.
- • Kumar played a key role in implementing decisions following the abrogation of Article 370 of the Constitution in Jammu & Kashmir during his stint in the Ministry of Home Affairs.
- • He took charge as an election commissioner on March 15, 2024.
- • During his tenure as the 26th CEC, Kumar will oversee the Bihar Assembly polls later this year, and the Kerala and Puducherry Assembly polls in 2026.
- • Similarly, he will oversee the Assembly polls in Tamil Nadu and West Bengal, which are also due in 2026.

Election Commission of India

- The Election Commission of India (EC) is a permanent independent constitutional body created under Article 324 of the Indian Constitution.
- The EC was set up on January 25, 1950, on the eve of India becoming a sovereign democratic republic with its headquarters in New Delhi.

Functions of EC

- EC is vested with the powers and responsibilities of superintendence, direction and control of the entire process of preparation and revision of electoral rolls for, and conduct of, elections to the

houses of Parliament and Legislatures of the states and the Union Territories and of elections to the offices of President and Vice-President.

- It prepares, maintains and periodically updates (new registration, modification and deletion as per guidelines) the electoral rolls, registers political parties/candidates, supervises the whole process of conducting election, monitors the election campaigns, including funding and expenditure of candidates, maintaining Model Code of Conduct (MCC) to make the entire electoral process free fair democratic and accessible for all its stakeholders.
- It also facilitates coverage of the election process by the media, carries out the voter education and awareness measures, organises the polling stations/ booths where voting takes place, and oversees under stringent surveillance mechanisms the counting of votes and the declaration of results.
- EC has introduced polling through EVMs (Electronic Voting Machines) and recently, introduced VVPAT (Voter Verifiable Paper Audit Trail) with an intention to enhance transparency and credibility of all the stakeholders in the electoral process.
- The poll panel has provided for compulsory identification at the time of voting by means of Electors' Photo Identity Cards (EPICs) and distribution of Photo Voter Slips to all electors close to polls.
- Elections are conducted according to the constitutional provisions, supplemented by laws made by Parliament and rules and orders made thereunder.
- **The major laws are:**
 - i) The Presidential and Vice-Presidential Elections Act, 1952.
 - ii) The Representation of the People Act, 1950.
 - iii) The Representation of the People Act, 1951.
- All political parties are required to get themselves registered with the Election Commission. Based on performance criteria laid down in the Election Symbols (Reservation & Allotment) Order 1968, the EC grants recognition to political parties as national or state parties. It also decides disputes relating to splits/mergers of recognised political parties.

Multi-member Commission

- The first Chief Election Commissioner (Sukumar Sen) was appointed on March 21, 1950.
- Originally, the commission had only a Chief Election Commissioner. It currently consists of the Chief Election Commissioner and two election commissioners.
- Two additional commissioners were first appointed on October 16, 1989, but they had a very short tenure till January 1, 1990. Later, on October 1, 1993, two additional election commissioners were appointed.

- The concept of multi-member Commission has been in operation since 1993, with decision making power by majority vote.

National Commission for Scheduled Tribes (NCST) Completes 22 Years: Role, Achievements & Challenges

- The National Commission for Scheduled Tribes (NCST) marks 22 years of its establishment, signifying over two decades of commitment to the rights and welfare of Scheduled Tribes in India.
- NCST plays a vital role in advising the government on policies concerning tribal welfare and ensuring constitutional safeguards for tribal communities.

Establishment and Role of NCST

- The NCST was established through the 89th Constitutional Amendment Act of 2003, bifurcating the erstwhile National Commission for Scheduled Castes and Scheduled Tribes into two separate entities. The primary function of NCST is to safeguard the interests of Scheduled Tribes and ensure their inclusion in mainstream development.

Functions and Responsibilities

- The commission is responsible for investigating complaints related to the deprivation of rights and safeguards of Scheduled Tribes. It also provides reports to the President of India on the implementation of constitutional provisions and various welfare measures for tribal communities.

Achievements of NCST

- Over the past 22 years, NCST has actively worked towards addressing tribal land disputes, ensuring proper implementation of the Forest Rights Act, and recommending policy changes for tribal welfare. The commission has also played a crucial role in advocating for the preservation of tribal cultures and traditions.

Challenges Faced by NCST

- Despite its efforts, the NCST faces several challenges, including inadequate funding, administrative delays, and limited authority to enforce its recommendations. There is a need for greater government support and enhanced powers to make its directives more effective.

Evolution of Tribal Rights in India

- The Indian Constitution provides special provisions for Scheduled Tribes under Articles 330, 332, and 335, ensuring political representation and job reservations. Over the decades, various commissions and committees have been formed to safeguard their interests.

Formation of NCST

- Prior to the formation of NCST in 2004, the welfare of Scheduled Tribes was overseen by a joint commission with Scheduled Castes. The need for a dedicated body led to the constitutional amendment that established NCST as a separate entity.

Impact of NCST on Tribal Development

- Since its establishment, NCST has made significant contributions, including recommending amendments to tribal laws, ensuring proper implementation of welfare schemes, and addressing grievances related to land rights and forest laws.

Facts on NCST

- The Office of the Commissioner for Scheduled Castes (SCs) & Scheduled Tribes (STs) was created in 1950 for effective implementation of various safeguards provided in the Constitution for the SCs & STs and various other protective legislations. In addition to it, a multi-member Commission for SCs and STs was set up in 1978.
- In 1992, these two organisations were replaced by a statutory multi-member National Commission for SCs and STs.
- Since the needs, problems and the solutions required for STs were quite different from those of SCs, a special approach for tribal development and an independent machinery to safeguard the rights of STs was considered necessary.
- Accordingly, a separate National Commission for Scheduled Tribes (NCST) was set up with effect from February 19, 2004 by amending Article 338 and inserting a new Article 338A in the Constitution, through Constitution (Eighty-ninth Amendment) Act, 2003.
- The NCST, in its first report for the year 2004-05 and 2005-06 made a recommendation for safeguarding the rights of Tribal Communities over mineral resources.

Members of NCST

- The NCST consists of chairperson, vice chairperson and three members.
- The chairperson and vice chairperson of the Commission have been conferred the rank of Union Cabinet Minister and Minister of State respectively, while other members have been given the rank of a secretary to the government of India.
- The chairperson, vice chairperson and members hold office for a term of three years from the date on which he/she assumes such office. The chairperson, vice chairperson and other members shall not be eligible for appointment for more than two terms.

Role of NCST

- The sub-clause (5) of the Article 338A of the Constitution of India provides that it shall be the duty of the National Commission for Scheduled Tribes as under:
- To investigate and monitor all matters relating to the safeguards provided for the Scheduled Tribes under this Constitution or under any order of the government and to evaluate the working of such safeguards.
- To inquire into specific complaints with respect to the deprivation of rights and safeguards of the Scheduled Tribes.

- To participate and advise on the planning process of socio-economic development of the Scheduled Tribes and to evaluate the progress of their development under the Union and any state.
- To present to the President, annually and at such other times as the Commission may deem fit, reports upon the working of those safeguards.
- To make in such reports recommendations as to the measures that should be taken by the Union or any state for the effective implementation of those safeguards and other measures for the protection, welfare and socio-economic development of the Scheduled tribes.
- To discharge such other functions as insulation to the protection, welfare and development and advancement of the Scheduled Tribes as the President may, subject to the provision of any law made by Parliament by rule specify.
- The National Commission for Scheduled Tribes (Specification of other function) Rules, 2005 provide for the following other functions in relation to the protection, welfare and development and advancement of the Scheduled Tribes. They are:
 - Measures that need to be taken over conferring ownership rights in respect of minor forest produce to STs living in forest areas.
 - Measures to be taken safeguard rights of the tribal communities over mineral resources, water resources, etc as laid down by law.
 - Measures to be taken for the development of tribal to plug loopholes and to work more viable livelihood strategies.
 - Measures to be taken to improve the efficacy of relief and rehabilitation measures for tribal groups displaced by development projects.
 - Measures to be taken to prevent alienation of tribal people from land and to effectively rehabilitate such people in whose case alienation has already taken place.
 - Measures to be taken to elicit maximum cooperation and involvement of tribal communities for protecting forests and undertaking social afforestation.
 - Measures to be taken to ensure full implementation of the provision of Panchayat (Extension to Scheduled Areas) Act, 1996.
 - Measures to be taken to reduce and ultimately eliminate the practice of shifting cultivation by tribal that lead to their continuous disempowerment and degradation of land and the environment.

Remission without application: What Supreme Court held, why

- The Supreme Court on Tuesday directed states with remission policies to consider the premature release of prisoners even if they don't apply for remission beforehand.
- In a landmark decision on the rights of prisoners, the **Supreme Court on Tuesday directed** states with remission policies to consider the premature release of prisoners even if they don't apply for

remission beforehand. With exceptions for certain kinds of convicts, states are empowered to release prisoners before the completion of their sentence under the Bharatiya Nyaya Suraksha Sanhita, 2023 (BNSS) and the Code of Criminal Procedure, 1973 (CrPC).

- A bench of Justices Abhay S Oka and Ujjal Bhuyan delivered this judgment in the case of “In Re: Policy Strategy for Grant of Bail”. This is a suo motu case that the court itself instituted in 2021 to tackle issues related to overcrowding in prisons.
- This decision marks a significant shift in the SC’s approach to remission. In two separate decisions from 2013, the court held that states cannot remit sentences suo motu (of their own volition) and the prisoner must first make an application. Here, we explain the court’s logic behind this shift in attitude.

What is the law on remission?

- The power of remission refers to the power to reduce the period of a sentence for a person who has been found guilty of a crime. Section 473 of the BNSS (and Section 432 of the CrPC) grants state governments the power to remit sentences “at any time”. States can also choose whether to impose conditions that the convict must meet for her sentence to be remitted, such as agreeing to report to a police officer at regular intervals.
- If any of these conditions are not fulfilled, the provision states that the states may cancel the remission granted and arrest the convict again without a warrant. This is separate from the power of the President and the Governor to remit sentences under Articles 72 and 161 of the Constitution respectively.
- One of the restraints placed on the state government’s power of remission can be found under Section 475 of the BNSS (and Section 433A of the CrPC). For convicts serving a life sentence and have been found guilty of an offence punishable by death, the state cannot release them from prison until at least 14 years imprisonment have been served.
- The BNSS and the CrPC mention that the remission process starts “Whenever an application is made to the appropriate Government”. However, the SC has now ruled that this application is not strictly necessary now that most states have remission policies which prescribe eligibility conditions.

What did the SC rule?

- The court considered two past decisions on the subject of remission, Sangeet and Anr. v State of Haryana (2013) and Mohinder Singh v State of Punjab (2013). In Sangeet, the court held that the power of remission under Section 432 of the CrPC “cannot be suo motu” as it is “only an enabling provision”. This, the court explained, means that Section 432 only enables the government to “override” a judicial decision by remitting a sentence, which can be set into motion “only through

an application for remission by the convict or on his behalf". Similarly, the court in Mohinder Singh held that the court cannot exercise the power to grant remission suo motu.

- However, on feb 18, 2025 the court noted that prison manuals in several states require the prison superintendent to initiate proceedings for the grant of remission. Further, it stated that the court in Sangeet and Mohinder Singh "did not consider a scenario where a policy was framed by the appropriate Government for grant of premature release or grant of remission".
- One of the reasons the court in Sangeet laid down the requirement for an application was that "It also eliminates "discretionary" or en masse release of convicts on "festive" occasions".
- However, when there is a remission policy in place that provides eligibility criteria for remission, the court on Tuesday held that problems would arise if states did not exercise discretion and grant suo motu remission. It held that states have an obligation "to consider cases of every eligible convict under the (remission) policy". Failing to do so, the court held, would be "discriminatory and arbitrary", and would violate the right to equality under Article 14 of the Constitution of India.

Did the SC issue any other directions?

- To ensure that the verdict is effective across the country, the court also directed every state to create an "exhaustive" policy for remission within two months if one is not already in place. The court also issued guidelines to build upon the decision in Mafabhai Motibhai Sagar v. State of Gujarat (2024) where the SC held that any conditions for remission must be "reasonable". It held that:
- Conditions must account for various factors including the motive of the crime, criminal background and public safety;
- Conditions must aim to ensure the criminal is rehabilitated and "the criminal tendencies, if any, of the convict remains in check";
- Conditions cannot be so "oppressive and stringent" that the convict cannot take advantage of the remission;
- Conditions must not be vague and should be capable of being performed.
- In the Mafabhai case, the court also clarified that remission should not be canceled in every case where the conditions are breached, stating the facts of each case should be considered carefully and "A minor or a trifling breach cannot be a ground to cancel remission". Relying on this holding, Justices Oka and Bhuyan held that a notice must be sent to the convict containing reasons for cancellation and the convict must be allowed to file a reply before the state decides to cancel the remission.

Centre extends tenure of NITI Aayog CEO Subrahmanyam by one year

- The Centre has extended the tenure of NITI Aayog Chief Executive Officer (CEO) B.V.R. Subrahmanyam by one year.

- Subrahmanyam, a 1987-batch retired Indian Administrative Service (IAS) officer of Chhattisgarh cadre, was appointed to the post for a period of two years in February 2023.
- The Appointments Committee of the Cabinet has approved extension in Subrahmanyam's tenure as NITI Aayog CEO for a period of one year beyond February 24, 2025.

What is NITI Aayog?

- National Institution for Transforming India, better known as NITI Aayog, was formed via a resolution of the Union Cabinet on January 1, 2015.
- The government constituted NITI Aayog to replace the Planning Commission, which had been instituted in 1950.
- • NITI Aayog acts as the quintessential platform of the government of India to bring the states to act together in national interest, and thereby fosters cooperative federalism.
- • It is the premier policy think tank of the government of India, providing directional and policy inputs. Apart from designing long-term policies and programmes for the government of India, NITI Aayog also provides relevant strategic and technical advice to the Centre, states, and Union Territories.
- • NITI Aayog is developing itself as a state-of-the-art resource centre with the necessary knowledge and skills that will enable it to act with speed, promote research and innovation, provide strategic policy vision for the government, and deal with contingent issues.
- **Team NITI Aayog**
- • The Prime Minister is the chairperson of NITI Aayog. The vice chairperson is appointed by the Prime Minister. Currently, there are four full-time members. Four Union ministers are nominated by the Prime Minister as Ex-officio members. Special Invitees are also nominated to NITI Aayog.
- • Chief Executive Officer (CEO) is appointed by the Prime Minister for a fixed tenure, in the rank of secretary to the government of India.
- NITI Aayog's entire gamut of activities can be divided into four main heads:
 - i) Policy and Programme Framework
 - ii) Cooperative Federalism
 - iii) Monitoring and Evaluation
 - iv) Think Tank, and Knowledge and Innovation Hub.
- • NITI Aayog plays an integrative role — with the active involvement of states, the civil society, and other think tanks — in development of a shared vision of national priorities and strategies in critical areas of human and economic development.
- **Governing Council of NITI Aayog**

- The Governing Council of NITI Aayog, comprising Chief Ministers of all states and Union Territories with legislatures and Lt Governors of other Union Territories, came into effect on February 16, 2015.
- The Governing Council is chaired by the Prime Minister.
- • It also includes ex-officio members and special invitees.
- • It is the premier body tasked with evolving a shared vision of national priorities and strategies, with the active involvement of states, in shaping the development narrative.
- • The Governing Council, which embodies the objectives of cooperative federalism, presents a platform to discuss inter-sectoral, inter-departmental and federal issues to accelerate the implementation of the national development agenda.

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PM Modi to attend 'biggest ever' jhumur event in Guwahati today: All about the tribal dance

- Prime Minister Narendra Modi will witness what has been pegged as the “biggest ever” jhumur (also spelt jhumoir or jhumair) event in history on Monday (February 24). Some 8,600 dancers will perform in Guwahati’s Sarusajai Stadium at the Jhumoir Binandini 2025 to mark the 200th anniversary of Assam’s tea industry.
- While inspecting preparations on **Saturday, Chief Minister Himanta Biswa Sarma** said that along with the PM, “60 heads of mission and ambassadors of different nations” will also witness the “historic” event that kicks off the Advantage Assam 2.0 summit.
- Here’s all you need to know about jhumur, the traditional dance of Assam’s “tea tribes”.

What is the tea garden community?

- The term “tea tribe” loosely refers to a multi-cultural, multi-ethnic community of tea garden workers and their descendants. These people came from Central India — mostly from present-day Jharkhand, Odisha, Chhattisgarh, and West Bengal — and settled in Assam in the 19th century to work in the tea gardens that the British were setting up.
- This migration was often forced, and even when it was not, it occurred in highly exploitative circumstances. Not only did migrants work under abysmal conditions at the tea gardens for very little pay, but they were also not free to leave. Thousands died of diseases during the journey to Assam and at the tea gardens, and hundreds were killed or brutally punished by British planters for trying to flee the estates.
- Today, the descendants of these people are primarily concentrated in districts with a large concentration of tea estates, namely Tinsukia, Dibrugarh, Sivasagar, Charaideo, Golaghat, Lakhimpur, Sonitpur and Udalguri in Upper Assam, and Cachar and Karimganj in the Barak Valley. They currently have Other Backward Classes (OBC) status in the state, although they have long been fighting for Scheduled Tribe (ST) status. Tribes such as the Munda or the Santhal, a part of

the larger tea garden community in Assam, have ST status in the states where they originally came from.

- According to the website of Assam's Directorate of Tea Tribes and Adivasi Welfare, "these people not only constitute a sizable chunk of the population in the state but also play a major role in tea production of the state". Socio-economically, however, remain marginalised, and among the poorest in the state.

what is the Jhumur dance?

- The tea garden community brought a motley collection of cultural practices from their homelands to Assam. Of particular note in this regard is the jhumur tradition.
- Jhumur is the folk dance of the Sadan ethnolinguistic group, who trace their origins to the Chotanagpur region. Today it occupies a central place in what are known as "tea garden festivals" or festivals celebrated by tea garden workers in Assam. The most important ones are the Tushu Puja and Karam Puja, which celebrate the oncoming harvest.
- Women are the main dancers and singers, while men play traditional instruments such as *madal*, *dhol*, or *dhak* (drums), cymbals, flutes, and *shehnai*. The attire worn varies from community to community, although red and white sarees are particularly popular among women.
- Dancers stand shoulder-to-shoulder and move in coordinated patterns with precise footwork while singing couplets in their native languages — Nagpuri, Khortha and Kurmali. These have evolved in Assam to borrow heavily from Assamese
- While set to upbeat tunes and lively rhythms, the subject of Jhumur songs in Assam, however, can often be grim. "These songs bring to life, and unravel the fissures in the lives of tea plantation workers... [and] tells us a lot about... [their] history of migration and the exploitative labour relations mar their lives," Nidhi Gogoi, a research scholar at the Gauhati University, wrote in her paper 'Jhumur folk tradition: A socio-cultural identity of tea community in Assam' (2022).
- The tradition thus also acts as a means of social cohesion, more so given the history of displacement of the tea garden communities. It aided them in not only retaining aspects of their culture and identity but also in making sense of the world their ancestors found themselves in.
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Decoded: Why Tamil Nadu is engaged in a tussle with Centre over NEP

- Tamil Nadu has once again opposed the Centre's National Education Policy (NEP), accusing the BJP-led government of pushing Hindi onto the state. The latest row erupted after the Centre withheld Rs 2,150 crore meant for Tamil Nadu after the MK Stalin-led government refused to implement the NEP in the state

- According to Chief Minister MK Stalin, the opposition to the NEP was not merely due to the "attempt to impose Hindi" but also because of factors that would have serious consequences for the future of students and the social justice system.

Here's explaining why Tamil Nadu is opposed to NEP:

Core concerns

- **1. Three-language formula:**The NEP 2020 recommends a three-language formula, suggesting that students learn three languages, with at least two being native to India. Tamil Nadu has historically adhered to a two-language policy, teaching only Tamil and English in schools. The state perceives the introduction of a third language as an attempt to impose Hindi, which has been a sensitive issue since the anti-Hindi agitations of the 20th century.
- Both the ruling DMK and the opposition AIADMK have expressed strong reservations against this aspect of the NEP, emphasising the importance of preserving Tamil linguistic heritage and opposing any form of Hindi imposition.
- **2. Centralisation and state autonomy:**Tamil Nadu argues that the NEP's framework undermines the state's autonomy over its educational policies. Education in India is a concurrent subject, allowing both the state and central governments to legislate on it. The state contends that the NEP imposes a uniform national policy that doesn't account for regional socio-economic and cultural differences, thereby infringing upon the state's rights to tailor education to its unique context.
- **3. Four-year undergraduate programme:**The NEP proposes restructuring undergraduate programmes into a four-year course with multiple exit options, allowing students to leave with a certificate after one year, a diploma after two years, or a degree after completing the full program.
- Critics in Tamil Nadu fear that this structure may lead to increased dropout rates, as students might opt for early exit points, thereby affecting the quality and depth of higher education. Also, there are concerns about the state's readiness in terms of infrastructure and faculty to implement such a system effectively.
- **4. Common entrance exams:**Tamil Nadu strongly opposes the entrance exam policies under NEP 2020, particularly CUET and NEET, arguing that they disadvantage state-board students and undermine social justice. The state rejects CUET for university admissions, claiming it favours CBSE students and increases reliance on coaching centres.

Why did Centre withhold funds for Tamil Nadu?

- The Centre's decision to link the release of funds under schemes like Samagra Shiksha Abhiyan (SSA) to the implementation of the NEP has intensified the controversy. Tamil Nadu alleges that over Rs 2,150 crore in SSA funds have been withheld because of its refusal to adopt the NEP and the three-language policy.

What is the Centre's stand?

- Union Education Minister Dharmendra Pradhan called out the DMK government's stand, saying that Stalin's letter to the PM goes against the idea of cooperative federalism.
- "Tamil Nadu has always been a torchbearer of social and educational progress, pioneering some of the most transformative reforms in India. However, the continued opposition to the NEP 2020 for political reasons deprives students, teachers, and educational institutions in Tamil Nadu of the immense opportunities and resources that this policy offers. The policy is designed to be flexible, allowing states to customise its implementation to suit their unique educational needs.

SC stays Lokpal order giving itself jurisdiction over HC judges

- The Supreme Court on Thursday (February 20, 2025) stayed a Lokpal order bringing High Court judges under its jurisdiction while terming the top anti-corruption ombudsman's interpretation "very disturbing".
- Taking *suo motu* cognisance of the January 27 Lokpal order, a Special Bench of Justices B.R. Gavai, Surya Kant and A.S. Oka, who are three senior judges of the Supreme Court and Collegium members, said it impacted the independence of the judiciary.
- The Bench, in a brief hearing, was offered assistance by senior advocates Kapil Sibal and B.H. Marlappalle even as Solicitor General Tushar Mehta appeared for the Union government.
- The Bench issued notice to the Centre, the Registrar of Lokpal and the complainant on whose plea the January 27 order was passed. The court listed the case on March 18. It enjoined the complainant from disclosing the name of the High Court judge in question and ordered the former to keep the contents of the complaint confidential.
- Mr. Sibal said the apex court sorely needed to lay down the law on this issue. Mr. Mehta categorically submitted that High Court judges would never fall within the ambit of the Lokpal.
- The order of the Lokpal, chaired by former Supreme Court judge, Justice A.M. Khanwilkar, was based on a complaint that an Additional High Court judge had influenced an Additional District Judge, and later another High Court judge, to decide in favour of a private company. It was alleged that the company had been a client of the judge during the latter's earlier years as an advocate.

Background: Lokpal's Order

- The Lokpal, chaired by former Supreme Court judge Justice A.M. Khanwilkar, ruled that High Court judges are "public servants" under the Lokpal and Lokayuktas Act, 2013, which place them within its investigative ambit.
- The decision derived from two complaints against a sitting High Court judge accused of influencing lower-court decisions to favor a private company, allegedly a former client from his advocacy days.

The Lokpal argued:

- High Courts were established by pre-Independence British Acts (e.g., Indian High Courts Act, 1861) and Letters Patent, predating the Constitution.

- Article 214 of the Constitution simply “recognized” High Courts but did not establish them, unlike the Supreme Court (Article 124).
- Clause (f) of Section 14(1) of the 2013 Act grants Lokpal jurisdiction over “any person” in bodies established by Parliament, which includes High Court judges.
- Supreme Court’s Intervention
- The SC took suo motu cognisance (initiated proceedings on its own) of the Lokpal’s order, forming a Special Bench of Justices B.R. Gavai, Surya Kant, and A.S. Oka (all Collegium members).
- Solicitor General Tushar Mehta (representing the Union government) argued High Court judges are constitutional appointees, not statutory functionaries, and thus outside Lokpal’s scope.
- In a 13-page order, the Lokpal concluded that High Court judges were ‘public servants’ and came within the ambit of the Lokpal and Lokayuktas Act of 2013.
- The anti-corruption body assumed jurisdiction to inquire or investigate complaints about High Court judges on the ground that, unlike the Supreme Court, the High Courts in India were constituted by British Parliamentary Acts — Indian High Courts Act, 1861 and Government of India Act 1935 — and Letters Patent of the British Monarch. In fact, the High Courts pre-dated the Constitution, the Lokpal reasoned.
- Article 214 of the Constitution, which said “there shall be a High Court for each State”, had only “intrinsically recognised” the existence of the High Courts. The Constitution did not establish the High Courts, the Lokpal argued in the January 27 order.
- On the other hand, the Supreme Court was completely a child of the Constitution, the ombudsman noted. Article 124 of the Constitution had established the Supreme Court, which had not been in existence till then.
- A few days before the January 27 order, the Lokpal, in a decision on January 3, had declared that it had no power over Supreme Court judges, including the Chief Justice of India.
- In the January 3 order, the Lokpal had explained that the Supreme Court was not a “body” established by an Act of Parliament or financed or controlled by the Central government. It had observed that Supreme Court judges, including the Chief Justice of India, even though ‘public servants’ in terms of the Prevention of Corruption Act of 1988, were not amenable to the jurisdiction of the Lokpal.
- But, the Lokpal, in its January 27 order, found the argument that a High Court judge was outside the ombudsman’s jurisdiction, “too naive”.
- The Lokpal said a High Court judge came within the ambit of clause (f) of Section 14(1) of the 2013 Act.
- A clause of Section 14 notes the Lokpal has jurisdiction over “any person who is or has been a chairperson or member or officer or employee in any body or Board or corporation or authority

or company or society or trust or autonomous body (by whatever name called) established by an Act of Parliament or wholly or partly financed by the Central government or controlled by it”

- The term ‘any person’ in the clause would include a judge of a High Court established by an Act of Parliament. “The 2013 Act does not provide for an explicit exception for the judges of the court established by an Act of the Parliament,” the Lokpal order read.
- In this case the judge in question was serving in the High Court of a State reorganised by an Act of the Parliament, it pointed out.
- The order had caught the attention of the Supreme Court as the Lokpal had forwarded the complaint to the Chief Justice of India for his consultation before launching a preliminary enquiry.
- “All judges have been appointed under the Constitution.

SC Order

- Stayed the Lokpal’s order, blocking its implementation.
- Issued notices to the Union government, Lokpal Registrar, and the complainant, scheduling the next hearing for March 18, 2025.
- Denied the complainant from disclosing the judge’s name or complaint details, mentioning confidentiality.

Push for monolithic Hindi identity’: Stresses the Language Diversity

- Tamil Nadu Chief Minister MK Stalin accused the Centre of imposing Hindi on those states where Hindi is not the mother tongue and alleged the forced adoption of the language swallowed several Indian languages.
- Several north Indian languages, including **Maithili, Brajbhasha, Bundelkhadi, and Awadhi**, have been **“destroyed by the hegemonic Hindi.”** This statement touches upon several key issues concerning language politics in India, especially in relation to linguistic diversity and the dominance of Hindi in the country.

India’s Linguistic Diversity

- India is renowned for its remarkable linguistic diversity, having diverse languages and dialects with its distribution influenced by historical, geographical, and cultural factors.
- Inhabitants of the Indian subcontinent spoke proto-**Dravidian languages** in the **4th century BCE**. These languages started to become more distinct from one another about 1,000 years later.
- The native languages of India fall into the following language families: **Indo-Aryan, Dravidian, Austro-Asiatic, Tai-Kadai, and Sino-Tibetan**.
- Indo-Aryan and Dravidian language families constitute the majority of native tongues spoken in India.
- According to the Census of India of 2001, India has 122 major languages and 1599 other languages.

- As of 2024, India has about **453 living languages**; the **Constitution of India** recognises **22 official languages**, known as "scheduled languages," listed in the **Eighth Schedule**.

Constitutional Provisions Related to Languages in India

- **Article 29** protects the rights of minorities to preserve their language, script, or culture.
- **Article 350A** mandates that states provide primary education in the mother tongue of children.
- **Article 350B** provides for the appointment of a "Special Officer" for linguistic minorities to safeguard their language rights.
- **Article 351** empowers the Union government to promote the development of Hindi as a national language.
- **Eighth Schedule** recognizes 22 official languages of India, including eleven with 'Classical' status, highlighting linguistic diversity.
- **Schedule Languages:** The **eighth schedule** includes the recognition of the following **22 languages**:
 - Assamese, Bengali, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Malayalam, Manipuri, Marathi, Nepali, Odia, Punjabi, Sanskrit, Sindhi, Tamil, Telugu, Urdu, Bodo, Santhali, Maithili and Dogri are the 22 languages presently in the eighth schedule to the Constitution.
 - Of these languages, 14 were initially included in the Constitution. Subsequently, Sindhi was added in 1967; Konkani, Manipuri and Nepali were added in 1992; and Bodo, Dogri, Maithili and Santali were added by the **92nd Amendment Act of 2003**.
- **Classical Languages:** Currently, **eleven languages** (previously it was 6) enjoy the 'Classical' status: Tamil (declared in 2004), Sanskrit (2005), Kannada (2008), Telugu (2008), Malayalam (2013), Odia (2014), Marathi (2024), Pali (2024), Prakrit (2024), Assamese (2024), and Bengali (2024).
- Under the Constitution provision is made for appointment of **Special Officer for linguistic minority** with the sole responsibilities of safeguarding the interest of language spoken by the minority groups.
- The language policy of India has been pluralistic, giving **priority to the use of mother tongue** in administration, education and other fields of mass communication.
- The **Language Bureau of Ministry of Human Resource Development** is set up to implement and **monitor the language policy**.

Science and Technology

ISRO's NVS-02 Navigation Satellite Encountering Technical Glitch

- ISRO's NVS-02 navigation satellite suffered a technical glitch after it was successfully injected into the intended Geosynchronous Transfer Orbit (GTO).
- The NVS-02 navigation satellite took off on January 29 aboard GSLV rocket from Satish Dhawan Space Centre in Sriharikota. It was the 100th launch from Sriharikota; and the 17th launch of GSLV.
- The launch was successful with the satellite injected into the intended orbit.
- All the launch vehicle stages performed flawlessly and the orbit was achieved with a high degree of precision," ISRO said, noting that solar panels on board the satellite were deployed and power generation started. Communication with the ground station was also established.
- The technical glitch occurred during orbit raising operations, ISRO said in the latest update.
- The orbit raising operations towards positioning the satellite to the designated orbital slot could not be carried out as the valves for admitting the oxidizer to fire the thrusters for orbit raising did not open," the national space agency said.
- The agency, however noted that the "satellite systems are healthy," and "is currently in elliptical orbit."
- ISRO said that the agency is developing an "alternate mission strategies for utilizing the satellite for navigation in an elliptical orbit".
- Radha Krishna Kavuluru, a former scientist at ISRO explained that satellites are first launched into a GTO, where they perform a series of engine burns (using onboard thrusters) to reach Geostationary orbit (GEO) -- a circular orbit 36,000 km above Earth's equator.
- Even as ISRO is exploring alternative solutions NVS-02's may suffer if it cannot reach GEO.
- "The satellite's utility may be compromised if it cannot reach GEO. By the way at a perigee of 200 km, NVS-02 stands on time for orbital decay due to orbital perturbations and space atmosphere drag," Kavuluru said in a post on social media platform X.
- The NVS-02 is one of the second-generation satellites for the Navigation with Indian Constellation system -- India's indigenous navigation system.
- The NavIC system provides an accurate Position, Velocity, and Timing service to users in India and to regions extending about 1500 km beyond Indian land mass.

India's winding road to '#EndTB

- According to the World Health Organization's Global Tuberculosis Report 2024, India continues to lead in the global TB burden (26% of cases) and is also the hub for drug-resistant TB (DR-TB) and TB deaths.

- While ambitious policies and initiatives are rolled out from the national level, the ground reality in India needs to be better understood to translate them into effective interventions.

Focus on vulnerable groups

- India's National Tuberculosis Elimination Programme (NTEP) clearly defines the high-risk or vulnerable groups that are at risk of contracting TB and developing adverse outcomes.
- Dr. Pavitra Mohan, says, "We get around 1000 persons with TB in our clinics every year and many of them have severe lung damage owing to fine dust inhalation from mining and stone carving. They are at risk for TB due to contributory factors like silicosis, undernutrition, overcrowding, and uncontrolled co-morbidities like diabetes.
- Migrant workers also have an added disadvantage of poor access to health-care facilities. Dr. Mohan says, "They prefer to go back to their native place if they fall ill and hence it is not easy for the healthcare delivery system also to keep track of their treatment."
- While a lot of attention is being paid to tackling undernutrition among persons with TB (pwTB), a host of other contributory factors in each geography needs to be addressed, requiring multisectoral action.
- TB is a curable disease with effective and free drugs from NTEP. A significant achievement for India is the treatment initiation in more than 95% of notified cases. This was possible, over the years, by establishing an exclusive procurement and supply chain system for the NTEP.
- However, in 2023, there was a country-wide break in the supply chain — it still continues in many parts.
- Shortage of key drugs in the centres, many of which are unavailable in the open market, left the beneficiaries and their families in a struggle. Nandita Venkatesan, data journalist and two-time TB survivor, says, "It takes many a mile for pwTB to reach the finishing line of treatment combating a wide range of side effects.
- Shortage of such critical medicines disrupts the treatment, risking resistance to antibiotics and poor disease outcomes. Moreover, having to buy drugs from outside leads to catastrophic health expenses."

On extrapulmonary TB

- **Extrapulmonary TB (EP-TB) affects any organ of the body — lymph nodes, the kidneys, the brain, the spinal cord, bones, joints, and skin.** However, the NTEP's main focus has been on pulmonary TB affecting the lung, as it is most common and transmissible.
- TB is an area where guidelines are updated quite frequently. However, studies show that a shortage of adequately trained human resources is a major challenge affecting implementation of the NTEP. Dr. Rangaswamy says, "Molecular tests are expensive and often take time to access as

they are mostly available only at district level. Results take time due to the heavy workload and shortage of trained staff. In effect, patients have to travel and incur more expenses.”

- **“The CBNAAT [Cartridge-based Nucleic Acid Amplification Testing] and Truenat machines are not available at many places,** [as they are] mostly placed at [the] district level. And very often, when a machine is available, the lab technician will not be there and if the lab technician is there, cartridge supply for the test would not be there.” The staff pattern within the NTEP does not meet the growing demands, with most now having more work.

What needs to be done

- Ownership at all levels is essential to make programmes work. Idukki district in Kerala collaborated with Kudumbashree, one of the largest women’s self-help networks in the world, for their TB elimination efforts.
- This resulted in widespread community participation and advocacy by government/leadership levels created a huge impact. “It helped us achieve our targets and sustain the activities,” says Dr. Cency B., former District TB Officer of Idukki district, and current Assistant Director, Kerala Health Services.

“Advocacy by political leadership helps in providing platforms for cross learning from best practices across geographies. But programme implementers will have to go beyond their routine work scope to achieve this.”

- While the chances of ending TB by 2025 look bleak, there is some hope. India’s case notification reached the highest level and deaths due to TB declined by 24% as compared to 2015, which is way more than the global decline.
- The administrative levels of the NTEP are designed to adapt to the innumerable contextual challenges. New bodies of knowledge from different parts of the world need to be considered.
- Vietnam, a high burden country, recently showed the effective use of active case finding for TB (advocated for high-risk groups) among the general population, so that targeted interventions could work better. Perhaps India too needs to restructure and redefine its many conventional frameworks, to combat this deadly disease.
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Retinal diseases: RNA therapeutics show promise but is India ready?

- Vision is crucial to navigate the world, connect with others, and perform everyday tasks. It helps us perceive colours, shapes, and movement, which are essential to learn, work, and keep safe.
- According to the World Health Organisation, more than 2.2 billion people worldwide experience some form of vision impairment. The causes range from cataracts and diabetic retinopathy to glaucoma, age-related macular degeneration, and inherited retinal diseases (IRDs).

- IRDs are genetic conditions that lead to progressive vision loss, often resulting in blindness. These diseases stem from mutations in more than 300 genes responsible for the function of the retina, the light-sensitive tissue at the back of the eye. While some individuals may lose their sight shortly after birth, others experience gradual deterioration over time. In many cases, early intervention could slow down or even prevent the progression of blindness.
- An estimated 5.5 million people suffer from IRDs around the world, with a prevalence rate of one in 3,450. However, the situation is more critical in India. Studies have revealed significantly higher prevalence, with one in 372 individuals in rural South India, one in 930 in urban South India, and one in 750 in rural Central India affected by these conditions.

A treatment breakthrough

- In 2017, the U.S. Food and Drug Administration (FDA) made a historic move by approving the first gene therapy for blindness caused by mutations in the *RPE65* gene. This approval sparked hope for patients with other genetic causes of blindness. Currently, more than 50 clinical trials are exploring gene therapy as an option to treat various inherited eye disorders.
- In India, however, awareness among clinicians about the availability and potential of *RPE65* gene therapy remains limited. While gene therapy has proven revolutionary, it is not yet a universal solution for all genetic eye diseases. This is where RNA-based therapies are poised to make a significant impact.
- RNA-based precision therapeutics are emerging as a game-changer for genetic disorders, including IRDs. Unlike DNA or genome-editing therapies, RNA-based therapies offer a safer alternative as they make temporary changes that don't carry over to future generations, reducing the risk of unintended long-term effects.
- Recent advancements have introduced RNA-based therapies like antisense oligonucleotides (ASOs), which have already been used successfully to treat diseases such as spinal muscular atrophy and Duchenne muscular dystrophy. Medical researchers are now exploring ASO therapy for retinal conditions like Stargardt disease, Leber congenital amaurosis, and retinitis pigmentosa.
- Beyond ASOs, researchers are also developing more advanced RNA-based options to address IRDs. One promising approach involves RNA-editing with ADAR enzymes, which can correct specific genetic mutations at the RNA level. This method has the potential to restore protein production in retinal cells without altering the underlying DNA, offering a new way to treat retinal degenerative diseases caused by single-point mutations.
- Another innovative strategy is the use of suppressor tRNAs to bypass stop-codon mutations, which can prematurely halt protein synthesis in retinal cells. By enabling the production of full-length proteins, this approach could help restore proper retinal function in IRD patients, where stop-codon mutations disrupt vital protein production.

- Another potential small molecule RNA-based therapy is PTC124, also known as ataluren, which is already being used to treat patients with cystic fibrosis and Duchenne muscular dystrophy. Recently, clinical trials have begun to investigate its use in treating a rare developmental eye disease called aniridia.
- Taken together, these options offer a more targeted, personalised treatment approach that could halt the progression of IRDs and improve patient outcomes with greater precision.

India and precision therapeutics

- Precision medicine is an approach that tailors treatments to an individual's genetic makeup, lifestyle, and other factors, offering a more targeted alternative to the one-size-fits-all approach of traditional options.
- For rare diseases like IRDs, understanding the genetic mutations prevalent in a population is essential for researchers to develop effective RNA-based therapies. Although researchers have linked more than 300 genes to IRDs, research in India has yet to fully map the genetic mutations responsible for these conditions in the local population.
- In fact, there is currently no large cohort study in India (i.e. involving at least 500 patients) to describe the mutation spectrum of IRDs. Such extensive studies are vital for researchers to identify the most common genetic defects that can subsequently be targeted using precision medicine.
- For example, the *ABCA4* gene is commonly mutated in IRD patients worldwide and is a popular therapeutic target. However, we lack a clear understanding of whether it is just as prevalent in Indian populations and/or whether some other mutation is expressed more often in certain ethnic groups.
- India's large size and diverse population add another layer to this challenge. Genetic mutations can vary significantly across different communities, making it difficult to identify common mutations. Accurately mapping these mutations necessitates extensive, resource-intensive research across various subgroups.
- Additionally, there are several barriers, including a lack of awareness of the genetic basis of IRDs among the people at large and healthcare providers alike, limited availability of genetic counselling services, insufficient research funding, and restricted access to diagnostic infrastructure in rural areas.
- Thus, to fully unlock the potential of RNA-based therapeutics, India must prioritise genetic research with a particular emphasis on understanding the mutation profiles of people with IRDs, in collaboration with local research institutions and healthcare providers.
- Expanding partnerships between global and local pharmaceutical companies, as well as research institutes, will also make these treatments more accessible to Indian patients. Raising awareness

among clinicians and researchers about advances in RNA therapies will likewise be crucial to ensure they are implemented effectively

Govt announces Nuclear Energy Mission with an outlay of Rs 20,000 crore

- The **Union Budget 2025-26** outlines a significant push towards **nuclear energy** as part of India's long-term energy transition strategy. The government has set an ambitious **target of 100 GW nuclear power capacity by 2047**, positioning nuclear energy as a **major pillar** in India's energy mix.
- This development aligns with the broader objectives of **Viksit Bharat**, ensuring **energy reliability** and **reducing dependency on fossil fuels**. To achieve this goal, **strategic policy interventions** and **infrastructure investments** are being undertaken, with an emphasis on **indigenous nuclear technology** and **public-private collaborations**.
- In the Union Budget 2025-26, Finance Minister Nirmala Sitharaman announced that a Nuclear Energy Mission for research & development of Small Modular Reactors (SMR) with an outlay of Rs 20,000 crore will be set up. At least five indigenously developed SMRs will be operationalised by 2033.
- The Budget outlines a significant push towards nuclear energy as part of India's long-term energy transition strategy. The government has set an ambitious target of 100 GW nuclear power capacity by 2047, positioning nuclear energy as a major pillar in India's energy mix.
- The strategy includes significant policy changes and investments in infrastructure, with a focus on indigenous technology and public-private collaborations.

Nuclear Energy Mission

- As a key component of energy security and sustainability, the government has launched the Nuclear Energy Mission for Viksit Bharat.
- Recognizing nuclear power as a **critical component** for achieving energy security and sustainability, the government has introduced the **Nuclear Energy Mission for Viksit Bharat**. This initiative aims to **enhance domestic nuclear capabilities**, **promote private sector participation**, and **accelerate the deployment of advanced nuclear technologies** such as Small Modular Reactors (SMRs).

Small Modular Reactors (SMRs) and R&D Initiatives

- A key highlight of the **Union Budget 2025-26** is the **launch** of a **Nuclear Energy Mission**, which is focused on research and development (R&D) of **Small Modular Reactors (SMRs)**. The government has allocated **₹20,000 crore** for this initiative, aiming to develop at least **five indigenously designed and operational SMRs by 2033**.

Nuclear Energy Mission for Viksit Bharat

- To facilitate the implementation of the **Nuclear Energy Mission**, amendments to the **Atomic Energy Act** and **Civil Liability for Nuclear Damage Act** will be taken up by the parliament. These amendments are expected to encourage **private sector investments** in nuclear power projects.
- This Mission seeks to enhance domestic nuclear capabilities, encourage private sector involvement, and accelerate the development of advanced technologies like Small Modular Reactors (SMRs).
- To implement this mission effectively, amendments to the Atomic Energy Act and the Civil Liability for Nuclear Damage Act will be proposed in Parliament, making it easier to attract private investment in nuclear energy projects.
- These amendments are expected to foster investment and innovation in the nuclear sector, helping India meet its target of 100 GW of nuclear energy by 2047 and reducing carbon emissions. India's current nuclear capacity stands at 8,180 MW as of January 2025.
- The government will enter into **partnerships** with the **private sector** with the motive of:
- Setting up **Bharat Small Reactors**,
- Research & development of **Bharat Small Modular Reactor**, and
- Research & development of **newer technologies** for nuclear energy.

Bharat Small Reactors

- The government is actively expanding its nuclear energy sector by developing **Bharat Small Reactors (BSRs)** and exploring **partnerships** with the **private sector**. BSRs are **220 MW Pressurized Heavy Water Reactors (PHWRs)** with a proven safety and performance record. These reactors are being upgraded to reduce land requirements, making them suitable for deployment near industries such as steel, aluminium, and metals, serving as captive power plants to aid in decarbonization efforts.
- The plan involves private entities providing land, cooling water, and capital, while the **Nuclear Power Corporation of India Limited (NPCIL)** handles design, quality assurance, and operation and maintenance, all within the existing legal framework. This initiative aligns with India's commitment to achieving **500 GW** of non-fossil fuel-based energy generation by **2030** and meeting **50%** of its energy requirements from **renewable energy** by **2030**, as pledged at the **COP26 Summit** in Glasgow in 2021.
- In addition to BSRs, the **Bhabha Atomic Research Centre (BARC)** is developing **Small Modular Reactors (SMRs)** for **repurposing retiring coal-based power plants** and meeting power needs in **remote locations**. The **Department of Atomic Energy (DAE)** also plans to introduce **new nuclear reactors**, including high-temperature gas-cooled reactors for hydrogen co-generation and molten salt reactors aimed at utilizing India's abundant **thorium resources**.

- This strategic move signifies India's dedication to **reducing carbon emissions** and **enhancing its civil nuclear energy program**, with private sector participation playing a crucial role within the bounds of Indian laws and regulations.

Bharat Small Modular Reactors

- India is actively exploring **Small Modular Reactors (SMRs)** as a crucial part of its energy transition strategy, aiming to achieve net-zero emissions while ensuring energy security. SMRs, are advanced nuclear reactors with a power generation capacity ranging from less than **30 MWe to 300+ MWe**, provide a flexible, scalable, and cost-effective alternative to conventional large nuclear reactors.
- Given India's growing energy demands and the need for reliable, low-carbon power, SMRs can play a **transformative role** in complementing renewable energy sources and stabilizing the grid. Their modular design allows for **factory-based manufacturing**, reducing construction timelines and costs, making them suitable for both **on-grid** and **off-grid applications**, including deployment in **remote locations**.
- India's **expertise in Pressurized Heavy Water Reactors (PHWRs)** provides a **strong foundation** for the development and deployment of indigenous SMR designs. By integrating SMRs into its energy mix, India can address land constraints, reduce dependence on fossil fuels, and enhance its ability to meet international climate commitments under the **Paris Agreement (2015)** which India ratified in **October 2016**.

Government Initiatives for Enhancing India's Nuclear Capacity

- India is actively enhancing its nuclear power capacity to meet growing energy demands and achieve environmental goals. The government has initiated steps to increase nuclear power capacity from the current 8,180 MW to **22,480 MW** by **2031-32**. This expansion includes the construction and commissioning of **ten reactors**, totalling **8,000 MW**, across **Gujarat, Rajasthan, Tamil Nadu, Haryana, Karnataka, and Madhya Pradesh**.
- Additionally, pre-project activities for ten more reactors have commenced, with plans for progressive completion by **2031-32**. Further, the government accorded in-principle approval to set up **6 x 1208 MW nuclear power plant** in cooperation with the **USA** at **Kovvada** in **Srikakulam** district in the state of **Andhra Pradesh**.
- A significant milestone was achieved on **September 19, 2024**, when the **Rajasthan Atomic Power Project's Unit-7 (RAPP-7)**, one of the country's largest and third indigenous nuclear reactors, reached **criticality**, marking the **beginning of controlled fission chain reaction**. This event signifies India's growing capability in building and operating indigenous nuclear reactors, contributing to a future powered by homegrown technology.

- **Safety** remains a cornerstone of India's nuclear energy policy. India's nuclear power plants operate with **stringent safety protocols** and **international oversight**. The **radiation levels** at Indian nuclear facilities are consistently well **below global benchmarks**, underscoring the country's commitment to secure and sustainable nuclear energy. These efforts align with India's broader strategy to provide clean and reliable energy, contributing to long-term energy security and environmental sustainability.

SMRs in India's Energy Transition

- India is keen on integrating SMRs into its energy strategy to meet growing energy demands while achieving net-zero emissions.
- SMRs are advanced nuclear reactors with a power generation capacity ranging from less than 30 MWe to 300+ MWe, which provide a flexible, scalable, and cost-effective alternative to conventional large nuclear reactors. Given India's growing energy demands and the need for reliable, low-carbon power, SMRs can play a transformative role in complementing renewable energy sources and stabilising the grid.
- Their modular design allows for factory-based manufacturing, reducing construction timelines and costs, making them suitable for both on-grid and off-grid applications, including deployment in remote locations.
- India's experience with Pressurised Heavy Water Reactors (PHWRs) provides a solid foundation for developing indigenous SMR designs.
- SMRs will help reduce land use and dependence on fossil fuels, assisting India in meeting its climate commitments under the Paris Agreement.

Bharat Small Reactors (BSRs)

- The government is also advancing the development of Bharat Small Reactors (BSRs), which are 220 MW Pressurized Heavy Water Reactors (PHWRs) with a proven safety record.
- These reactors are being upgraded to reduce land requirements, making them suitable for deployment near industries like steel, aluminum, and metals, acting as captive power plants for decarbonisation.
- Private companies will provide land, cooling water, and capital, while the Nuclear Power Corporation of India (NPCIL) will handle design, quality assurance, and operations within the existing legal framework.
- This initiative contributes to India's goal of generating 500 GW of non-fossil fuel-based power by 2030 and achieving 50 per cent renewable energy by 2030.
- Additionally, the Bhabha Atomic Research Centre (BARC) is developing SMRs for repurposing retiring coal plants and powering remote areas.

- The Department of Atomic Energy (DAE) is also working on new nuclear reactor designs, including high-temperature gas-cooled reactors for hydrogen production and molten salt reactors utilizing India's thorium resources.

Government Initiatives to Enhance Nuclear Capacity

- The government aims to increase India's nuclear capacity from 8,180 MW to 22,480 MW by 2031-32.
- This expansion includes building 10 new reactors, totaling 8,000 MW, in various states like Gujarat, Rajasthan, and Tamil Nadu. Additionally, pre-project activities have begun for 10 more reactors, with plans for completion by 2031-32.
- The government has accorded in-principle approval to set up a 6x1208 MW nuclear power plant in cooperation with the United States at Kovvada in Srikakulam district of Andhra Pradesh.
- The successful criticality of Rajasthan's Atomic Power Project's Unit-7 (RAPP-7) in September 2024 marked a significant achievement in India's nuclear capabilities.

Safety Measures

- Safety remains a top priority in India's nuclear program. Indian nuclear plants operate under strict safety protocols, with radiation levels well below global standards, ensuring safe and sustainable energy production.

Recent Developments in Nuclear Energy

- A new uranium deposit was discovered near the Jaduguda Mines, extending the mine's life by over 50 years.
- Two indigenous 700 MWe PHWR units at Kakrapar, Gujarat, began commercial operation in FY 2023-24.
- India's first Prototype Fast Breeder Reactor (PFBR) achieved significant milestones in 2024, including core loading and sodium purification.
- NPCIL and NTPC have signed a joint venture agreement, ASHVINI, to develop nuclear power plants, including the upcoming Mahi-Banswara project in Rajasthan.
- The provisions for nuclear energy in the Union Budget 2025-26 represent a transformative step in India's energy strategy. By promoting nuclear power as a sustainable and reliable energy source, the government aims to ensure long-term energy security and meet the nation's economic and environmental goals.

EXERCISE Ekuverin

- The primary focus of Exercise Ekuverin is to enhance interoperability in counter-insurgency and counter-terrorism operations, as well as to conduct joint humanitarian assistance and disaster relief operations. This reflects a commitment to regional security and stability

- The term "Ekuverin," meaning "friends" in Dhivehi, symbolizes the camaraderie between India and the Maldives. The exercise has been held alternately between the two countries since its inception in 2009, with previous editions enhancing military collaboration and operational readiness.
- This joint military exercise not only strengthens defence ties but also reinforces both nations' capabilities to respond effectively to regional challenges
- 'Ekuverin' means friends in Dhivehi language.
- It is a bilateral annual exercise conducted alternatively in India and Maldives. In 2023, it was conducted at Chaubatia in Uttarakhand.
- The 14-day exercise is aimed at enhancing interoperability in counter insurgency and counter terrorism operations, and carry out joint humanitarian assistance and disaster relief operations.
- The defence cooperation between the two countries extends from joint exercises to assisting Maldives with defence training and equipment requirements.
- 'Ekatha' is another annual exercise conducted between naval forces of both countries.

Improvements in bilateral defence and security ties

- The ties between India and the Maldives came under severe strain after President Mohamed Muizzu, known for his pro-China leanings, took charge of the top office in November 2023.
- Within hours of his oath, he had demanded the withdrawal of Indian military personnel from his country. Subsequently, the Indian military personnel were replaced by civilians.
- Maumoon is on a three-day visit to India, nearly eight months after New Delhi completed pulling out its military personnel from the Maldives.
- The overall episode had significantly frayed the ties between the two nations. However, there was a thaw in the relations following Muizzu's visit to New Delhi in October 2024.

India-Maldives relations

- Maldives' proximity to the west coast of India (it is barely 70 nautical miles away from Minicoy and 300 nautical miles away from India's West coast), and its situation at the hub of commercial sea-lanes running through Indian Ocean imbues it with significant strategic importance to India.
- India and Maldives share ethnic, linguistic, cultural, religious and commercial links. Both the nations enjoy close, cordial and multidimensional relations based on shared values of democratic virtues, peaceful coexistence and rule of law.
- India was among the first to recognise Maldives after its independence in 1965 and to establish diplomatic relations with the country.
- India's prompt assistance during the 1988 coup attempt, led to development of trust and long-term and friendly bilateral relations with the Maldives.
- Both the countries are key players in maintaining safety and security of the Indian Ocean Region (IOR).

- Maldives occupies a very special place in the 'Neighborhood First Policy' and the SAGAR (Security and Growth for All in the Region) vision of the government of India.
- 'India First' has been a stated policy of the government of Maldives and President Solih, ever since he assumed office in November 2018.
- Bilateral cooperation with Maldives includes the creation of people-friendly infrastructure – housing, water and sanitation, health and education, ports, roads and stadiums. It also includes maritime security, connectivity and people to people exchanges.

India's Advanced Medium Combat Aircraft (AMCA) Stealth Fighter Set To Feature 'Beast Mode' Configuration: Report

- India's Advanced Medium Combat Aircraft (AMCA), a fifth-generation fighter jet currently under development, is set to feature a unique capability known as 'Beast Mode.' This mode significantly enhances the aircraft's firepower and offensive capabilities, allowing it to carry a larger payload of weapons at the expense of its stealth features.

What Is 'Beast Mode'?

- 'Beast Mode' refers to the configuration where the AMCA can maximise its armament for deep-strike missions, particularly in scenarios where air superiority has already been established and enemy defences have been neutralised. In this mode, the aircraft will utilize external hardpoints to carry a greater number of missiles and bombs, transitioning from its standard stealth configuration that prioritizes internal weapon storage to minimise radar visibility.
- Beast Mode is designed for use in less contested environments where rapid deployment of ordnance is prioritized. It is typically activated once enemy air defences have been neutralized, making stealth less critical. Aircraft like the Advanced Medium Combat Aircraft (AMCA) being developed by India are expected to switch between standard stealth configurations and Beast Mode. This adaptability is seen as a major tactical advantage in modern aerial combat.
- Operating in Beast Mode alters the flight dynamics of the aircraft due to the added weight and drag from external munitions. This change can provide unique training opportunities for pilots as they learn to manage different flight characteristics under varying loads.

Tactical Implications

- The introduction of 'Beast Mode' is expected to be a game-changer for India's aerial combat capabilities. By enabling the AMCA to switch between stealth and high-firepower configurations, it offers several tactical advantages:
- **Versatility In Missions:** The ability to adapt to different mission profiles—from stealthy reconnaissance to aggressive strike operations—enhances operational flexibility.

- **Cost Efficiency:** Utilising 'Beast Mode' for missions where stealth is less critical can reduce wear on stealth coatings and systems, potentially lowering maintenance costs over time.
- **Enhanced Combat Effectiveness:** The AMCA can effectively engage in deep penetration strikes against heavily defended targets once air dominance is achieved, significantly impacting the dynamics of aerial warfare in the region.
- The AMCA's development comes at a crucial time as India seeks to bolster its air force capabilities amidst regional tensions.
- The integration of 'Beast Mode' not only aligns with modern warfare trends but also positions India competitively against other nations developing advanced fighter jets. With plans for mass production expected by 2035, the AMCA is poised to play a vital role in India's defence strategy and air power projection in the coming decades

Scans of seemingly empty space reveal black holes not far from earth

- Astronomers have discovered a gigantic black hole named Gaia BH3 hiding close to the earth, the third of its kind. All three were discovered by the European Space Agency's Gaia telescope, which has been constantly monitoring the motions of billions of stars in our galaxy since 2013.
- **Black holes are fascinating to non-scientists and astronomers alike.** They warp spacetime around them such that anything that gets close enough to the centre, even light, can't escape back to the universe. Yet black holes are still 'visible' because of the unique effects they have on their surroundings. As matter swirls around a black hole, it is compressed, heated up, and emits X-rays.
- In the Milky Way, there are around a thousand black holes accompanied by X-ray emissions. Cygnus X-1 is probably the most well known.

Cosmic geometry

- Of late, the Gaia spacecraft has also been spotting the quiet ones not associated with X-ray emissions.
- If a (light-emitting) star orbits a black hole, it will appear from a distance to be orbiting empty space. Gaia projects the star's orbit on a plane in the sky.
- **Ground-based telescopes meanwhile track how light from the star is shifted by the Doppler effect to reveal its motion** along our line of sight, which is perpendicular to the plane of the sky.
- Putting these observations together, astronomers can determine the orientation of the star's orbit in space and based on that estimate its mass and then the mass inside the 'blank' space.
- When a sufficiently massive star dies, a black hole forms. The star's death may happen as a violent supernova explosion or a more prosaic collapse.
- Most supernova explosions leave behind neutron stars rather than black holes, but neutron stars can have no more than about three solar masses.

- If Gaia and Kepler's third law together reveal a luminous star orbiting a dark object whose mass exceeds this threshold, it must be a black hole.

Gaia's first black hole

- On June 13, 2022, Gaia scientists published the spacecraft's third data collection comprising more than a billion stars. This dataset revealed a star going around something dark every half earth-year. Its measured velocity matched data collected by the Large Sky Area Multi-object Fiber Spectroscopic Telescope (LAMOST) in China.
- The Magellan Clay telescope in Chile observed the star on July 6, 2022, and reported a much greater velocity. These and subsequent measurements, made by other telescopes more than three weeks later, suggested the star was racing around something no one could see.
- The dark object and the yellow star were as far apart as the sun and Mars are. But the star was orbiting the dark region three-times faster. **For a given separation, Kepler's third law says the pair's total mass is related to the square of the orbital velocity.** Because the star was moving three-times faster than Mars, the dark object must have been about nine-times as massive as the sun — which meant it could only have been a black hole.
- Astronomers called the system Gaia BH1. It's located about 1,560 light years away and is the closest black hole to the earth yet. This distance is 1.4% of the Milky Way's width. The black hole at the galaxy's centre is 26,670 light years away.

A third is revealed

- A team of scientists headed by Kareem El-Badry from the California Institute of Technology observed a second black hole with a mass of nine solar masses on August 22, 2022, again by tracking a star rapidly orbiting a seemingly empty volume of space. The team announced the discovery, called Gaia BH2, in early 2023.
- BH1 and BH2 are quite similar but Gaia BH3 — the newest — is completely different.
- It's the first black hole astronomers have found in the Milky Way galaxy's outer reaches and the largest known stellar-mass black hole in the galaxy.
- In July 2023, astrophysicist Pasquale Panuzzo at the Paris Observatory was examining unreleased Gaia data. He was looking at what he called "binary fake solutions": stars that seemed to be orbiting massive dark objects but only because of undetected errors. But one of the fakes turned out to be real. In fact, Panuzzo and his colleagues soon realised they had discovered the largest stellar-mass black hole to date.
- Its 33 solar masses easily surpasses Cygnus X-1, the galaxy's prevailing heavyweight, by 12 solar masses. A yellow giant star nearby orbited the black hole every 11.6 years. On average, the star and the black hole are slightly closer together than the sun and Uranus are. The team reported the discovery in April 2024.

'A rare occurrence'

- In the sky, Gaia BH3 is located about 2,000 light years away in the constellation Aquila and appears to be a passive black hole: it isn't actively pulling material in from its surroundings.
- Scientists have interpreted this to mean it lacks a significant supply of matter in its neighborhood. It doesn't have associated X-ray emissions either.
- Studies of the composition of the star orbiting it suggested that it was very old. Harvard University astrophysicist suggested in a statement that this means black holes as massive as BH3 "were made early in the universe"
- Black holes of this class were first revealed in 2015 when the LIGO and VIRGO experiments detected gravitational waves emitted by a pair of black holes merging. Each possessed 30 solar masses and were located 1-2 billion light years away from the earth.
- Panuzzo said in a statement, "We finally have an equivalent in our galaxy that we can study because it's so nearby."
- "Further data from ground-based telescopes confirmed that it is many times more massive than any black hole previously found in our galaxy. Such a discovery is a rare occurrence in astronomical research

Reusable rockets, air taxis and 'autonomous autos' are the future: WIPO

- Air taxis, "autonomous autos" and reusable rockets are just some of the future transport solutions that inventors all over the world are striving to make a reality, while patents for combustion engines are "flatlining", the UN intellectual property agency (WIPO) said.
- "Analysis of patents shows that inventors are working hard to ensure that how we get around tomorrow is cleaner and better than today," maintained WIPO, which said that patent filings for future transportation solutions have grown by 700 per cent over the last two decades, from 15,000 inventions in 2003 to 120,000 in 2023.
- **"Autonomous ships and smart ports are revolutionizing transportation at sea; electric vehicles, high-speed trains and smart traffic management systems are driving change on land,"** WIPO insisted.
- "Vertical take-off and landing aircraft are offering new ways to travel by air, while reusable rockets and satellite technology are pushing what is possible beyond the earth's atmosphere."
- Driving this trend is the recognition that transportation accounts for more than one-third of CO2 emissions globally, which has encouraged the development of sustainable technologies that reduce the environmental impact of transportation. These include the adoption of electrified propulsion, the shift to renewable energy sources and the promotion of public and shared transport options.

- Digitalization is also revolutionizing the transportation sector, WIPO insists, pointing to the rise of autonomous driving, “which is **projected to generate from \$300 billion to \$400 billion in revenue by 2035**”.
- According to the Geneva-based UN agency, intellectual property supports this kind of groundbreaking innovation – such as wireless charging for electric vehicles - by encouraging investment in research and development.
- Competition is fierce as firms jostle for access to rare earth minerals, while AI is also taking centre stage, WIPO says.
- **“The report also shows flatlining growth in patenting activity for legacy products like the internal combustion engine and other fossil fuel-based systems” such as catalytic converters, the UN agency noted.**
- Its data indicated that more than 1.1 million inventions have reshaped transportation since 2000, introducing the prospect of sustainable alternatives to fossil fuel-based systems such as renewable energy cells, air taxis and self-piloting cargo ships.
- In the driver’s seat of this travel transformation are China, Japan, the US, South Korea and Germany, which represent the world’s top inventors. Land transportation patents dominate global filings, at 3.5 times more than for air, sea and space combined. The US, meanwhile, has filed the most international patents.
- The largest area of growth in patenting is related to sustainable propulsion – such as batteries for electric vehicles or hydrogen fuel cells – which represent efforts to ensure that people and goods are moved around in a “cleaner, more climate-friendly fashion”.
- Experts with an eye on imaginative transport solutions for the future say that AI is also poised to play a key role. They point to the rise of autonomous driving, although infrastructure has not adapted swiftly enough for such vehicles to take over, the WIPO report notes.

Drone dilemma

- **The scarcity of minerals, meanwhile, will determine whether the world can massively adopt electric cars – vehicles.**
- “Having these rare and limited raw earth minerals in an electric vehicle for personal use that’s been utilized only a few per cent of the day is **not an effective use of those tools**,” .
- In the air sector, drones will continue their sky-high ascension.
- According to WIPO, transport patent growth in China has been strong given its recent dominance of the electric vehicle market. But other countries have also contributed with strong patent filings activity including Sweden, Italy, India and Canada.

Indian researchers’ new drug delivery system to revolutionise arthritis treatment

- Researchers from the Institute of Nano Science and Technology (INST) Mohali, an autonomous institution of the Department of Science and Technology (DST), have developed an innovative “self-actuating” drug delivery system that could revolutionise the treatment of rheumatoid arthritis (RA).
- Rheumatoid Arthritis (RA) affects millions of people worldwide, causing chronic inflammation, debilitating pain, and irreversible joint damage.
- While traditional treatments often rely on systemic drug administration, which carries the risk of side effects and also requires frequent dosing, the novel treatment targets inflammation directly within the joints so that therapeutic agents are released only when needed, the researchers said.
- The new system responds directly to the biochemical signals in the inflamed synovial environment. It uses specially designed microspheres loaded with methotrexate — a commonly used anti-rheumatic drug.
- “These microspheres are engineered to sense inflammation in joints and release the drug only when needed, minimising side effects and improving therapeutic outcomes,” said the team led by Dr. Rahul Kumar Verma from the Institute.
- The formulation consists of polymer-lipid hybrid micro-composites, where the lipid component (soya lecithin) ensures high drug encapsulation efficiency, and the polymer component (gelatin) provides responsiveness to Matrix metalloproteinases (MMP).
- In animal studies, it significantly reduced joint swelling, inflammation, and cartilage damage while promoting joint repair, the team said.
- “The system leverages the unique biochemical signals present in the inflamed synovial microenvironment to release therapeutic agents precisely when needed. When exposed to these enzymes, the gelatin substrate is cleaved, triggering the release of the encapsulated drug in a controlled, pulsatile manner,” said the researchers in the paper published in the journal Biomaterial Advances.
- The findings could offer a safer, more effective alternative to current RA treatments by eliminating the need for frequent drug injections and reducing systemic toxicity.
- The system enhances drug effectiveness by improving bioavailability and retention in the affected joints, leading to longer-lasting relief with fewer doses. This means less pain, improved joint function, and slower progression of joint damage for patients.
- Beyond arthritis, the technology holds promise for managing other inflammatory diseases, such as synovitis and inflammatory bowel disease. It could also pave the way for smart biomaterials in regenerative medicine and personalized treatments, said the researchers.

Nano-urea led to decrease in yield, protein content of rice and wheat: Study

- One of the largest and most sustained trials analysing the impact of nano-urea on crop yields has concluded that its continued use could reduce yields of rice and wheat, which together constitute about 70% of India's annual foodgrains output.
- Promoted by the fertiliser company IFFCO, and extensively promoted by the government's Department of Fertilisers, the application of nano-urea, in the manner prescribed by the company, led to a decrease in the protein content in rice and wheat grains by 35% and 24%, respectively, the study found.
- "Premature and long-term adoption of such nitrogen-management practice may lead to yield losses besides reduction in grain and straw-nitrogen content,".
- **Urea, a solidified nitrogen fertiliser, is critical to India's agricultural economy.** India needs about 350 lakh tonnes of urea annually, for which 40 lakh tonnes have to be imported.
- However, urea in India is heavily subsidised, with a 45-kg bag actually costing around ₹3,000 but sold at ₹242 to farmers. In 2023-24, the government spent ₹1.3 lakh crore on urea. A bag of urea provides about 20 kg of nitrogen in a form usable by plants.
- Into this sector came a technological innovation **called "nano-urea"**. A half-litre solution of nano urea contains 4% (w/v) N equivalent to 20g N, or about one-thousandth of the nitrogen in a bag.
- IFFCO, however, claims that one spray of a 500 ml solution of nano-urea can substitute more than 52 kg of N ha⁻¹ as commercial urea in a number of crops, irrespective of soil and climatic conditions.
- This is because nano-urea is converted to nanoparticles, and therefore made more bio-available, and if applied in a prescribed manner at appropriate stages of rice and wheat plant development, can substitute the conventional bag. Moreover, unlike conventional urea that is applied to the roots, nano urea is sprayed on the leaves at two critical flowering stages of the plants.
- Thus, rather than farmers deploying two bags of urea for a hectare of rice to provide the nitrogen required for a hectare, they could instead use one bag, and substitute the other bag with liquid nano-urea with no loss of yield.
- A bottle of urea costs a little more than a 45 kg bag or around ₹260. The claim was that this would eventually reduce aggregate urea consumption and lead to savings on the import bill.
- However, since its commercial release in 2022, evidence for nano-urea as a reliable substitute has been thin. "Despite previous positive results in trials conducted by IFFCO, there has been mixed evidence, and so we felt it was necessary to conduct a careful trial.
- Study was funded by the IFFCO, which has also funded several other trials in other institutions. Yield gains, plant physiology suggested, were correlated with uptake of nitrogen in the soil from the roots.

- However, in their studies, they showed a “reduction” in root attributes (length and dry weight), and nutrient content. “What’s happening is that in the two years (2021 and 2022) we conducted our studies, the plants were unable to use the urea sprayed as nano-urea. Whatever was available was from the soil, so naturally this will reduce yields,” Professor Sikka told *The Hindu*.
- “Newer formulations of nano-urea, which had 8% N and 20% N were being brought out by the company and these too had failed to increase yields, according to tests conducted at his institute,” Prof. Sikka said.

The way forward

- In order to address the multiple goals of fertilizer policy, we need to simultaneously work on four key policy areas. One, we need to be self-reliant and not depend on import of fertilizers. In this way, we can escape the vagaries of high volatility in international prices. In this direction, five urea plants at Gorakhpur, Sindri, Barauni, Talcher and Ramagundam are being revived in the public sector.
- Two, we need to extend the NBS model to urea and allow for price rationalisation of urea compared to non-nitrogenous fertilizers and prices of crops.
- The present system of keeping the price of urea fixed and absorbing all the price increases in subsidy needs to be replaced by distribution of price change over both price as well as subsidy based on some rational formula.
- Three, we need to develop alternative sources of nutrition for plants. Discussions with farmers and consumers reveal a strong desire to shift towards the use of non-chemical fertilizers as well as a demand for bringing parity in prices and subsidy given to chemical fertilizers with organic and biofertilizers.
- This also provides the scope to use a large biomass of crop that goes waste and enhance the value of livestock byproducts. We need to scale up and improve innovations to develop alternative fertilizers. Though compost contains low amounts of nitrogen, technologies are now available to enrich this.
- Finally, India should pay attention to improving fertilizer efficiency through need-based use rather than broadcasting fertilizer in the field.
- These changes will go a long way in enhancing the productivity of agriculture, mitigating climate change, providing an alternative to chemical fertilizers and balancing the fiscal impact of fertilizer subsidy on the Union Budgets in the years to come.

Chandrayaan-3's Shiv Shakti landing point on the Moon is as old as life on Earth

- Dead for over a year, Vikram Lander, part of the Chandrayaan-3 mission is still making new discoveries. Indian scientists have discovered that Vikram's landing site also known as the Shiv Shakti Point, is as old as the dawn of life on Earth.

- The team from India's Physical Research Laboratory (PRL) has created the first geological map of the site, which sits close to the Moon's south pole.
- The geological map reveals the spatial distribution of three distinct terrain types within the landing area that includes high-relief rugged terrain and smooth plains, and low-relief smooth plains.
- In a study published, the team said that geological mapping is a fundamental process of organizing different datasets into geological units that eventually helps in understanding the spatial and temporal sequences of the underlying processes that have shaped the surface of a planetary body.
- The team also noticed that debris from the nearby Schomberger crater blankets the area. The landing site is blanketed with boulders, some exceeding five metres in size, and mostly originating from a fresh, 540-metre crater located 14 kilometres south of the landing site.
- Additionally, the rover's exploration revealed smaller rock fragments (centimeter-sized) near a 10-meter-wide crater west of the landing site.
- The high-relief rugged terrain has areas with hills and rough surfaces, smooth plains comprise of flat areas with fewer surface features, and low-relief smooth plains have relatively flat regions with slight variations in elevation. Vikram landed in the low-relief smooth plains.
- This region is estimated to be about 3.7 billion years old — the same age as some of the earliest life forms on Earth.
- India's Chandrayaan-3 mission achieved a historic milestone on August 23, 2023, as it landed on the Moon's south polar region, making India the fourth country to achieve a soft landing on the lunar surface and the first to reach the Moon's South Pole.
- India is **now readying the Chandrayaan-4 mission slated for launch in 2027. This mission aims to collect samples from** the Moon's surface and bring them back to Earth for scientific analysis.
- The mission will involve a complex two-phase launch strategy, utilising multiple spacecraft modules.

What is India's VSHORADS missile system, capable of destroying areal threats with extreme accuracy

- Three successive flight trials of Very Short-Range Air Defence System (VSHORADS) were successfully conducted by the Defence Research & Development Organisation (DRDO) recently, showcasing the ability of the missiles to neutralise threats like drones and high-speed targets flying at very low altitudes. The tests were conducted in Chandipur off the coast of Odisha.
- **VSHORADS is a man-portable air defence system** designed and developed indigenously by Research Center Imarat in collaboration with other DRDO laboratories and development cum production partners. The missile system is capable of meeting the needs of all three branches of India's armed forces—Indian Army, Indian Navy and Indian Air Force.

- The missiles intercepted and completely destroyed the targets having reduced thermal signature mimicking low flying drones at different flying conditions.
- The flight-tests were carried out in the final deployment configuration wherein two field operators carried out weapon readiness, target acquisition and missile firing.
- The flight data captured by various range instruments like Telemetry, Electro-Optical Tracking System and Radar deployed by Integrated Test Range, Chandipur, confirmed the high accuracy and established the unique capability of VSHORADS missile system in neutralising drones and other aerial threats.
- The flight tests were conducted in the presence of senior officials of DRDO, armed forces and development and production partners.
- Defence Minister Rajnath Singh congratulated DRDO, the armed forces and the industries for the successful flight tests, calling it a great success.

Significance of the VSHORADS System

• Factor	• Significance
• Versatility	• The system is suitable for use by the Indian Army, Navy, and Air Force , providing broad operational capabilities.
• Self-Reliance (Atmanirbhar Bharat)	• Developed indigenously , reducing dependence on foreign defense imports and contributing to national security.
• Countering Modern Aerial Threats	• Designed to neutralize drones and low-altitude aircraft , which are increasingly posing security risks globally.
• Enhanced Defense Capabilities	• Strengthens India's defense modernization by providing a cost-effective, highly mobile air defense solution.

What is hidden hunger? 2.8 billion people experienced this in 2022

- In the 'State of Food Security and Nutrition in the World' report published in 2024, it was observed that up to 733 million people globally suffered from malnutrition in 2023. This is an increase of 152 million from 2019.

- This trend has been linked to the food price dynamics. In 2022, when the world experiences sharp price rises, the World Bank estimated that a mere 1 per cent rise in global food prices can push an additional 10 million people into extreme poverty. Because of rising food prices and growing inequality around the world, a largely obscure villain, "hidden hunger", is now unleashing his spectre around the world. And, in 2022 alone, at least 2.8 billion people have been pushed to the grapple of "hidden hunger".

What is hidden hunger?

- Hidden hunger describes a state of deficiency of essential vitamins and minerals (such as zinc, iodine, and iron), referred to collectively as micronutrients. Often, the signs of this form of malnutrition are 'hidden'.
- The individuals may appear "fine" but may be suffering from extremely negative impacts on health and well-being. Clinical signs of hidden hunger appear only when the deficiency becomes severe.
- Traditional notions of hunger typically focus on caloric deficiency, but in recent years only it has been appreciated that an inadequate intake of micronutrients may have health consequences even without overt signs of disease.
- The Food Security and Nutrition report highlights that while it may seem intuitive that food-insecure individuals are less likely to maintain a healthy diet, the relationship is not straightforward.
- This complexity arises from various factors that differ across contexts, including food environments, consumer behaviour, and the cost and affordability of nutritious foods.
- In some cases, food insecurity is linked to lower consumption of all food types and a higher reliance on staple foods for dietary energy.
- In others, it can be associated with reduced intake of nutritious foods and increased consumption of energy-dense foods high in unhealthy fats, sugars, and salt. As a result, food insecurity and "hidden hunger" can result not only in undernutrition but can also lead to overweight and obesity.

Hidden hunger-diabetes link

- Micronutrient deficiencies are a significant issue, particularly in South Asia and sub-Saharan Africa.
- Evidence suggests that micronutrient deficiencies may influence glucose metabolism and insulin signalling pathways, leading to the onset and progression of type 2 diabetes.
- Notably, the diabetes load of countries like India is significant.
- Recently, a group of researchers from the Indian Institute of Health Management Research attempted to find crucial links connecting micronutrient deficiency and type 2 diabetes and published their findings in BMJ Nutrition, Prevention and Health.
- As part of this study, the researchers analysed 132 studies with 52,501 participants, and they concluded that micronutrient deficiencies are common in type 2 diabetes patients, and found that

among the individual micronutrients, vitamin D deficiency was the most common deficiency, with a prevalence as high as 60.45%.

- Notably, the team also observed that women were more likely to be affected by micronutrient deficiency than men.

India to soon launch its own AI model at affordable cost: Ashwini Vaishnaw

- India will soon launch its own safe and secure indigenous Artificial Intelligence (AI) model at an affordable cost, Union Minister for Electronics and Information Technology Ashwini Vaishnaw announced on Thursday.
- Interacting with media, the minister said that the proposed AI model is a timely step as India is a trusted nation among the comity of nations. The move will also help India emerge as a more reliable technological powerhouse of ethical AI solutions in the days to come, he added.
- "Backed by a high-end common computing facility, the India AI mission is now closer to customising indigenous AI solutions for the Indian context using Indian languages," Vaishnaw said, adding that scientists, researchers, developers and coders were working on multiple foundational models in this regard.
- With the given pace, the Indian AI model is likely to be ready within 6 months, he remarked.
- "Our prime minister's economic thinking is very inclusive. He believes in making modern technology accessible to everyone to ensure the people at the bottom of the pyramid are economically empowered."
- According to an official release, the Indian AI model is beginning with the computation facility of roughly 10000 GPUs and soon the remaining 8693 GPUs will be added. The model will largely benefit researchers, students & developers in the beginning.
- "The technical partners who are participating in the mission have expressed a lot of confidence in the ability of the mission to deliver its objective of democratising access to computing and that too at a very competitive rate," it said.
- The statement further claimed that compared to global models costing 2.5 to 3 dollars per hour usage, India's AI model will cost less than 100 rupees per hour after 40 per cent government subsidy. "The attractive half yearly and annual plans will further make it more affordable," it said.
- The Ministry of Electronics & Information Technology, within 10 months of the launch of India AI Mission, has been able to create a high end and robust common computing facility of about 18,693 GPUs. It is about nine times of what Open Source Model DeepSeek has, and about two third of what ChatGPT has, the ministry said.
- Vaishnaw, in his interaction, claimed that DeepSeek can get hosted on Indian servers after security checks so that coders, developers and designers can take benefit of its Open Source code.

- “Safety and ethical deployment of AI Model remains top priority for the government,” he said, adding that India is establishing an AI Safety Institute, adopting a techno-legal approach.
- The IT ministry, in its press statement, claimed that Indian AI model will address the country’s linguistic and contextual needs while eliminating biases, ensuring inclusivity and promoting fairness.
- “Leading developers and researchers are working towards completing multiple foundational models within 8 to 10 months, leveraging algorithmic efficiency to achieve cost-effective and timely development,”

Carving a niche in biotechnology with BioE3 Policy

- The metabolic engineering group at the (ICGEB) in Delhi, is working on the impact of microgravity in the International Space Station (ISS) on edible microalgae to capture the CO₂ from the spacecraft cabin as well as recycle wastewater (undiluted urine) which contain NPK and plant growth hormone auxin and to grow photosynthetic microalgae as food while producing oxygen for the astronauts.
- ICGEB explains that these **edible microalgae are the source of vital nutrients (Carotenoids—astaxanthin, zeaxanthin, lutein—Vit A, B1, B2, B6, B12, C, E) and provide sustainable food (proteins, fat, carbohydrates) for extended space expeditions for astronauts.**
- “Algae can thrive in any harsh conditions and even on Earth they can live for two billion years in any harsh condition.
- The **edible algae producing astaxanthin, zeaxanthin and lutein have been shown to fight radiation damage and eye disease**, and other common muscular weakness and health problems that astronauts may face in space,”
- The group's objective is to do a comparative assessment of physiochemical and morphological changes due to microgravity on algal growth and metabolism in the International Space Station compared to Earth.
- The aim is also to select one of the most robust strains suitable for future space missions and study if any genetic intervention is required to make them adaptable for space.
- “Comparative data will help to improve algae via genetic intervention for better survival in space and the production of novel molecules of industrial importance. Also, selection of robust alga for future use in space for sustainable food,” .
- The Union cabinet had approved initiatives in the field of human space programme and biotechnology with the announcement of the establishment of a Bharatiya **Antariksh Station and the unveiling of ‘BioE3 (Biotechnology for Economy, Environment and Employment) Policy’** for fostering high-performance biomanufacturing in the country.

- “Currently, the key challenges of space missions are a continuous availability of nutrients, preservation of food, microgravity, radiation, physiological changes and health hazards in space travelers, potable water and a way clean and use waste in a sustainable way,” remarked a scientist.
- Besides testing the impact of microgravity on edible microalgae which has the ability to grow in wastewater and undiluted urine and also in adverse conditions, another proposal is to study the growth and proteomics responses of cyanobacteria growing on urea in microgravity.
- However, **muscle loss or Sarcopenia takes decades to develop on Earth**. By using nutritional supplements in a muscle cell culture model, researchers are attempting to increase the mitochondrial function which is emerging as an important component in this condition,” explained a scientist from DBT.
- Interestingly, the BioE3 Policy was launched by the government in August 2024. The broader aim is to ensure biotechnology for economy, environment and employment. As per the DBT officials, there was an urgent need to bring in this policy for the government.
- There has been an unsustainable pattern of material consumption, resource utilization and waste generation that has led to climate change-related problems such as forest fires, melting of glaciers and a decline in biodiversity.
- At the same time, India demonstrated strong economic growth in the past decade and has a great potential to be amongst the global leaders in the fourth industrial revolution by leveraging emerging technologies and innovations.
- As per **the BioE3 policy**, there is an integrated biomanufacturing policy too that had been envisaged for use of bio technology for economy, environment and employment that in turn will create innovative solutions by fostering high-performance biomanufacturing initiatives in the country.
- The BioE3 policy prioritised different thematic verticals for implementation under the biomanufacturing initiative such as bio-based chemicals or biopolymers, smart proteins and functional foods, precision biotherapeutics, climate resilient agriculture, carbon capture and utilisation and futuristic marine and space research.
- The policy also involves setting up of bio artificial intelligence (AI) hubs which will serve as the focal point for advancing the integration of AI in fostering innovation and R&D by using the AI under the biomanufacturing initiative.
- DBT BioE3 policy will promote indigenous innovation and development of-biopharmaceuticals, smart proteins, bio-based specialty chemicals, enzymes, agribiologicals etc. through biological processes.

- The policy is also expected to promote green growth, leading to a sustainable environment in the country through the transition of a chemical-based industry to a more sustainable bio-based industry.
- The policy will also help in combating climate changes, and attaining net zero carbon emissions particularly by controlling emission of green house gases by motivating industries to adapt greener processes of manufacturing i.e. biomanufacturing.
- It is also expected that it will bring a surge in employment in the 2- and 3-tier cities, where biomanufacturing hubs are proposed to be setup due to their closed proximity to the source of Biomass.
- “India produces 750 million metric tons of biomass every year, much of which is wasted and many time burnt in the field leading to immense environmental pollution.
- Considering that greater than 85 per cent of the current fuel needs of India, which is more than 200 million metric tons per year, is imported from outside, there is an excellent opportunity to reduce the import burden by using biomass as feedstock for producing fuels,” .
- Microbial Engineering Group of ICgeb performed an extensive bioprospecting study to screen a hyper-cellulase producing fungal species. A detailed characterisation of enzyme composition led to the discovery of several novel enzymes and auxiliary proteins that play important roles in biomass hydrolysis.
- The use of **ICgeb's DIBzyme-3 enzyme technology for producing 2G ethanol** is likely to reduce the use and import of fossil fuels and the associated greenhouse gas emissions, which ultimately will help in achieving India's vision of net-zero carbon emission by the year 2070,”

JP Nadda launches nationwide MDA campaign to eliminate lymphatic filariasis

- Union Minister for Health and Family Welfare, Jagat Prakash Nadda on Monday launched the Annual Nationwide Mass Drug Administration (MDA) Campaign for the **elimination of Lymphatic Filariasis (LF)** through a video conference with State Health Ministers from 13 identified LF-endemic states. The event outlined the objectives of the campaign, key strategic activities, and the critical role of participating states in ensuring high coverage and compliance with the MDA program.
- The MDA campaign, which targets 111 endemic districts across 13 states, involves a door-to-door administration of filaria prevention medications. The states that participated in the event included Andhra Pradesh, Assam, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Odisha, Bihar, Maharashtra, and Uttar Pradesh, with each health minister emphasizing the importance of the campaign in their respective regions.

- Lymphatic filariasis, commonly known as elephantiasis, is a painful and disfiguring disease. It is **caused by infection with parasites classified as nematodes** (roundworms) of the family Filariodidea that are transmitted through the bites of infected mosquitos.
- Speaking at the launch, stressed the government's commitment to eliminating LF, emphasizing the necessity of active community involvement and participation in the campaign.
- "An LF-free India is our commitment, and achieving this goal requires the participation of every citizen. With active community involvement, we can eliminate Lymphatic Filariasis and ensure protection for crores."
- The MDA campaign, led by the National Center for Vector Borne Diseases Control (NCVBDC), is designed to address this issue by providing free anti-filarial medications to over 17.5 crore people across the endemic regions.
- The Union Minister emphasized that the MDA campaign, conducted twice a year, must ensure that at least 90% of the eligible population consumes the prescribed medication to halt the transmission of the disease..
- "From February 10 onwards, these medicines will be made available free of cost, and it is imperative that residents in these areas consume the medicines to protect themselves and their families," he said.
- Approximately 50% of lymphoedema cases receive MMDP kits annually and that surgeries for hydrocele (a common complication of LF) are available under the National Health Mission (NHM) and the Pradhan Mantri Jan Arogya Yojana (PMJAY).
- The MDA campaign aims to eliminate LF by reducing the spread of the disease, primarily through the administration of a combination of anti-filarial medicines. The regimen **includes either a Double Drug (DA) treatment of Diethylcarbamazine Citrate (DEC) and Albendazole or a Triple Drug (IDA) treatment of Ivermectin, DEC, and Albendazole**. These medications help eliminate the microscopic filarial parasites from the bloodstream, preventing further transmission through mosquitoes.

Advancing Mental Healthcare in India

- Mental health refers to an individual's **emotional, psychological, and social well-being**. It influences how people think, feel, and behave in daily life. It also affects decision-making, stress management, and relationships.
- According to the **World Health Organization (WHO)**, mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community.

Impact of Poor Mental Health

- **Impact on Productivity:** Poor mental health leads to lower workplace performance, increased absenteeism, and reduced efficiency.
- **Social and Emotional Well-being:** Mental well-being affects interpersonal relationships, self-confidence, and social interactions.
- **Economic Impact:** According to WHO, mental disorders contribute significantly to the global burden of disease, and untreated conditions can lead to high economic costs.

Mental Health Scenario in India

- **WHO Data Insight**
- India contributes to 18% of the global population. WHO estimates that the burden of mental health problems in India is **2443 disability-adjusted life years (DALYs) per 10000 population**; the age-adjusted suicide rate per 100000 population is **21.1**. The economic loss due to mental health conditions, between **2012-2030**, is estimated at **USD 1.03 trillion**.

Prevalence:

- The **National Mental Health Survey (NMHS) 2015-16** by NIMHANS found that **10.6% of adults in India** suffer from mental disorders.
- The **lifetime prevalence** of mental disorders in India is **13.7%**.
- National studies reveal that **15%** of India's adult population experiences mental health issues requiring intervention.
- **Urban areas** have a higher prevalence (13.5%) compared to rural (6.9%).
- **Treatment Gap**
- **70% to 92% of people with mental disorders do not receive proper treatment** due to lack of awareness, stigma, and shortage of professionals.
- According to the Indian Journal of Psychiatry India has **0.75 psychiatrists per 100,000 people**, whereas WHO recommends **at least 3 per 100,000**.

Insights from Economic Survey 2024-25

- Mental wellbeing is the ability to navigate life's challenges and function productively. Recognising its importance, Economic Survey 2024-25 highlighted that Mental well-being encompasses all our mental-emotional, social, cognitive, and physical capabilities. This can also be construed as the mind's composite health. It emphasised a whole of community approach to tackling mental health problems and stated that it is about time to find viable, impactful preventive strategies and interventions. India's demographic dividend is riding on skills, education, physical health and, above all, mental health of its youth.

The Economic Survey 2024-25 suggested:

- **Enhance Mental Health Education in Schools:** Early intervention strategies to address anxiety, stress, and behavioural issues in students.

- **Improve Workplace Mental Health Policies:** Address job stress, long working hours, and burnout.
- **Expand Digital Mental Health Services:** Strengthen Tele MANAS and integrate AI-based mental health solutions.
- **Mental Health Infrastructure in India**
- As part of the National Mental Health Programme, in 2024, **25 Centres of Excellence** were sanctioned set up to train more postgraduate students in mental health and provide advanced treatment.
- **47 PG Departments** in mental health have been established or upgraded in **19** government medical colleges. Mental health services are also being introduced in **22 newly established AIIMS**.
- **47** Government-Run Mental Hospitals including **3 Central Mental Health Institutions**, viz. **National Institute of Mental Health** and **Neuro Sciences**, Bengaluru, **Lokopriya Gopinath Bordoloi Regional Institute of Mental Health**, Tezpur, Assam and **Central Institute of Psychiatry**, Ranchi.
- **Integration of Mental Health Services in Ayushman Bharat – Health & Wellness Centres (HWCs)**
- Under **Ayushman Bharat**, the government has upgraded more than **1.73 lakh** Sub Health Centres (SHCs) and Primary Health Centres (PHCs) to Ayushman Arogya Mandirs. Mental health services have been added in the package of services under Comprehensive Primary Health Care provided at these Ayushman Arogya Mandirs.

These HWCs provide:

- Basic counselling and psychiatric medication at PHC levels.
- Training for general physicians to handle mild-to-moderate mental health conditions.
- Linkages to district hospitals for advanced psychiatric care.
- This initiative ensures that mental healthcare is available in both urban and rural areas, reducing dependence on specialized hospitals and making psychiatric care more community-centric.

Policies and Schemes Undertaken by the Government of India

- **National Mental Health Programme (NMHP) – 1982**
- Recognizing the **growing burden of mental disorders** and the **shortage of mental health services**, India launched the **National Mental Health Programme (NMHP)** in **1982**. The primary goal was to ensure that mental healthcare becomes an **integral part of the general healthcare system**, rather than being confined to specialized hospitals.
- Key components include:
- **District Mental Health Programme (DMHP)** was introduced under NMHP to expand community mental health services.

- Covers **767 districts**
- Provides counselling, outpatient services, suicide prevention programs, and awareness initiatives.
- **10-bedded inpatient mental health facilities** at the district level.

NIMHANS Act, 2012

- The **NIMHANS Act, 2012**, was a significant step towards enhancing mental health education and research in India. Under this act, the **National Institute of Mental Health and Neurosciences (NIMHANS)**, Bengaluru, was declared an **Institute of National Importance**. This recognition allowed NIMHANS to expand its academic and research capabilities, making it the premier institution for psychiatry, neuropsychology, and mental health sciences in India.

The Rights of Persons with Disabilities (RPwD) Act, 2016

- The Rights of Persons with Disabilities (RPwD) Act which replaced the Persons with Disabilities (PWD) Act, 1995, expanded the definition of disability to include mental illness and introduced stronger legal protections for individuals with psychosocial disabilities. The Act aligns with India's commitment to the UN Convention on the Rights of Persons with Disabilities (UNCRPD) and aims to ensure equality, dignity, and non-discrimination for persons with disabilities, including those with mental health conditions.

National Mental Healthcare Act, 2017

- The **Mental Healthcare Act, 2017**, was enacted to ensure the **right to mental healthcare services**, protect the **dignity and rights of individuals with mental illness**, and align India's mental health laws with international standards, particularly the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD). The Act replaced the Mental Health Act of 1987 and introduced several progressive changes to mental health care and services in India like the Right to affordable and quality mental healthcare services and the decriminalization of suicide in India.

National Health Policy, 2017

- The **National Health Policy (NHP), 2017** was a landmark that acknowledged mental health as a national health priority. This policy aimed to address mental health issues through a multi-pronged approach, integrating mental healthcare into primary healthcare, strengthening human resources, and improving treatment accessibility.
- By placing mental health at the center of India's healthcare framework, NHP 2017 aimed to **bridge the treatment gap** by making psychological services available at Primary Health Centres (PHCs) and Health and Wellness Centres (HWCs) under Ayushman Bharat.

iGOT-Diksha Collaboration for Mental Health Training

- The government has also collaborated with the iGOT-Diksha platform, a digital learning initiative in 2020, to train healthcare professionals, frontline workers, and community health volunteers in mental healthcare. This program focuses on:
 - Building capacity for mental health care at the grassroots level.
 - Equipping doctors and nurses with skills to diagnose and treat mental disorders.
 - Promoting mental health awareness in rural areas.
- Through **iGOT-Diksha**, India has expanded its mental health workforce, ensuring better early intervention strategies and community support mechanisms.
- **National Tele Mental Health Programme (Tele MANAS), 2022**
- Launched on **October 10, 2022**, the **National Tele Mental Health Programme (Tele MANAS)** was a game-changer in India's digital mental health infrastructure. Tele MANAS provides free, **24/7 mental health support** to individuals through a **national toll-free helpline (14416 / 1800-89-14416)**. Available in **20** Indian languages.
- As of **February 7, 2025**, the **Tele MANAS helpline** has handled **over 1.81 million (18,27,951) calls** since its launch in **2022**, providing essential mental health support across India. There are **53 Tele MANAS Cells** across various states, ensuring local access to mental health services. The program is supported by **23 Mentoring Institutes** nationwide, along with **5 Regional Coordinating Centers**, ensuring efficient service delivery and expert guidance in mental healthcare.

Tele MANAS services include:

- Immediate tele-counselling by trained professionals.
- Referral support to psychiatrists for severe cases.
- Mental health awareness campaigns via digital platforms.
- Mobile-based mental health interventions, ensuring accessibility in rural and remote areas.

Tele MANAS Mobile App & Video Consultation

- The **Tele MANAS App** was launched in **October 2024**.
- Offers self-care strategies, stress management tools, and direct access to mental health professionals.
- Video consultation services introduced in Karnataka, Tamil Nadu, and J&K.

KIRAN Helpline Merged into Tele MANAS

- The **KIRAN Helpline (1800-599-0019)**, initially launched in **2020**, was merged into **Tele MANAS** in **2022** to enhance the efficiency of mental health support services. This transition streamlined mental health helpline operations, making it more accessible and better integrated with India's healthcare system.

- **During COVID-19**, the government took crucial steps to support mental health. A **24/7 helpline** provided nationwide psychosocial assistance, while health workers received online training through the **iGOT-Diksha** platform.
- **Public awareness campaigns** spread stress management strategies via media, and official guidelines and advisories were issued to promote mental well-being. These interventions played a vital role in addressing the psychological challenges of the pandemic.
- **National Suicide Prevention Strategy, 2022**
- The **National Suicide Prevention Strategy (NSPS)** was launched by the **Ministry of Health and Family Welfare (MoHFW)** in **2022**, with the goal of reducing suicide mortality by **10% by 2030**. Recognizing suicide as a public health concern, the strategy focuses on early intervention, crisis management, and mental health promotion.

Key components of NSPS include:

- Mental health screenings for students in schools and colleges.
- Establishing crisis helplines and psychological support centers.
- Community awareness programs to break the stigma around mental illness and suicide.
- Stronger implementation of workplace mental health programs.
- By focusing on high-risk populations, such as students, farmers, and young adults, the strategy ensures targeted intervention to prevent self-harm and improve overall well-being.

Conclusion

- India has made notable progress in mental healthcare through policy reforms, digital initiatives like **Tele MANAS** and expanding access to services under programs such as **NMHP, Ayushman Bharat HWCs, and the National Suicide Prevention Strategy**.
- Moving forward, India must strengthen awareness campaigns, expand workforce training and invest in digital mental health solutions. A mentally healthier India is vital for individual well-being, economic growth, and national development, requiring a whole-of-society approach to make mental healthcare accessible, inclusive, and stigma-free.

How quantum cryptography is leveraging principles of quantum mechanics to secure data to prevent financial frauds

- In recent years, India has been witnessing a major surge in digital payment frauds. According to data from the Reserve Bank of India (RBI), the total value of digital payment frauds escalated to Rs 14.57 billion in the fiscal year ending March 2024, marking a more than five-fold increase from the previous year.
- Besides, a survey by US-based data analytics company FICO revealed that over 34 per cent of respondents in India reported losing money to scams via real-time payments. Notably, while fewer

consumers reported losses in 2024 compared to 2023, the percentage of high-value losses (those exceeding Rs 8,00,000) doubled

- In addition to this, a report by BioCatch indicated a 101 per cent increase in reported fraud volumes in the first five months of 2024 compared to the same period in the previous year.
- Up to 40 per cent of these reported frauds were categorised as voice scams, underscoring the evolving tactics of fraudsters.
- Such statistics underscore the pressing need for enhanced security measures and increased user awareness to combat the rising tide of digital payment frauds in India. Newer technologies such as quantum cryptography leverages principles of quantum mechanics to secure data.
- “Unlike classical cryptography, which relies on mathematical complexity, **quantum cryptography uses the fundamental laws of physics.**
- A primary example is **Quantum Key Distribution (QKD), which enables two parties** to generate a shared, secret key.
- Any attempt by an eavesdropper to intercept the key alters the quantum states, revealing the intrusion and ensuring the integrity of the communication,” which offers forensic-driven cybersecurity solutions for the digital payments industry.
- “Quantum cryptography provides security based on physical laws rather than computational assumptions, making it resistant to current and future computational attacks, including those from quantum computers. As quantum computing advances, traditional cryptographic methods become vulnerable.
- Quantum cryptography, particularly QKD, ensures that any interception attempt is detectable, safeguarding data against both classical and quantum attacks.
- QKD facilitates the secure distribution of cryptographic keys, a critical component in digital payment security. This ensures that encryption keys remain confidential and integral, preventing unauthorised access and fraudulent transactions,”
- Implementing quantum cryptography in digital payments involves integrating QKD systems with existing payment infrastructures. This requires the development of quantum networks capable of transmitting quantum keys over distances relevant to financial transactions.
- Additionally, payment protocols must be adapted to incorporate quantum-generated keys, ensuring compatibility and seamless operation. Broadly quantum mechanics provides a level of security that is fundamentally resistant to both current and emerging threats, ensuring the integrity and trustworthiness of digital financial transactions.

- Recently "The UNGA (United Nations General Assembly) has announced the year 2025 as the year of International Quantum Science, this initiative by SISA is also in line with the the government of India's national quantum mission to increase the skill resources in quantum technology."
- "Quantum supremacy, the point where quantum computers surpass classical ones, is expected within the next five to ten years, with the quantum computing market forecast to reach \$50 billion by 2030.
- These advancements pose a critical threat to the digital payments ecosystem, as quantum technology risks rendering traditional encryption methods like RSA, ECC, and DSA obsolete, leaving sensitive data and financial transactions exposed.
- Despite the growing urgency, many organisations remain uncertain about whether to invest and how to prepare for a quantum-secure future.

Should mpox be labelled a sexually transmitted disease?

- Mpox was first declared a global health emergency by the World Health Organization (WHO) in 2022, when an outbreak of the the clade 2b strain gripped several countries in Africa -- and while this strain has continued to spread, but at lower levels, cases of a newly-identified and more potent variant, clade 1b, which began to be reported in the latter half of 2024, are still widespread in parts of Central Africa and are also being seen through travel-associated infections from Europe, Asia and North America as well
- As mpox cases continue to rise globally, experts remain divided on whether the disease should be classified as a sexually transmitted disease (STD).
- While some argue that such a designation could help focus public health interventions, Indian health professionals caution that it may lead to increased stigma, ultimately hindering effective response efforts.
- Mpox is an infectious disease that can cause a painful rash, enlarged lymph nodes, fever, headache, muscle ache, back pain and low energy. Most people fully recover, but some get very sick.
- **Mpox is caused by the monkeypox virus (MPXV).** It is an enveloped double-stranded DNA virus of the *Orthopoxvirus* genus in the *Poxviridae* family, which includes variola, cowpox, vaccinia and other viruses. There are two distinct clades of the virus: clade I (with subclades Ia and Ib) and clade II (with subclades IIa and IIb).
- A global outbreak of clade IIb began in 2022 and continues to this day, including in some African countries. There are also growing outbreaks of clades Ia and Ib affecting the Democratic Republic of the Congo and other countries in Africa. As of August 2024, clade Ib has also been detected beyond Africa.
- The natural reservoir of the virus is unknown, but various small mammals such as squirrels and monkeys are susceptible.

- A major point of discussion among researchers is whether mpox should be classified as a sexually transmitted disease (STD), which would lead to targeted public health measures to control its spread.
- While some experts argue that classifying mpox as an STD would help focus interventions, others warn that such a label could lead to stigma and hinder containment efforts.
- Indian public health experts warn that branding mpox as an STD could discourage individuals from seeking timely medical care due to societal stigma. Instead, they advocate for broader awareness campaigns that emphasize all modes of transmission while ensuring affected individuals receive necessary support.

Key Facts

- Mpox, previously **known as monkeypox, is a viral illness caused** by the monkeypox virus, a species of the genus *Orthopoxvirus*.
- There are two distinct clades of the virus: clade I (with subclades Ia and Ib) and clade II (with subclades IIa and IIb). In 2022–2023 a global outbreak of mpox was caused by the clade IIb strain.
- Mpox continues to be a threat today, and an upsurge of cases in the Democratic Republic of the Congo and other countries caused by clades Ia and Ib has raised concern.
- There are vaccines for mpox. Vaccination should be considered along with other public health interventions.
- Common symptoms of mpox are a skin rash or mucosal lesions which can last 2–4 weeks accompanied by fever, headache, muscle aches, back pain, low energy and swollen lymph nodes.
- Mpox can be transmitted through close contact with someone who has mpox, with contaminated materials, or with infected animals. During pregnancy, the virus may be passed to the fetus, or to the newborn during or after birth.
- Mpox is treated with supportive care for symptoms such as pain and fever, with close attention to nutrition, hydration, skin care, prevention of secondary infections and treatment of co-infections, including HIV where present.

Arguments for Classifying Mpox as an STD

- During the 2022 outbreak, studies showed that 98% of diagnosed mpox cases were linked to sexual transmission, primarily among men who have sex with men (MSM) and bisexual individuals.
- Based on these findings, some scientists suggested that the transmission pattern of mpox aligns with the characteristics of an STD.

Concerns Over Stigma and Misclassification

- However, other experts believe that classifying mpox as an STD could have negative consequences. In the same *Clinical Infectious Diseases* issue, researchers Aniruddha Hazra and Joseph N. Cherabie pointed out that historical mpox outbreaks in Africa primarily spread through non-sexual means,

such as household contact or animal-to-human transmission through the consumption of bushmeat.

- They cautioned that labeling mpox as an STD might divert attention away from pediatric cases and other vulnerable groups. The fear is that a strict focus on sexual transmission could reduce efforts to prevent non-sexual transmissions, which have been common in past outbreaks.

Kerala's Experience Challenges STD Labeling

- In India, Kerala has been at the forefront of managing mpox cases. The state recorded its first case of the clade 1b strain in a traveler returning from the United Arab Emirates.
- Two more cases were detected in January 2025, but all patients recovered successfully with no secondary infections, reducing fears of a widespread outbreak.
- Given Kerala's experience, public health experts have raised concerns about classifying mpox as an STD. They emphasized that public health strategies should consider the psychological and social impact of labeling mpox as an STD, particularly in communities where stigma around MSM and STDs remains strong.
- "The success of public health strategies depends on the context in which they are implemented.
- Currently, people are reporting mild lesions and voluntarily seeking treatment because mpox is seen as an infectious disease. However, if it is labeled an STD, particularly one linked to MSM, people may avoid seeking medical help, leading to further transmission."
- He further pointed out that despite advances in HIV treatment and awareness, stigma against HIV-positive individuals persists. "Unlike HIV, mpox is rarely fatal. If people choose to remain under the radar and avoid treatment, the risk of human-to-human transmission will increase significantly."

India's Public Health Approach: A Balanced Strategy

- Health officials in Kerala stress the need for an approach that considers India's social and cultural context. Many mpox patients in Kerala, including those from the 2022 outbreak, were individuals working in the Middle East who returned to India after being infected. Officials fear that classifying mpox as an STD could lead to unintended social consequences, such as marital problems for returning patients.
- A Kerala Health Department official explained, "Our information, education, and communication (IEC) strategies are carefully crafted to prevent unnecessary stigma. Attaching labels like STD or MSM to mpox could lead to social problems, including the dissolution of marriages."
- Additionally, a team from the Union Health Ministry that visited Kerala to assess the mpox situation sought to identify the possible sources of infection among patients. However, none of the patients admitted to engaging in sexual activity. The official added, "While we understand the primary

transmission route, our priority is treating patients and preventing further spread rather than forcing them to disclose personal details.”

Biovet's Breakthrough LSD Vaccine for Lumpy Skin Disease Gets Approval

- The **Lumpy Skin Disease is a highly contagious viral disease** that affects cattle and buffaloes, causing economic losses for dairy farmers due to reduced milk production, weight loss, and even fatalities.
- The introduction of BIOLUMPIVAXIN provides a much-needed solution to controlling and eradicating LSD in India. With its ability to differentiate vaccinated animals from naturally infected ones, the vaccine will enhance disease surveillance and prevention measures.

The Development Process

- The BIOLUMPIVAXIN vaccine is a live-attenuated marker vaccine, developed using the LSD virus strain from Ranchi/2019. The research and development process spanned three years and was a collaborative effort between ICAR-NRCE and Biovet. The project was led by NRCE, with ICAR playing a crucial role in ensuring that the vaccine meets global standards for animal health.

A Game-Changer for India's Livestock Industry

- “Veterinarians and epidemiologists can now easily distinguish between animals vaccinated with BIOLUMPIVAXIN® and those previously infected with LSD.”
- The CDSCO approval will reduce India's dependence on imported vaccines, boosting the country's self-reliance in veterinary medicine.
- This milestone is expected to play a vital role in achieving a disease-free livestock population and ensuring better health for dairy cattle and buffaloes across the country.

A Unique and Effective Vaccine

- **BIOLUMPIVAXIN is the only vaccine of its kind worldwide** for LSD. It is designed to be both safe and effective while offering a unique feature that differentiates between naturally infected animals and those that have been vaccinated. This differentiation is crucial for veterinarians and epidemiologists in controlling and monitoring the spread of the disease.
- The vaccine underwent rigorous testing at two of India's premier veterinary research institutes—ICAR-National Research Centre on Equines (ICAR-NRCE) and the Indian Veterinary Research Institute (IVRI). These tests confirmed the vaccine's quality, safety, and efficacy, making it a breakthrough development in the fight against LSD.

A Step Toward a Healthier Future

- With the approval and introduction of BIOLUMPIVAXIN, India is taking a major step toward strengthening its veterinary healthcare system. The vaccine is expected to help millions of livestock farmers by ensuring the well-being of their animals, improving productivity, and supporting the country's dairy industry.

- As India continues to develop innovative solutions in veterinary medicine, this groundbreaking vaccine is a testament to the nation's commitment to achieving self-sufficiency and global leadership in animal health.

Fruit flies aboard Gaganyaan-1, India's maiden human space flight.

- A team of scientists from the Tata Institute of Fundamental Research (TIFR) in Mumbai are planning to launch fruit flies aboard Gaganyaan-1, India's maiden human space flight.
- The fruit flies will be used to assess how space travel affects living organisms and what kind of biological changes and stresses they go through during the flight.
- The team will be **sending fruit flies (Drosophila melanogaster)**, which share close to 75% of the genetic pathways that influence human disease. This trait makes them ideal for studying biological phenomena.
- Our experiments with **Drosophila will simulate** the effects of short-term space travel – around seven days of microgravity – to understand how it impacts metabolic fitness and healthspan.
- “Most studies so far have focused on long-term exposure aboard the International Space Station (ISS). We’re filling a gap in understanding the aftermath of shorter missions like Gaganyaan.
- The flies will be placed in multiple vials and will be monitored in real-time. With the lifespan of the flies around 5-60 days, they are apt for the full 5-7-day-long flight of Gaganyaan Mission.
- The team will focus on studying **SIRT1 gene, which is a key gene** that encodes the SIRT1 protein, which belongs to the sirtuin family of enzymes. These enzymes play a crucial role in cellular regulation, ageing, metabolism, and stress resistance.
- “We will investigate whether manipulating SIRT1 levels can shield organisms from the adverse effects of space travel. This could open new possibilities for dietary or pharmaceutical interventions to improve health outcomes for astronauts
- The maiden flight of the Gaganyaan mission, which involves sending Indian astronauts in a **specially designed spacecraft to low-earth orbit** and bringing them back safely, will be conducted next year.
- The program includes two uncrewed test flights followed by a crewed mission, with the first uncrewed flight scheduled for 2025.
-

Isro completes testing of European network system to communicate with Gaganyaan

- The Indian Space Research Organisation (Isro) has completed the testing of the European Space Agency's network system, which will be used to communicate with the Gaganyaan Crew Module in space.

- Isro **conducted a series of Radio Frequency Compatibility Tests (RFCT)** to validate the network operations of Gaganyaan Orbital Module communications systems with the European Space Agency (ESA) Ground Stations.
- "These tests are essential towards ensuring the readiness of the entire communications architecture and validation of compatibility of Isro's systems with external ground stations before undertaking Gaganyaan missions.
- The testing included integrating the operation of the Gaganyaan onboard telemetry, tracking & command, data handling, and audio/video systems with the external ground station.
- With the successful accomplishment of these RFCT jointly with ESA, end-to-end compatibility between Isro's Gaganyaan Orbital Module communications systems and ESA's Ground station network has been demonstrated," .
- Isro and the European Space Agency had signed an agreement to cooperate on the Gaganyaan Mission. India had recently launched Europe's Proba-3 mission to space.
- Following the launch, a Technical Implementing Plan (TIP) for providing Ground Tracking Support for Gaganyaan Missions was signed by both Isro and ESA.
- "Ensuring seamless communication between Mission Control Centre and Gaganyaan Orbital Module is vital for the mission's success. This is essential for successful accomplishment of mission operations in human space missions such as communication with onboard Crew, monitoring of various onboard systems of the Orbital Module as well as commanding operations by a team of ground-based Flight Controllers,".

Superbug's defence mechanism found.

- Scientists at the Indian Institute of Technology, Roorkee (IIT-Roorkee) have uncovered a crucial regulatory mechanism in *Acinetobacter baumannii*, a highly drug-resistant superbug responsible for life-threatening infections.
- Their study, published in mBio, reveals how the pathogen controls its attack and defence systems, paving the way for new treatment strategies.
- Some bacteria and other germs are resistant to most types of antibiotics and medicines that treat them. They are called superbugs.
- Anti-microbial resistance occurs when bacteria, viruses, fungi and parasites change over time and no longer respond to medicines making infections harder to treat and increasing the risk of disease spread, severe illness and death.
- *Acinetobacter baumannii* is a nosocomial Gram-negative pathogen that often displays multidrug resistance due to its robust outer membrane and its ability to acquire and retain extracellular DNA that frequently encodes antibiotic resistance genes. Moreover, it can survive for prolonged durations on surfaces and is resistant to desiccation.

- Gram-negative bacteria are surrounded by a thin peptidoglycan cell wall, which itself is surrounded by an outer membrane containing lipopolysaccharide.
- Gram-positive bacteria lack an outer membrane but are surrounded by layers of peptidoglycan many times thicker than is found in the Gram-negatives.
- *Acinetobacter baumannii* is often found in hospitals and can lead to pneumonia, meningitis, and other serious infections. The microbe is also a leading cause of infections in wounded soldiers in Iraq and Afghanistan.
- A major survival tool of this superbug is the Type 6 Secretion System (T6SS) — a bacterial “weapon” used to attack competing microbes. However, how *A. baumannii* regulates T6SS while maintaining antibiotic resistance has remained unclear until now.

Targeting manganese-dependent RNA molecule

- The researchers discovered that *A. baumannii* switches T6SS on or off based on environmental conditions. A small RNA molecule, AbsR28, plays a key role in this regulation, influenced by manganese (Mn^{2+}) levels. When Mn^{2+} levels are high, AbsR28 binds to an essential gene (*tssM*) required for T6SS function, leading to its degradation.
- This prevents the activation of T6SS and enables *A. baumannii* to retain plasmid pAB3, which carries multiple antibiotic resistance genes.
- When *A. baumannii* activates T6SS, it becomes more vulnerable to antibiotics and oxidative stress. So, the bacteria must carefully regulate this system to survive in different conditions.
- The discovery sheds light on how this pathogen adapts during infections, helping it evade both antibiotics and the immune system.
- By targeting AbsR28, scientists may be able to disrupt the superbug’s regulatory system, making it more susceptible to antibiotics without directly attacking resistance genes.
- This discovery opens new avenues for precision medicine and novel drug development against multidrug-resistant infections.
- *A. baumannii* is on the WHO’s list of top priority pathogens, meaning this discovery could influence global antibiotic resistance policies.

France's ITER, or 'Mini Sun' project, and its India link

- One of Prime Minister Narendra Modi's pit stops on Wednesday, during his France visit, will be to review the progress of the world's most advanced fusion energy nuclear reactor that is being developed in Cadarache where scientists from around the globe have gathered to create a "miniature Sun" on Earth.
- Named the ITER (International Thermonuclear Experimental Reactor) or "The Way", the project seeks to provide the world an unlimited supply of clean energy and costs over Euro 22 billion. The

project, which was first conceptualized in the mid-80s, took off with the collaboration of seven nations - the US, Russia, South Korea, Japan, China, India and the European Union (EU).

- It will be the first fusion device to generate more heat than used to start the fusion reaction, relying on an impressive range of technologies which are essential to deliver fusion power in future. ITER will be the largest Tokamak device to test magnetic confinement to produce fusion energy. It will count millions of components, operated by cutting-edge systems, so as to measure its performance, and draw lessons for a future commercial fusion power plant.

The project

- The one-of-a-kind scientific collaboration dates back to 1985 when former Soviet Union Premier Gorbachev proposed to US President Reagan that an international project be set up to develop fusion energy for peaceful purposes. The first design was completed in 2001.
- China, the Republic of Korea, and later on, India joined the project. In 2003, Europe offered to host the ITER project and eventually, the land was allotted in France. On 24 October 2007, they signed an international agreement to build ITER
- The platform measures 42 hectares and is one of the largest man-made levelled surfaces in the world. The European Union is taking care of 45 per cent of the construction cost, and the rest of the member nations are sharing 9.1 per cent of the cost each.

'Made in India'

- India has made significant contributions to the 'mini Sun' project. It has committed Rs 17,500 crore - around 10 per cent of the cost, in return for 100 per cent access to the technology.
- India has also contributed the biggest component in the project - the world's largest refrigerator that houses this unique reactor. The refrigerator was made in Gujarat by Larsen & Toubro. It weighs over 3,800 tonnes and is almost half the height of the Qutub Minar. The total weight of the ITER reactor will be about 28,000 tonnes. Besides, India has also contributed "in-kind" material manufactured by the Indian industry.

What is ITER?

- • ITER (the Latin word for "the way") is a large-scale scientific experiment intended to prove the viability of fusion as an energy source. ITER is currently under construction in the south of France.
- • It is one of the most ambitious fusion energy projects in the world, in Cadarache in France.
- • Seven partners — China, the European Union, India, Japan, Korea, Russia and the United States — have pooled their financial and scientific resources to build the biggest fusion reactor in history.
- • These nations are collaborating to build the world's largest tokamak, a magnetic fusion device that has been designed to prove the feasibility of fusion as a large-scale and carbon-free source of energy based on the same principle that powers our Sun and stars.

Origin of ITER

- ITER was set in motion at the Geneva Superpower Summit in November 1985, when the idea of a collaborative international project to develop fusion energy for peaceful purposes was proposed by Soviet Union's Mikhail Gorbachev to the US President Ronald Reagan.
- One year later, an agreement was reached. The European Union (Euratom), Japan, the Soviet Union and the US joined to pursue the design for a large international fusion facility, ITER. Conceptual design work began in 1988, followed by increasingly detailed engineering design phases until the final design for ITER was approved by the members in 2001.
- The ITER members — China, the European Union, India, Japan, Korea, Russia and the United States — are now engaged in a decades-long collaboration to build and operate the ITER experimental device, and together bring fusion to the point where a demonstration fusion reactor can be designed.
- On-site construction of the scientific facility began in 2010. As the buildings rise at the ITER site in southern France, the fabrication of large-scale mockups and components is underway in the factories of the seven ITER members.

What is fusion?

- Fusion is the energy source of the Sun and stars. In the tremendous heat and gravity at the core of these stellar bodies, hydrogen nuclei collide, fuse into heavier helium atoms and release tremendous amounts of energy in the process.
- This is the opposite of nuclear fission – the reaction that is used in nuclear power stations today – in which energy is released when a nucleus splits apart to form smaller nuclei.
- Three conditions must be fulfilled to achieve fusion in a laboratory: very high temperature (on the order of $150,000,000^{\circ}\text{C}$); sufficient plasma particle density (to increase the likelihood that collisions do occur); and sufficient confinement time (to hold the plasma, which has a propensity to expand, within a defined volume). At extreme temperatures, electrons are separated from nuclei and a gas becomes a plasma — often referred to as the fourth state of matter. Fusion plasmas provide the environment in which light elements can fuse and yield energy.
- In a tokamak device, powerful magnetic fields are used to confine and control the plasma.

What is a tokamak?

- The tokamak is an experimental machine designed to harness the energy of fusion.
- The term 'tokamak' came from a Russian acronym that stands for "toroidal chamber with magnetic coils".
- First developed by Soviet research in the late 1950s, the tokamak has been adopted around the world as the most promising configuration of magnetic fusion device. ITER will be the world's largest tokamak.

- Inside a tokamak, the energy produced through the fusion of atoms is absorbed as heat in the walls of the vessel. Just like a conventional power plant, a fusion power plant will use this heat to produce steam and then electricity by way of turbines and generators. The heart of a tokamak is its doughnut-shaped vacuum chamber.
- Inside, under the influence of extreme heat and pressure, gaseous hydrogen fuel becomes a plasma — the very environment in which hydrogen atoms can be brought to fuse and yield energy.
- • The charged particles of the plasma can be shaped and controlled by the massive magnetic coils placed around the vessel. Physicists use this important property to confine the hot plasma away from the vessel walls.

What is the significance of ITER?

- ITER will not produce electricity, but it will resolve critical scientific and technical issues in order to take fusion to the point where industrial applications can be designed.
- By producing 500 MW of fusion power from 50 MW of power injected in the systems that heat the plasma — a “gain factor” of 10 — ITER will open the way to the next step: a demonstration fusion power plant.
- ITER is one of the most complex scientific and engineering projects in the world today. The complexity of the ITER design has already pushed a whole range of leading-edge technologies to new levels of performance. However, further science and technology are needed to bridge the gap to the commercialisation of fusion energy.
- The experimental campaign that will be carried out at the ITER is crucial to advancing fusion science and preparing the way for the fusion power plants of tomorrow.
- The ITER will also test the availability and integration of technologies essential for a fusion reactor (such as superconducting magnets, remote maintenance, and systems to exhaust power from the plasma) and the validity of tritium breeding module concepts that would lead in a future reactor to tritium self-sufficiency.
- As signatories to the ITER Agreement, concluded in 2006, the seven Members will share the cost of project construction, operation and decommissioning. They also share the experimental results and any intellectual property generated by the fabrication, construction and operation phases.
- Europe is responsible for the largest portion of construction costs (45.6 per cent). The remainder is shared equally by China, India, Japan, South Korea, Russia and the United States (9.1 per cent each).
- Taken together, the ITER members represent three continents, half of the world's population and 73 per cent of global gross domestic product.
- In the offices of the ITER Organisation and those of the seven domestic agencies, in laboratories and in industry, literally thousands of people are working toward the success of ITER.

India's role in ITER

- India became a full partner of ITER in December 2005. ITER-India, Institute for Plasma Research (IPR), located in Gandhinagar, Gujarat is the Indian domestic agency to design, build and deliver the contributions to ITER.
- Around 200 Indian scientists and associates, as well as notable industry players such as L&T, Inox India, TCS, TCE, HCL Technologies among others are engaged in the ITER project.

India is responsible for delivery of the following ITER packages:

- Cryostat
- In-wall Shielding
- Cooling Water System
- Cryogenic System
- Ion-Cyclotron RF Heating System
- Electron Cyclotron RF Heating System
- Diagnostic Neutral Beam System
- Power Supplies
- Diagnostics.

India's Matsya-6000 Deep-Ocean Submersible clears wet tests

The India's fourth-generation deep-ocean submersible, Matsya-6000, has successfully completed its wet testing at the harbor, marking a significant step towards conducting shallow-water demonstrations at depths of up to 500 meters by the end of 2025, as per an official statement released on Monday.

- Matsya-6000 is equipped with several innovative subsystems that ensure its functionality in the deep ocean environment. Key features include a main ballast system for diving, thrusters for movement in all directions, a battery bank for power supply, and syntactic foam for buoyancy.
- It also boasts advanced control hardware, software, and sophisticated underwater navigation devices. Communication is facilitated through an acoustic modem, **underwater telephone, VHF for surface communication, and GPS** for precise location tracking.
- The submersible's interior is designed with human life-support systems, along with displays for critical environmental parameters, navigation joysticks for maneuvering, and various oceanographic sensors.
- Underwater lighting and cameras are integrated into the exterior, all subsystems being indigenously designed and undergoing rigorous testing.
- Following the completion of its design phase, Matsya underwent comprehensive dry tests at a 500-meter operational range.

- These tests, which were conducted to assess the submersible's integration and performance, proved successful, allowing the submersible to be transported to the L&T Shipbuilding facility at Kattupalli Port near Chennai for wet tests between January 27 and February 12.
- Although the restricted water depth in the harbor hindered underwater voice communication, the tests confirmed that Matsya-6000 is on track for future demonstrations in deeper waters. The successful completion of the tests at Kattupalli Port has raised confidence that the submersible will be ready for shallow-water demonstrations at depths of up to 500 meters by the end of 2025.
- Under the **government's Deep Ocean Mission initiatives, the Ministry of Earth Sciences has entrusted the National Institute of Ocean Technology** with the ambitious task of designing and developing the Matsya-6000, as part of the Samudrayan Project.
- The Ministry of Earth Sciences, through the National Institute of Ocean Technology (NIOT), Chennai, is developing a manned submersible 'Matsya 6000', which aims to carry three people to a depth of 6000 meters in the ocean with a suite of scientific sensors for ocean exploration and observation. The manned submersible Matsya 6000 is likely to be realised by 2026.
- The technologies developed under the Deep Ocean Mission will expand the country's capability **for deep-sea man-rated vehicle development and** pave the way for sustainable deep-sea exploration and harnessing of deep-sea living and non-living resources. The deep-sea exploration includes biodiversity, survey and mineral resources. A
- part from the benefits of scientific research and technological empowerment, this mission has immediate spin-offs in underwater engineering innovations, asset inspection and the promotion of ocean literacy.
- Under the Deep Ocean Mission, a manned submersible Matsya 6000 is being **developed to house a 2.1-metre internal diameter Titanium alloy personnel** sphere for safely carrying humans to a 6000 m depth. The Titanium alloy personnel sphere is being integrated in collaboration with ISRO.
- The manned submersible is to be equipped with subsystems for buoyancy management enabling descent/ascent, power, and control systems, maneuvering propellers, subsea intervention manipulators, navigation and positioning devices, data and voice communication systems, on-board energy storage batteries, as well as systems for emergency support.
- It is designed to enable continuous operations at 6000 m depth for up to 12 hours with an emergency endurance of up to 96 hours for conducting deep water observation and exploration. Human Support and Safety System, which is a critical need for three humans, has been realized for the acclimatization and usage during routine and emergency scenarios.
- The deep-sea activities, exploration of deep-sea living and non-living resources, are being undertaken in **accordance with the guidelines of UN governing bodies.**

- The development of ocean climate change advisory services relies on robust data acquisition and analysis for deriving projections of sea level change, intensity of cyclone, storm surge, and waves and their impacts on associated coastal erosion and inundation in the projected climate.
- The acquisition of a multidisciplinary research vessel is in progress. Expansion of capacity building in marine biology in the country is also being prioritized by setting up a dedicated Advanced Marine Station for Ocean Biology (AMSOB).

SCIENTIFIC STUDIES CARRIED OUT IN ARCTIC REGION

- The Ministry of Earth Sciences, through its autonomous institute, the National Centre for Polar and Ocean Research (NCPOR), Goa organizes the Indian Arctic expeditions and manages the Indian Arctic Research Station Himadri.
- Till date, 15 successful Indian Scientific Expeditions to the Arctic with participation from the academicians, scientists and researchers have been carried out. These expeditions are multidisciplinary and multi-institutional in nature.
- Various atmospheric and oceanic measurements have been undertaken to understand the association between Arctic ice melt and Indian Monsoon through teleconnection.
- India has **deployed a mooring IND-Arc in the inner Kongsfjorden** to measure the different oceanic parameters to understand the causes and changes in atmospheric and oceanic properties due to melting Arctic ice.
- Indian scientists have participated in several scientific cruises to the Arctic Ocean in collaboration with the Norwegian Polar Institute (NPI) and the Korean Polar Research Institute (KOPRI) to study biophysical processes involved in and during the Arctic Sea ice melting.
- Indian scientists **conducted two field works in the Canadian High Arctic region in 2023 and 2024 to understand** the role of permafrost as a potential reservoir of significant human health microbes.
- More than 200 scientific research publications have come out and more than a dozen Ph.D. theses have been awarded/ongoing from the Indian Arctic Program since its inception.
- Both the regions - the Arctic and Himalayas - are climatically and ecologically sensitive and contain a large cryosphere (ice-covered regions). Global warming is adversely affecting both regions through ice melting.
- Various studies based on observational, modeling and past climate data from the Arctic have shown that Arctic sea-ice and Arctic temperatures are linked to the Indian monsoon through atmospheric and oceanic teleconnections. The linkage will cause disruption in the Indian monsoon, which in turn will affect the precipitation/snowfall over the Himalayas.
- The total amount of funding allocated and utilized for the purposes of carrying out research in the Arctic Circle over the last five years has been about Rs. 39.00 Crores.

- India's engagement with the Arctic region has been consistent and multidimensional. On 17 March 2022, India unveiled its Arctic policy document titled 'India and the Arctic: building a partnership for sustainable development'.
- **The policy lays down six pillars:** i) strengthening India's scientific research and cooperation, ii) climate and environmental protection, iii) economic and human development, iv) transportation and connectivity, v) governance and international cooperation, and vi) national capacity building in the Arctic region.
- Implementation of India's Arctic Policy is overseen by an inter-ministerial Empowered Arctic Policy Group.
- To expand India's scientific interests in the Arctic region, regular winter expeditions in the Norwegian Arctic has been initiated since December 2023 and scientific research and operations are carried out in Arctic by occupying the Indian research station Himadri for more than 300 days since December 2023.
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MANAGEMENT OF GROWING E-WASTE IN THE COUNTRY

- Generation of e-waste has been increased over the past years and is increasing day by day due to increased usage of electrical and electronic equipment (EEE) by the consumers. E-waste generation is direct result of economic growth and technological advancements.
- Ministry **has comprehensively revised the E-Waste (Management) Rules, 2016** and notified the E-Waste (Management) Rules, 2022 in November, 2022 and the same is in force since 1st April, 2023.
- The objective of the said rules is to take all steps required to ensure that e-waste is managed in a manner which shall protect health and environment against any adverse effects, which may result from such e-waste.
- These new rules intend to manage e-waste in an environmentally sound manner and put in place an improved Extended Producer Responsibility (EPR) regime for e-waste recycling **wherein all the manufacturer, producer, refurbisher and recycler are required to register on portal developed by the** Central Pollution Control Board (CPCB).
- The new provisions would facilitate and channelize the informal sector to formal sector for doing business and ensure recycling of e-waste in environmentally sound manner. Provisions for environmental compensation and verification & audit have also been introduced.
- These rules also promote Circular Economy through EPR regime and scientific recycling/disposal of the e-waste.
- Currently there are 322 nos. of recyclers and 72 nos. of refurbishers registered with CPCB to cater the services for recycling / refurbishing of generated e-waste. **The reported processing capacity**

of 322 registered recyclers as on 09.02.2025 is 22,08,918.064 MT per annum and processing capacity of 72 registered refurbishers is 92,042.18 MT per annum. Further, CPCB has taken following steps for effective management of E-Waste Rules as under:

- An online **EPR E-Waste portal** has been developed by CPCB where entities such as producers, manufacturers, recyclers, and refurbishers of the e-waste are required to be registered.
- CPCB has developed guidelines for the scientific and environmentally sound management of e-waste.
- The guidelines details procedures and facilities in terms of machineries and pollution control devices required for the recycling of e-waste in environmentally sound manner.
- An action plan for **implementation of E-Waste (Management) Rules, 2022 is in place** and the same is being implemented by all State Pollution Control Boards (SPCBs)/Pollution Control Committees (PCCs) in their respective States/UTs. SPCBs/PCCs are submitting quarterly progress report.
- The action plan has action point for checking informal e-waste activities and has asked SPCBs/PCCs to carry out regular drives for checking informal e-waste activities.
- Under **Rule 10(1) of the E-Waste (Management) Rules, 2022, State Government has been entrusted with the responsibility to ensure** earmarking or allocation of industrial space or shed for e-waste dismantling and recycling in the existing and upcoming industrial park, estate and industrial clusters
- CPCB issued following Directions to SPCBs/PCCs for effective implementation of the E-Waste (Management) Rules, 2022:
 - Directions dated 06.09.2022 under Section 18 (1) (b) of the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 regarding checking informal e-waste activities, verification of authorized dismantlers/recyclers of e-waste and drives for mass awareness.
 - Directions dated 30.01.2024 under Section 5 of the Environment (Protection) Act, 1986 regarding registration of producers, manufacturers, recyclers and refurbishers on the Online E-Waste EPR Portal.
 - Directions dated 14.02.2024 under Section 5 of the Environment (Protection) Act, 1986 for ensuring generation of EPR Certificates by e-waste recyclers towards fulfilment of Producers EPR obligations for the FY 2023-24.

India's ongoing efforts to strengthen cancer care and research.

- Cancer continues to be one of the major causes of death worldwide, with millions of new cases reported each year.

- In 2022, approximately 20 million new cancer cases were recorded, and 9.7 million people died from the disease globally. In India, cancer remains a pressing health concern, with cases projected to rise. According to the Indian Council of Medical Research (ICMR), more than 14 lakh new cases were estimated in 2023.
- The **National Cancer Registry Programme (NCRP)**, under ICMR, has been monitoring cancer incidence and trends since 1982, providing essential data for policy decisions.
- The National Institute of Cancer Prevention & Research (NICPR) plays a role in research and screening guidelines. The government has introduced policies, financial support, and strategic interventions to improve prevention, early detection, and treatment across the country.
- **Government Initiatives in Cancer Care**
The Union Budget 2025-26 reflects the government's focus on healthcare, with the Ministry of Health and Family Welfare allocated Rs. 99,858.56 crore.
- The government plans to set up Day Care Cancer Centres in all district hospitals within the next three years, with 200 centres planned for 2025-26. To make treatment more accessible, customs duty exemptions have been introduced for 36 life-saving drugs used in cancer and other diseases, with some medicines attracting a concessional customs duty of 5%.
- Drugs provided under pharmaceutical companies' patient assistance programs have also been exempted from customs duty.
- The **National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke (NPCDCS)** is being implemented under the National Health Mission. The programme focuses on early detection and screening for oral, breast, and cervical cancers. Several district clinics and community health centres provide screenings and related services. Infrastructure is being strengthened through tertiary cancer centres and state cancer institutes.
- Efforts to decentralize cancer care have resulted in the establishment of multiple tertiary care centres.
- There are now 19 State Cancer Institutes and 20 Tertiary Care Cancer Centres across the country. Institutions such as the National Cancer Institute in Jhajjar, Haryana, and the Chittaranjan National Cancer Institute in Kolkata contribute to advancing treatment and research.
- **Expanding Access to Treatment**
The Ayushman Bharat scheme, launched in 2018, provides healthcare coverage to economically weaker sections, ensuring timely treatment for cancer patients. The scheme includes chemotherapy, radiotherapy, and surgical oncology, reducing financial strain on families.
- The Health Minister's Cancer Patient Fund under the Rashtriya Arogya Nidhi programme provides financial aid of up to Rs. 5 lakh for cancer treatment, with a maximum assistance limit of Rs. 15 lakh. Funds are allocated to 27 regional cancer centres to support underprivileged patients.

- The **National Cancer Grid (NCG)**, established in 2012, works to standardize cancer care across the country. The network has expanded to 287 members, including research institutes, hospitals, and advocacy groups.
- The NCG supports evidence-based treatment and collaborates with Ayushman Bharat to ensure affordability. It has also contributed to digital health initiatives by developing electronic patient records.
- **Advancements in Cancer Research**
India has made progress in cancer research, with recent developments in treatment technology. In 2024, **NexCAR19, India's first indigenous CAR-T cell therapy**, was introduced through a collaboration between IIT Bombay, Tata Memorial Centre, and ImmunoACT. This therapy offers a treatment option for blood cancers and aims to make advanced care more accessible.
- International collaborations are also shaping cancer research. In 2024, India partnered with the US, Australia, and Japan under **the Quad Cancer Moonshot initiative to address cervical cancer in the Indo-Pacific region**.
- The initiative focuses on expanding screening and vaccination programs and advancing research.
- The Advanced Centre for Treatment, Research, and Education in Cancer (ACTREC), a key unit of Tata Memorial Centre, has initiated an expansion plan to enhance cancer research and patient care.
- This development supports ongoing clinical advancements and new therapeutic approaches.
- **Raising Awareness and Promoting Prevention**
Efforts to educate the public on cancer prevention and early detection are being strengthened. The government has integrated cancer awareness into primary healthcare through community-level programs.
- Media campaigns across print, electronic, and social platforms promote healthy lifestyles and early detection. National Cancer Awareness Day and World Cancer Day serve as opportunities to encourage public participation in health initiatives.
- Other initiatives, such as the Eat Right India campaign by the Food Safety and Standards Authority of India, promote nutritious food choices.
- The Fit India Movement encourages physical activity, and yoga programs under the Ministry of AYUSH support overall well-being. These initiatives contribute to awareness and prevention efforts.

Building a Stronger Cancer Care System

India's approach to cancer care involves policy measures, infrastructure development, and financial assistance programs.

- The government is expanding access to treatment through district-level cancer centres and affordable healthcare schemes.

- Research efforts, such as indigenous CAR-T cell therapy and global collaborations, are contributing to advanced treatment options. Digital health initiatives and standardized care networks are improving coordination in cancer management

RuTAGe Smart Village Center to drive Rural Innovation and sustainable solutions

- The much-awaited launch of the Rural Technology Action Group (RuTAGe) Smart Village Center (RSVC) took place yesterday in Mandaura village, Sonipat, marking a transformative moment in rural technological advancement.
- The RSVC Mandaura was inaugurated by Prof. Ajay Sood, the Hon'ble Principal Scientific Adviser to the Government of India.
- **RuTAGe Smart Village Center (RSVC) is a pivotal step** towards bridging the gap between rural needs and technological advancements, ensuring that innovation reaches the grassroots and transforms the lives of our communities.
- Prof Ajay Sood, Principal Scientific Adviser to the Government of India also shared the concept behind the creation of RSVCs, highlighting the major challenges faced by rural communities in accessing technologies that directly address their basic needs.
- These challenges include innovative solutions for animal intrusion, organic farming, and livelihood-enhancing technologies such as bead-making and bakery machinery.
- The Principal Scientific Adviser emphasized the significance of ensuring that technologies reach the bottom of the pyramid, a concept championed by Prof. CK Prahalad, thus creating a direct link between innovations and the market to improve rural livelihoods.
- This unique center, developed under the aegis of the Office of the Principal Scientific Adviser (PSA) to the Government of India, aims to integrate cutting-edge technologies with rural needs, enhancing the quality of life and empowering communities through sustainable solutions.
- Their efforts in taking forward technologies such as satellite data, water monitoring kits, Internet of Things (IoT), solar power, organic fertilizers, assistive technologies, and livelihood-focused innovations to the grassroots level are a testament to the collaborative spirit driving this initiative.

Key Highlights of the RuTAGe Smart Village Center (RSVC) Model:

- **Location & Physical Presence:** The RSVC is designed to serve as a permanent presence at the Panchayat level, providing deep handholding to cater to the technological needs of 15-20 villages over several years. The center aims to build trust and confidence among the community members, ensuring the seamless adoption of innovative solutions.
- The **RuTAGe Smart Village Center (RSVC)** offers a comprehensive range of 12 technology tracks to address diverse rural challenges:
- **Agriculture & Waste Management:** Services for agriculture, waste management, homestays, and village tourism, supported by pre-sowing to post-harvest technologies, in collaboration with KVKs.

- **RuTAG Technologies:** Innovations from 7 IITs, developed under the Office of the Principal Scientific Adviser to the Government of India.
- **Livelihood & Entrepreneurship:** Promoting local entrepreneurship through schemes like NRLM and TRIF in Uttar Pradesh.
- **Renewable Energy:** Solar hybrid and wind technology solutions, with technical assistance from SELCO Foundation.
- **National Innovations:** Technologies from Manthan, Pune Cluster, and IIT Madras for various rural needs.
- **Affordable Housing:** Innovative housing technologies from Manthan and HR Corporation Pvt Ltd.
- **WASH:** Waste management, water, and sanitation solutions, including IIT Madras Aquamaps and weVois technologies.
- **FinTech:** Financial inclusion apps and AR/VR technologies developed by IISC and XR Group.
- **Capacity Building:** Research and capacity-building initiatives with Tier 2 & 3 colleges where NIFTEM is facility for piloting biscuit manufacturing from locally sourced materials like sugar, ghee. NAARM undertaking capacity building of RSVC centre heads.
- **Govt. Scheme Apps:** Dissemination of government schemes through citizen-centric apps for science, tech, and welfare programs.
- **Assistive Technologies:** Solutions for differently abled individuals through the Assistive Technology Foundation.
- **Custom Solutions:** Deployment of technologies like animal intrusion prevention and electronic medical record-keeping based on local needs.
- **Quality Assurance:** The RSVC ensures quality and feasibility through anchor leads from institutions such as Selco, IIT Madras, and the Assistive Tech Foundation. These entities guide the RSVC team in the on-the-ground deployment of technologies from platforms like Manthan and RuTAG.
- **Market Access & Linkages:** The RSVC also emphasizes market linkages through collaborations with platforms like ONDC, Amazon, and Market Mirchi (a RuTAG innovation by IIT Bombay), ensuring that rural producers have access to larger markets and can sell their goods effectively. Additionally, a Government Schemes Help Desk provides villagers with crucial information on available financial assistance and government schemes.
- **Integration with Government Ministries:** The initiative aligns with the objectives of various Ministries, including Rural Development, Agriculture, Animal Husbandry, and Labour, through collaboration on schemes that will further enhance the welfare of rural communities.
- **Scalability:** The RSVC model is set to expand, with plans for 20 new centers across India. In addition to expanding the physical network, the Techpreneurs (Foot Soldiers) program will

empower women entrepreneurs to sell and promote technologies in their local communities, ensuring the sustainability of this model.

- This launch marks the beginning of a new era of technology-driven rural development, where the community, local entrepreneurs, and various stakeholders work together to bridge the rural-urban divide.
- The launch also witnessed presence of steering committee members from various Ministries, Foundations, Corporates, and NGOs, all of whom have played a crucial role in making the RSVC a reality.
- Their collective support and engagement ensure that this initiative will have a lasting impact, not just on Mandaura village but on rural communities across India.

What lies beneath the surface of the F-35's allure for India?

- In an unexpected move, US President Donald Trump has offered F-35 stealth fighter jets to India as part of efforts to strengthen bilateral defence ties and build a closer strategic partnership with New Delhi. He is looking to expand military deals and enhance cooperation between the two nations. This offer comes as the Indian Air Force (IAF) is exploring different options for new fighter jets, with several aircraft models already being considered for purchase.
- Earlier, the *F-35* was not seen as a likely choice for India due to its highly sensitive technology and the fact that India already uses a large number of advanced Russian defence systems
- During Prime Minister Narendra Modi's recent visit to Washington, DC, Trump offered India the *F-35* fighter jets. This happened around the same time as the *Aero India, 2025*, air show was held at the Yelahanka Air Force Station in Bengaluru, where the *F-35* was also showcased.
- Even before Trump assumed presidency, the US had already started seeing India as an important buyer of its military equipment. Last year, the Biden Administration had approved Indian defence deals worth nearly \$4 billion. These included 31 *MQ-9B Sky Guardian* drones, up to 170 *AGM-114R Hellfire* missiles and 310 *GBU-39B/B Laser* Small Diameter Bombs.
- India **has decided to buy six more P-8I Neptune maritime patrol** aircraft to strengthen its ability to monitor, and protect, its waters. These aircraft are equipped with advanced radar and sensors, helping the Navy track enemy submarines and safeguard India's coastline.
- Additionally, India is acquiring **Javelin anti-armour missiles designed to destroy** enemy tanks and heavily armoured vehicles. **These missiles use a 'fire-and-forget' system**, meaning that, once launched, they automatically track and hit the target, making them highly effective in battle.
- India is also set to receive *Stryker* infantry combat vehicles, which provide soldiers with armoured protection and mobility on the battlefield. These vehicles are built to move quickly across rough terrain, helping troops stay safe while advancing in combat zones.

- India has also secured agreements to locally manufacture both *Javelin* missiles and *Stryker* vehicles, boosting its defence industry. This move will reduce dependence on foreign suppliers and create new jobs in the country's defence sector.
- There have been discussions in the past about the likelihood of the US offering *F-35* stealth fighters to India. In 2018, a top US military official from the Pacific Command reportedly expressed support for selling these advanced jets to India, highlighting potential defence cooperation between the two countries.
- Lockheed Martin is eager to collaborate with both the US and Indian governments on future defence deals. These include fighter jets, *Javelin* missiles, and helicopters, which will strengthen India's military with modern technology and enhance its ability to tackle security challenges effectively. This will be a major milestone in strengthening the defence partnership between the US and India, further deepening their strategic ties and cooperation.
- Lockheed Martin has been working closely with India for more than 30 years, playing an important role in developing the country's aerospace and defence industry. The company has helped build a strong foundation for military aircraft, weapons and defence technology, making India more self-reliant in this field.
- India's defence industry has benefited from key manufacturing projects, including the *C-130J* transport aircraft, the *S-92* helicopter cabins and fighter jet wings, which are also a segment of the global supply chain. Lockheed Martin has played a significant role in supporting these efforts.
- The IAF is looking to add 114 new fighter jets from foreign manufacturers as part of its **Multirole Fighter Aircraft (MRFA) programme**. This is one of the most important defence projects aimed at strengthening India's air power. India has already bought 36 *Dassault Rafale* jets under a different deal. And now, the aircraft is one of the contenders in the *MRFA* competition.
- When India first announced the requirement for 114 fighter jets, it was meant only for single-engine aircraft, which, automatically, excluded the French *Rafale*. However, over time, the competition has expanded to include a wider range of fighter jets. Now, such aircraft as the *F-15EX* and the *F/A-18E/F Super Hornet* are also being considered, showing that the selection process is now open to both single-engine and twin-engine fighter jets.
- European contenders for India's fighter jet competition include the *Eurofighter Typhoon* and the *Saab Gripen E/F*. Meanwhile, Russia has put forward its *Su-57 Felon*, a stealth fighter also showcased at *Aero India, 2025*.
- If India chooses to go with a single-engine fighter, the *F-21* a special version of the *F-16* designed for India could also be a strong contender. The *F-35* is also a single-engine fighter, but it stands out with its advanced technology and superior capabilities, setting it apart from other choices.

- India is unlikely to manufacture the *F-35* locally any time soon, and it is uncertain whether New Delhi will be willing to waive this requirement. Instead, the stealth fighter may come with other benefits, such as manufacturing certain parts in India, or sharing some technology.
- This could be valuable for India as it develops its own next-generation fighter, the *Advanced Medium Combat Aircraft* (AMCA). However, India's strong defence ties with Russia may still impose some restrictions.
- The MRFA programme aims at providing temporary fighter jets to strengthen the IAF, which is facing a shortage. These jets will help bridge the gap until India's own fifth-generation fighter, the AMCA, is ready for service.
- Similar to other fighter jets in its class, the AMCA will have a stealthy design with internal weapons storage. It will also include advanced technology, such as AESA radar and modern avionics. From the start, it is being designed to work alongside drones as part of a manned-unmanned team.
- Recent reports suggest the AMCA may not be ready for service until 2036. However, it is still uncertain whether an *F-35* deal could happen within this period. If India could acquire the *F-35*, it would provide a ready-made solution to significantly boost the IAF's strength especially as China's military advancements continue to grow rapidly. The *F-35* could greatly reshape the IAF and influence its future plans for fighter jets.
- India actively buys defence equipment from Russia, including air defence systems. India uses the *S-400* long-range air defence system the same weapon that previously got Turkey removed from the *F-35* programme. Lately, the US seems more open to selling the *F-35* to Turkey, but only if Turkey agrees to give up its *S-400* systems.
- Turkey refused to give up its *S-400* systems and, as a result, lost both its *F-35*s and its role in the programme. If India were given the same choice, it is uncertain whether it would agree. Unlike Turkey, which has bought only a few Russian weapons, India has been one of Russia's biggest arms buyers for a long time. This has created a strong military partnership and a powerful Russian influence in India's defence sector.
- Before Trump's announcement, Indian defence journalist Angad Singh, who writes for *The War Zone*, pointed out that the *S-400* is a major obstacle to any potential *F-35* deal. He explained that, regardless of US political changes, India's use of the *S-400* and other Soviet, or Russian-made, military equipment makes acquiring the *F-35* more complicated.
- With changes in US politics and foreign policy, India's ties with Russia and its use of Russian weapons may no longer be a major obstacle to buying the *F-35*. There is also a possibility that India could strike a deal to replace the *S-400* with similar US air defence systems. Trump's proposal to offer the *F-35* to India is important. But many challenges still need to be addressed before a formal

deal can take shape. Right now, the US is reassessing its policy on selling fifth-generation fighters to India. What happens next is uncertain, as India's fighter jet purchases are often unpredictable.

- Apart from the issue of *F-35*, it is important to note that the US government is making more efforts to strengthen its defence partnership with India. Besides selling more military equipment and not just fighter jets the US may see an opportunity to strengthen its defence ties with India by taking advantage of Russia's weaker position in global affairs. This is particularly important for the Indo-Pacific region, where both the US and India see China as their main security challenge and strategic competitor.
- After meeting Prime Minister Modi, Trump stated that strong cooperation between the US, India, Australia and Japan was essential for maintaining peace and stability in the Indo-Pacific region. The *F-35* offer is not just a major fighter jet deal for the US, but also aimed at weakening India's defence ties with Russia, while strengthening India's military to counter China in the Indo-Pacific region.

India, Malaysia expand defence ties, advance Su-30 upkeep cooperation

- India and Malaysia on Wednesday moved forward towards enhancing cooperation between the Indian Air Force (IAF) and the Royal Malaysian Air Force (RMAF) in exchanging expertise and best practices for maintaining their respective Russian-origin Sukhoi-30 (Su-30) combat aircraft fleets, while also enhancing cooperation in the defence industry, maritime security, multilateral engagements, and other key emerging areas during Defence Secretary Rajesh Kumar Singh's visit to Kuala Lumpur.
- "Both sides also exchanged the finalised terms of reference (ToR) on the establishment of the Su-30 forum, as an outcome of the Malaysia-India Defence Cooperation Committee (MIDCOM)," an official Ministry of Defence (MoD) release stated, adding that the forum "will enable closer cooperation between the two air forces in exchanging expertise and best practices in Su-30 maintenance".
- Both countries also took steps to strengthen bilateral defence cooperation during the 13th meeting of MIDCOM, held in Kuala Lumpur on Wednesday. The meeting was co-chaired by Defence Secretary Singh and Secretary General of Malaysia's Ministry of Defence, Lokman Hakim Bin Ali. According to the MoD release, "Both sides expressed happiness at the growing bilateral defence cooperation with regular engagements between the two armed forces in recent years."
- The two sides held wide-ranging discussions on practical and effective initiatives to expand bilateral defence engagements and broaden coordination on regional and global issues, as stated in the MoD release. The co-chairs identified steps to enhance cooperation in emerging areas such as cybersecurity and artificial intelligence, while also exploring ways to deepen existing

collaboration in the defence industry, maritime security, and multilateral engagements. They further agreed to establish a joint focus group to address non-traditional maritime security threats.

- Both sides reaffirmed their commitment to fully implementing the new initiatives under the defence pillar of the Comprehensive Strategic Partnership, as envisioned by Prime Minister Narendra Modi and Malaysian Prime Minister Dato' Seri Anwar Ibrahim during the latter's visit to India in August 2024.
- India and Malaysia also exchanged the finalised ToR on the establishment of a Strategic Affairs Working Group. The MoD release stated that the forum will function as an intermediate consultative mechanism between the MIDCOM and the two sub-committees to advance all aspects of bilateral defence cooperation.
- The defence secretary highlighted the capability of the Indian defence industry, particularly its potential to collaborate with Malaysian companies and the armed forces in their capability enhancement and modernisation. He congratulated Malaysia on assuming the chairmanship of the Association of Southeast Asian Nations (ASEAN) and the ASEAN Defence Ministers' Meeting-Plus (ADMM-Plus) and wished the Malaysian Ministry of Defence the best for conducting ADMM-Plus and the ASEAN Defence Senior Officials' Meeting this year.
- According to the MoD release, **India supports "ASEAN centrality and unity," a crucial element of New Delhi's Indo-Pacific Vision.** The defence secretary reiterated India's support for Malaysia's role as ASEAN chair in promoting a stronger, unified, and prosperous ASEAN that plays a central role in shaping the evolving dynamics of the Indo-Pacific region.
- The MoD release stated, "India considers Malaysia an important partner in the Indo-Pacific, as Malaysia lies at the confluence of three key foreign policy visions: **the Act East Policy, SAGAR (Security and Growth for All in the Region), and the Indo-Pacific Oceans Initiative.**"
- The IAF currently operates 259 Su-30MKI aircraft, an India-specific upgraded variant of the twin-engine, multirole air superiority fighter, most of which were licence-produced by Hindustan Aeronautics Limited (HAL) and form the backbone of its combat fleet.
- Twelve additional aircraft worth Rs 12,573 crore are on order, and HAL expects approval for the Su-30MKI upgrade programme within the next 12 months, ensuring the aircraft retain their air combat capability for another 30 years. FlightGlobal's 2025 World Air Forces directory reports that the RMAF operates 18 Su-30MKMs.

IndiaTDS-1: A giant leap for India's private space sector

- India is on the verge of a major advancement in its space programme with the upcoming launch of Technology Demonstration Satellite-1 (TDS-1). Set for the third quarter of 2025, this mission is not only a technological milestone but also a pioneering achievement for the country's growing private space sector.

- For the first time, a Polar Satellite Launch Vehicle (PSLV), India's reliable space launch vehicle has been entirely manufactured by private industry, reflecting the nation's increasing confidence in its homegrown space capabilities.
- This PSLV has been developed by Hindustan Aeronautics Limited (HAL) and Larsen & Toubro (L&T), marking a shift from traditional rocket manufacturing, which was previously led by the Indian Space Research Organisation (ISRO).
- The rocket will **transport TDS-1 into a sun-synchronous orbit at 747km** altitude, enabling the satellite to cover the entire Earth every 12 days, providing crucial data for multiple applications.
- However, the real significance of this mission lies in its role as a technology test bed, as it carries 35 advanced indigenous systems that will play a key role in shaping India's future in space.
- **"TDS-1 is equipped with a 300 milli-Newton (mN) electric propulsion thruster, developed by ISRO's Liquid Propulsion Systems Centre (LPSC).** This system is more efficient and has a longer operational lifespan than conventional chemical thrusters, making it suitable for long-duration and deep-space missions.
- A successful test could lead to its use in future interplanetary spacecraft. TDS-1 will also validate an Indian-made atomic clock, which offers high precision and reliability. This technology will enhance India's satellite navigation systems and improve the accuracy of space-based operations,"
- Space experts point out that as cybersecurity threats continue to evolve, secure communication technology is crucial. TDS-1 will test quantum communication payloads, utilising quantum mechanics principles to create highly secure, unbreakable encryption.
- This advancement could transform secure satellite communications, benefiting both civilian and defence applications.
- "The satellite is equipped with high-resolution cameras and spectrometers, which will collect detailed imagery and environmental data.
- These systems will contribute to weather forecasting, disaster response, resource mapping, and scientific research, expanding India's ability to monitor and understand Earth's changing environment,"
- The collaboration between HAL, L&T, and ISRO represents a major turning point for India's space programme. By leveraging private sector expertise, ISRO can focus on more advanced and complex space missions, while also encouraging growth and competition in the space industry.
- This shift not only eases ISRO's workload but also opens new opportunities for private companies to contribute meaningfully to India's space ambitions.
- A successful launch and deployment of TDS-1 will validate the private sector's role in building and launching space vehicles, paving the way for even more ambitious partnerships in the future.

- The technologies tested on this mission will provide valuable insights, shaping upcoming space missions and enhancing India's technological leadership in space exploration.
- Experts point out that though challenges remain such as the integration of multiple new technologies and the need for clear regulatory guidelines for private space enterprises the TDS-1 mission is a step forward.
- It showcases India's technological innovation, engineering expertise, and commitment to space self-reliance. As the country moves further into deep-space exploration and advanced satellite applications, this mission stands as a symbol of progress, demonstrating how public-private partnerships can drive India's space future.

Does chlorinating drinking water increase risk of cancer?

- Chlorinating drinking water is a widely used disinfection method that plays a crucial role in ensuring the safety and quality of drinking water. But how safe is it?
- A recent study on chlorination of drinking water reveals that chlorinating drinking water at common levels in the United States and European Union probably increases the risk of cancers.
- The study from across the globe found that the process of disinfecting water with chlorine generates trihalomethane (THM), a byproduct found in all public drinking water systems across the US and EU.
- The researchers noted that though chlorination is a "cheap, effective and readily available" method, it causes an increased risk of bladder cancer (33 per cent), and colorectal cancer (15 per cent).
- When chlorine is added to water, it reacts with organic compounds, like decaying plant materials to create toxic byproducts.
- "What we see is alarming and we need some more high-quality studies," Emilie Helte, a lead author with Karolinska Institutet in Sweden said.
- Alternatives such as treating water with UV lights, or installing new filtration systems were also suggested by the researchers.

What is drinking water chlorination?

- The addition of chlorine to drinking water systems is known as drinking water chlorination. It is the most common type of disinfection that kills harmful bacteria, viruses and other microorganisms.
- Water chlorination was introduced in the US and other countries as waterborne diseases like typhoid, dysentery became a common cause of death in the past.
- Some of the alternative disinfectants include:
 1. Ultraviolet disinfection
 2. Ozone disinfection
 3. Nano photocatalytic disinfection

India emerges as a global leader in science, technology, and innovation: Dr. Jitendra Singh

- India is no longer just a follower on the global stage; it is now leading in multiple fields, including space exploration, biotechnology, nuclear energy, and scientific research. Dr. Jitendra Singh, Union Minister of State for Science and Technology, Earth Sciences, and Minister of State for PMO, made this bold assertion during a recent address, highlighting India's remarkable advancements and rising prominence in the world of science and technology.
- India's space sector has undergone a remarkable transformation in recent years. With ambitious missions and successful international collaborations, India has positioned itself as a key player in space exploration. The Space Docking Experiment (SpaDeX), part of India's growing technological capabilities, is paving the way for future missions such as Gaganyaan, Chandrayaan-4, and the Bharatiya Antariksh Station—India's forthcoming international space station.
- India's rise in the space sector is underscored by its increasing role in satellite launches. Over the past decade, the country has launched 433 foreign satellites, earning substantial revenues—\$157 million and €260 million—from 2014 to 2023. The success of Chandrayaan-3, which made India the first country to land near the Moon's south pole, has propelled India to the forefront of lunar exploration. The global scientific community, including NASA, is now keenly awaiting India's findings from the Moon's southern pole.
- India's achievements in biotechnology and bioeconomy are equally impressive. The nation became the first to develop a DNA-based COVID-19 vaccine, cementing its leadership in vaccine research. Additionally, India introduced the world's first herpesvirus vaccine for cervical cancer, further establishing itself as a global leader in preventive healthcare.
- The bioeconomy has also flourished, growing from \$10 billion in 2014 to nearly \$140 billion today. Projections suggest it will reach \$250 billion in the coming years, fueled by a surge in biotech startups—almost 9,000 today compared to just 50 in 2014. India is also gaining ground in bio-manufacturing, ranking third in the Asia-Pacific region and 12th globally, with its influence rapidly expanding.
- India is also pioneering space biology, with significant investments in research focused on sustaining life beyond Earth. The Indian Space Research Organisation (ISRO) and the Department of Biotechnology have signed an MoU to advance space biotechnology, focusing on growing plants in space to support long-term space missions. Research in space medicine and human physiology in extraterrestrial environments is expected to be crucial as humanity looks to expand its presence beyond Earth.
- In nuclear energy, India has set an ambitious goal of generating 100 gigawatts of nuclear energy by 2047. This effort will contribute significantly to reducing carbon emissions by 50%, positioning India as a leader in sustainable energy development. India's nuclear policy, originally envisioned

by Homi Bhabha for peaceful purposes, is now viewed as a model of responsible energy development worldwide.

- India's standing in scientific research has gained global recognition. The country is now ranked fourth worldwide in scientific publications, and projections suggest it could surpass the United States to become the leading nation in scientific research by 2030. This growing dominance is also reflected in India's space economy, which is expected to grow five to ten times in the next decade, further solidifying its leadership in science and bio-manufacturing.

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Webb Telescope provides unprecedented view of our Milky Way's supermassive black hole

- NASA's James Webb Space Telescope is providing the best look yet at the chaotic events unfolding around the supermassive black hole at the center of our Milky Way galaxy, observing a steady flickering of light punctuated by occasional bright flares as material is drawn inward by its enormous gravitational pull.
- Webb, which was launched in 2021 and began collecting data in 2022, is enabling astronomers to observe the region around the black hole – called Sagittarius A*, or Sgr A* – for extended periods for the first time, allowing them to discern patterns of activity. The region around Sgr A* was seen as bubbling with activity rather than remaining in a steady state.
- The researchers observed a constant flickering of light from the swirling disk of gas surrounding the black hole – called an accretion disk. This flickering appears to be emanating from material very close to the event horizon, the point of no return beyond which everything – stars, planets, gas, dust and all forms of electromagnetic radiation – gets dragged into oblivion.
- There also were occasional flares – around one to three large ones over any 24-hour period, with smaller bursts in between.
- “The accretion disk is a very chaotic region filled with turbulence, and the gas gets even more chaotic and compressed as it approaches the black hole, under extreme gravity,” said astrophysicist Farhad Yusef-Zadeh of Northwestern University in Illinois, lead author of the study published on Tuesday in the Astrophysical Journal Letters.
- “Blobs of gas are bumping into one another, and in some cases being forced or compressed together by the strong magnetic fields that exist within the disk – somewhat similar to what happens in solar flares,” said astrophysicist and study co-author Howard Bushouse of the Space Telescope Science Institute in Baltimore.
- While these bursts arise from a mechanism similar to solar flares – which blast hot charged particles into space from our sun – they occur in a different astrophysical environment and at a vastly higher energetic level.

- Black holes are exceptionally dense objects with gravity so strong that not even light can escape, making viewing them quite challenging. As such, the new observations are not of the black hole itself but of the material surrounding it.
- Sgr A* possesses roughly 4 million times the mass of our sun and is located about 26,000 light-years from Earth. A light-year is the distance light travels in a year, 5.9 trillion miles (9.5 trillion km).
- Most galaxies have a supermassive black hole residing at their core. While the events observed around Sgr A* are dramatic, this black hole is not as active as some at the center of other galaxies and is considered to be in a relatively quiescent state.
- The new findings were based on a total of about 48 hours of observations of Sgr A* made by Webb over a year, in seven increments ranging from 6 hours to 9-1/2 hours, as the researchers obtained continuous measurements of the brightness around the black hole.
- The observations are providing insight into how black holes interact with their surrounding environments. Yusef-Zadeh said that about 90% of the accretion disk's material falls into the black hole while the rest is ejected back into space.
- This accretion disk appears to be made up of material accumulated from the stellar winds of nearby stars – gas being blown off the surface of those stars – that is captured by the gravitational force of Sgr A*, rather than from a star that wandered too close and got shredded, the researchers said.
- Astronomers previously were limited to getting a few hours of observations from ground-based telescopes or about 45 minutes at a time from the orbiting Hubble Space Telescope, giving them a piecemeal account. Webb also offers the advanced sensitivity of its Near-Infrared Camera (NIRCam), and the observations were made at two different wavelengths within the infrared spectrum.
- "It has been known for a long time that Sgr A* often shows bright flares at many different wavelengths, ranging from radio, to infrared, optical and even X-rays. But most previous observations, done from both the ground-based and space-based telescopes, were limited to only being able to observe Sgr A* for a few hours at a time or were limited in their sensitivity, and hence only detected the occasional brightest flares,
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What is space docking technology, which will be used in India's Gaganyaan mission

- Space **docking refers to the process of connecting two spacecraft in orbit**. The technology is expected to give a major boost to India's space programme
- India's ambitious Gaganyaan mission, aimed at sending Indian astronauts into space, is poised to leverage space docking technology, marking a significant leap in the country's space exploration capabilities.

- The technology is **expected to be extensively used during the Gaganyaan mission. Space docking**, which is the intricate process of connecting two spacecraft in orbit, offers numerous advantages over conventional approaches, making it a crucial component for the success of the Gaganyaan mission and future space endeavours.
- This technology is not just about joining two pieces of metal in the vastness of space, it is about opening up a new era of possibilities for India's space programme.

How does this technology score over conventional methods?

- Space docking technology provides several benefits over traditional methods of launching and operating spacecraft. Imagine trying to build a complex structure like a house by launching all the materials at once in a single rocket. That's essentially what conventional methods entail for building structures in space. Space docking offers a more elegant solution.
- "Think of it like building with LEGO blocks in space. Space docking allows for modular assembly, where individual components of a larger structure, such as a space station or a lunar base, are launched separately and then connected in orbit.
- This approach offers significant advantages in terms of cost and logistical efficiency. Instead of requiring a single, massive launch vehicle capable of carrying the entire structure, smaller, more manageable rockets can be used to transport individual modules.
- This reduces the risk and complexity associated with launching large payloads and allows for greater flexibility in mission design.
- **Furthermore, space docking enables efficient resupply missions, where essential resources like fuel**, food, water, and equipment can be delivered to orbiting spacecraft, extending their operational life and supporting long-duration missions,
- Space docking significantly enhances mission safety by providing a critical backup option in case of emergencies. "If a problem arises with the primary spacecraft, astronauts can transfer to a docked module or vehicle for a safe return to Earth. This capability is particularly crucial for long-duration missions, where the ability to evacuate crew members quickly can be life-saving.
- Moreover, space docking allows for greater operational flexibility. For instance, a crew could dock with a specialised module equipped for scientific experiments or repair work, expanding the scope of their mission without requiring the entire spacecraft to be designed for those specific tasks.
- Space docking allows for in-space servicing and upgrades. A service module can dock with an orbiting spacecraft to refuel it, replace worn-out components, or install new instruments and technology. This capability can significantly prolong the operational life of valuable space assets, reducing the need for frequent and costly replacements.

- Space docking technology fosters international collaboration by enabling spacecraft from different countries to connect and work together. This opens up exciting possibilities for joint missions, shared resources, and the exchange of knowledge and expertise.
- For example, an Indian spacecraft could dock with the International Space Station (ISS), allowing Indian astronauts to participate in research and activities on the ISS. Such collaborations not only accelerate the pace of scientific discovery and technological advancement, but also strengthen diplomatic ties and promote global cooperation in space exploration.
- A prime example of India's progress in space docking technology is the recent demonstration of the Space Docking Experiment (SPADEX).
- The Indian Space Research Organisation (ISRO) successfully tested the autonomous docking capabilities of two spacecraft in orbit, showcasing the precision and sophistication of its technology.
- This successful experiment is a crucial step towards realizing the goals of the Gaganyaan mission and paves the way for the development of India's own space station, where modules will be assembled and docked in orbit.
- The SPADEX mission involved deploying two small spacecraft, each weighing about 220 kilograms, into a 470-km circular orbit.
- It also demonstrated the transfer of electric power between the docked spacecraft, a capability vital for applications such as in-space robotics, composite spacecraft control, and payload operations following undocking.

Acute myeloid leukaemia in India: Understanding barriers to care and exploring solutions.

- Cancer is among the greatest health challenges of the current century. The sheer complexity of the disease, and challenges in finding the right course of treatment for each patient have resulted in an ever-increasing burden worldwide. Concurrently, intensive research has yielded newer therapies, efficient diagnostic methods, better prognostic methods, and improved disease monitoring and supportive care. However, these advances are not uniform across the world.
- In the case of patients with acute myeloid leukaemia (AML), an aggressive form of blood cancer, these advances only reach a miniscule fraction in low and middle-income countries such as India. Several barriers in accessing, and getting the right care, result in abysmal outcomes for patients and increase the health burden. After the United States and China, India had the highest number of cases of AML in 2021. Effective cancer care depends on three critical factors: early screening, accurate diagnosis to determine prognosis and to tailor therapeutic regimens, and timely initiation of treatment to improve survival rates. Hence, it is necessary to recognise and address these barriers in AML care to improve the lives of thousands.
- **D The challenges of AML care**

- AML is the most common form of leukaemia in adults. It affects the blood and bone marrow, causing the growth of abnormal cells called blasts, which eventually outnumber healthy cells, affecting the production of red blood cells, white blood cells, and platelets. It can progress quickly and even spread to the brain and spinal cord. Hence, early detection and treatment are essential to improve outcomes.
- In India, the situation is unique as patients present with the disease almost a decade earlier (median age 40 years) as compared to high-income countries. Despite being younger, patients present at late stages, have poor nutritional and performance status, and face delays in treatment initiation, leading to poor outcomes. Moreover, high incidence rates of fungal infections and multidrug-resistant bacteria during chemotherapy also contribute to mortality rates. Furthermore, the disease is not reported in a large-scale and systematic manner, painting a misleading picture of its real burden.
- Patients face several hurdles during the initial phases of treatment. Some of these include disorganised referral systems, lack of well-equipped diagnostic facilities, inadequate hospital infrastructure, and lack of access to cutting-edge therapies. This impact is more pronounced in rural and semi-urban areas. Additionally, many patients lack access to adequate funding, hindering effective treatment. For those eligible for government schemes, there is a significant delay in receiving financial aid. Furthermore, financial programmes do not cover the initial diagnosis. Treatment involves staying for prolonged periods in cities that have state-of-the-art facilities, causing logistical bottlenecks and absenteeism from work for patients and caregivers who travel long distances seeking care. These hurdles become more pronounced when the socioeconomic status, location of patients, and choice between public and private hospitals are taken into account, necessitating a more nuanced approach. In tertiary care hospitals that have medical expertise and can provide affordable services, resources are often stretched to the limit when treating patients with cancer.
- **Addressing the challenges**
- While the government has taken several positive steps to make cancer treatment accessible and affordable, such as the Ayushman Bharat scheme, there is more that needs to be done by both the private and public sector to improve outcomes. Strengthening the infrastructural framework can be done at multiple levels depending on the challenges faced. Some of the solutions include:
- **Diagnosis:** Raising awareness among primary care physicians to facilitate appropriate referrals to specialists, decentralising diagnostics to improve access, ensuring that all cases of AML are registered and reported systematically to facilitate data collection and resource allocation.

- **Treatment:** Creating and training a healthcare workforce that is dedicated to AML care, preparing standardised guidelines for AML therapy and infection control, forming public-private partnerships to enhance access to resources such as beds, healthcare workers, and labs.
- **Policy changes:** Forming groups to conduct clinical trials and collect data from different centres, enhancing access to novel drugs, standardisation of quality of generic cancer and anti-microbial drugs, including low and middle-income countries in clinical trials for new drugs.
- For every patient, the journey from diagnosis to treatment is unique, and survival often depends on how easily they can navigate these stages. Several barriers such as access to advanced diagnostics, the availability of treatment options, and financial constraints influence timely and effective treatment. Strengthening the healthcare infrastructure around AML care in India is essential to overcome these barriers. By improving early diagnosis, expanding access to innovative treatments, and making care more affordable, the healthcare system can help patients navigate these challenges with ease. In doing so, the country can improve survival rates and ensure that more patients receive the care they need at the right time

Sonowal inaugurates key waterways terminal in Assam's Jogighopa

- The new terminal will play a major role in logistics and connectivity of Eastern India and boost trilateral trade between India, Bhutan and Bangladesh.

Strategic Location and Economic Impact

- The newly inaugurated terminal in Jogighopa is strategically located and connected to the Multi-Modal Logistics Park. It is expected to serve as an international port of call for Bhutan and Bangladesh, facilitating seamless cargo movement across Assam and the Northeast region. The event was attended by Bhutan's Minister of Finance, Lyonpo Namgyal Dorji, underscoring the terminal's regional significance.
- "The IWT terminal at Jogighopa is set to transform connectivity in the region and bolster our trilateral trade with Bhutan and Bangladesh. Its strategic position allows it to act as an economic multiplier for the region, a testament to PM Narendra Modi's doctrine of 'Neighbourhood First,'" said Sonowal.
- India's IWT sector has seen remarkable growth over the past decade. The number of operational national waterways has surged by 767%, while cargo handling has increased by 727%.
- Additionally, multimodal terminals have expanded by 62%, and the budget allocation for inland waterways has grown by 860%. Cargo traffic on national waterways has witnessed an exponential rise, increasing from 18 million tonnes a decade ago to 133 million tonnes in FY 2023-24, with a compound annual growth rate (CAGR) exceeding 22%.

Jogighopa Terminal: Infrastructure and Capacity

- The Jogighopa terminal plays a crucial role in India's trade with Bangladesh and Bhutan. It is located 91 km from Gelephu (Bhutan), 108 km from the Bangladesh border, and 147 km from Guwahati.
- Additionally, it serves as a designated Port of Call under the Protocol on Inland Water Transit and Trade (PIWT&T) agreement with Bangladesh. By 2027, the terminal is projected to handle 1.1 million tonnes of cargo annually.
- Developed at a cost of over ₹82 crore, the terminal includes essential facilities such as administrative and customs offices, immigration services, truck parking, a 1,100 sqm covered storage area with backup power, and an 11,000 sqm open storage area.

Growth in River Cruise Tourism

- Beyond cargo transportation, India's inland waterways are also driving the growth of tourism. The MV Ganga Vilas, the world's longest river cruise, demonstrated the potential of cruise tourism by traversing 27 river systems across five states and two countries. Over the past decade, the river cruise tourism sector has expanded significantly, with the number of river cruise vessels increasing from just three in 2013-14 to 25 in 2023-24.
- A world-class river cruise terminal is being developed in Guwahati to enhance passenger experiences. Additionally, four dedicated river cruise terminals at Silghat, Bishwanath Ghat, Neamati, and Guijan are under development, offering modern amenities and offshore facilities.
- "The development of inland waterways holds great promise for transforming India's logistics sector. By leveraging our extensive network of rivers and water bodies, we can create a sustainable, cost-effective, and efficient mode of transportation for goods," Sonowal added.

Boost to Infrastructure and Legislative Reforms

- The government has undertaken major initiatives to expand and modernize India's waterways. The 'Cruise Bharat Mission' aims to establish 10 sea cruise terminals, 100 river cruise terminals, and five marinas over the next five years. This initiative is expected to double cruise calls and passenger numbers, strengthen regional alliances, and significantly boost sea and river cruise tourism by 2029.
- "Under the leadership of Prime Minister Narendra Modi ji, the government has enacted groundbreaking legislations like the National Waterways Act, 2016, and the Inland Vessels Act, 2021, to empower and enhance the inland waterways transportation ecosystem for both cargo and passenger traffic," Sonowal said.

Urban Water Transport and the Water Metro Model

- The Inland Waterways Authority of India (IWAI) has outlined plans to strengthen urban water transport by developing water metro projects in 18 cities across 12 states, including Guwahati.

This initiative aims to replicate the success of the Kochi Water Metro model, providing efficient and eco-friendly transportation solutions.

Legislative Frameworks

- Inland Waterways Authority of India (IWAI) in 1986 is created under Inland Waterways Authority of India Act, 1985 It is an autonomous organization responsible for development, maintenance and regulation of National Waterways (NWs).
- The Authority primarily undertakes projects for development and maintenance of IWT infrastructure on national waterways through grant received from the Ministry of Ports, Shipping and Waterways.

It presently has five regional offices in

- Guwahati (Assam)
- Patna (Bihar)
- Kochi (Kerala)
- Bhubaneswar (Odisha)
- Kolkata (West Bengal)
- Inland Waterways Authority of India Headquarter: Noida, Uttar Pradesh.
- National Waterways Act, 2016: It has declared 111 inland waterways as 'National Waterways' (NWs).
- NW-1 (Haldia – Allahabad on Ganga-Bhagirathi-Hooghly River System)
- NW-2 (Dhubri – Sadiya on River Brahmaputra)
- Inland Vessels Act, 2021: It replaced over 100 years old Inland Vessels Act, 1917 to facilitate harmonised regulation of the inland vessels and their safe navigation

Significance of Inland Water Transport

- Cargo traffic on NWs has witnessed an exponential growth in the last decade. It aids in logistic sector.
- Cruise Bharat Mission aims to significantly increase sea and river cruise travellers by 2029k, boosts tourism sector.
- About IWT Jogighopa
- It is located on Brahmaputra River, Assam.
- Port of Call: Under Protocol on Inland Water Transit and Trade (PIWT&T) between India and Bangladesh.
- Port of call is an intermediate port where ships customarily stop for supplies, repairs, or transshipment of cargo.

IN-SPACE unveils Rs 500 crore technology adoption fund to boost India's space startups and innovation

- The Indian National Space Promotion and Authorization Centre (IN-SPACe), an arm of the Department of Space (DoS), has launched a new fund with a corpus of Rs 500 crore to support the growth of India's space startups.
- The Technology Adoption Fund (TAF) aims to accelerate the development of indigenous space technology, reducing reliance on imported solutions. It will invest in domestic research and development and strengthen collaboration between government agencies and the private sector, positioning India as a key global player in the space industry.
- "The fund will offer financial support of up to 60 per cent of the project cost for startups and MSMEs, and 40 per cent for larger industries, with a maximum funding cap of Rs 25 Crores per project," said Dr Pawan Goenka, Chairman, IN-SPACe.
- Goenka said the fund is designed to enable "innovators to bridge the gap between early-stage development and commercialisation".
- "This support will enable companies to refine their technologies, enhance production processes, and meet market demands both within India and abroad. Our focus is on enabling practical solutions that can be quickly integrated into the space ecosystem," he added.
- The fund will also support the transition of early-stage space technologies developed by Indian companies into commercially viable products. With TAF, IN-SPACe aims to support a wide range of outcomes — from the development of new space products to the creation of intellectual property that can drive future research and development.
- The fund will help promote advanced space technologies and contribute to job creation along with economic growth.
- By funding projects that have the potential to become commercial successes, IN-SPACe is taking concrete steps toward strengthening India's position in the global space sector. The TAF is also open to all eligible Non-Government Entities (NGEs)/companies that are ready to demonstrate the commercial potential of their innovations.
- The fund will also provide partial funding to NGEs. In addition to financial support, the initiative will provide technical guidance and mentoring opportunities, which will help companies navigate challenges during the product development phase.
- This comprehensive support framework is intended to ensure that innovative ideas are not only protected and refined but also brought to market efficiently.
- "The launch of this forward-looking fund by IN-SPACe is a major step toward enabling start-ups to accelerate their journey from concept to commercialisation," said Lt. Gen. AK Bhatt (retd.), Director General, Indian Space Association (ISpA), while welcoming the initiative.

What is IN-SPACe?

- Indian National Space Promotion and Authorisation Centre (IN-SPACe) is a single-window, independent, nodal agency that functions as an autonomous agency in the Department of Space (DOS).
- It was created for promoting, authorising and overseeing the activities of non-government entities (NGEs) in the space sector.
- As the space sector was opened up to private enterprises and startups to undertake space activities to promote, handhold, regulate and authorise their activities, an autonomous nodal agency attached to the Department of Space was formed.
- This will enhance the diffusion of space technology and boost the space economy within the country.
- IN-SPACe will permit and oversee the activities of private enterprises and startups.
- It regulates space activities, including the building of launch vehicles and satellites and providing space-based services as per the definition of space activities.
- The agency acts as an interface between ISRO and NGEs and assesses how to utilise India's space resources better and increase space-based activities.
- It permits the sharing of space infrastructure of ISRO and the establishment of temporary facilities within the premises of ISRO.
- It also assesses the needs and demands of private players, including educational and research institutions, and explores ways to accommodate these requirements in consultation with ISRO.

Purpose of the Technology Adoption Fund

- The fund will offer financial support of up to 60 per cent of the project cost for startups and MSMEs, and 40 per cent for larger industries, with a maximum funding cap of Rs 25 crores per project.
- The fund is open to all eligible non-government entities that are ready to demonstrate the commercial potential of their innovations.
- By providing partial funding to non-government entities (NGEs), the Technology Adoption Fund will support the transition of innovative ideas from the drawing board to a market-ready stage.
- In addition to financial support, the initiative will provide technical guidance and mentoring opportunities, which will help companies navigate challenges during the product development phase.
- Investing in domestic research and development, the TAF will help build a strong partnership between government bodies and the private sector and position India as a reliable global partner in the space industry.
- With this fund, IN-SPACe aims to support a wide range of outcomes — from the development of new space products to the creation of intellectual property that can drive future research and development.

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Only the second animal to find its way by polarised moonlight found

- Many nocturnal animals, including insects like ants and bees, follow the moon's position to find their way when they go foraging.
- But the moon waxes and wanes in a cycle and can be obscured by clouds or overhanging tree canopies, so the animals can't always directly track its position.
- Now, for the first time, scientists at Macquarie University, Sydney, have found that **two nocturnal bull ant species (*Myrmecia pyriformis* and *Myrmecia midas*) make their way at night with the help of polarised moonlight**, which, while being dimmer even than moonlight, contains unusual patterns that can point the way.
- This is also only the second instance of an animal being found to use polarised moonlight to orient itself.

Returning late

- Seen from the ground, both sunlight and moonlight contain characteristic polarisation patterns. The way these patterns are oriented in the sky, rather than the location of the light source alone, allows animals to use it as a compass.
- The study found the nocturnal bull ants were able to detect and use polarised moonlight throughout the lunar cycle for foraging, even under a crescent moon when moonlight is 80% less intense.
- The **polarisation patterns in moonlight are also a million-times dimmer than in sunlight**. So while many animals are known to use the latter, very few use the former. The first **animal found to use polarised moonlight was the dung beetle**.
- Scientists already knew *M. pyriformis* and *M. midas* ants used polarised sunlight to navigate, but this light fades as the sun sets. The study's researchers were also aware most of the foraging *M. midas* ants returned overnight while the night-time activity of *M. pyriformis* ants increased on full-moon nights.
- **The e-vector pattern**
- The **sun and the moon both emit unpolarised light**. Light is an electromagnetic wave, with the electric field oscillating perpendicular to the magnetic field, and both fields oscillating perpendicular to the wave's direction of motion.
- When the light moves through **the earth's atmosphere, it is scattered by particles in the air and becomes polarised**. Polarisation denotes a specific orientation of the electric field.
- Both sunlight and moonlight scattered in the atmosphere become linearly polarised, meaning the electric field oscillates in a single, fixed plane perpendicular to the wave's motion. The scattered light is also oriented 90° to the incident light.

- As numerous light waves are scattered in this way, an unusual pattern emerges in the sky when seen through a filter that can detect polarised light. This is called the e-vector pattern.
- “[W]hen the sun/moon is near the horizon, the pattern of polarised skylight is particularly simple, with uniform direction of polarisation approximately parallel to the north-south axes,”.

What is Polarised Light?

- Polarized light is light that travels in a specific direction & it is scattered after hitting particles in the atmosphere.
- Normally, light travels in all directions, but when it contacts dust or water droplets, it becomes polarized. That means it vibrates in a specific direction.
- Moonlight behaves in a similar way to sunlight. Even moonlight is also sunlight reflecting off the moon. But it also becomes polarized like sunlight when it passes through Earth's atmosphere.
- Some animals can detect these polarized light patterns. This is known as e-vector patterns

Under the moon

- The researchers created linearly polarised light and cast it on a population of nocturnal bull ants in the wild, then tracked the ants' ability to orient themselves relative to their two nests, located more than 50 metres apart.
- Under full, waxing, and waning moon conditions, the researchers rotated their polariser clockwise by 45° and later counterclockwise by 45° . In each instance, the e-vector of the light falling on the ants changed.
- The ants responded by adjusting their path to the left and later to the right. Once the foragers crossed the area where the researchers' light was being cast, they adjusted once more to reorient themselves according to the e-vector pattern in the sky.
- The researchers used paired tests to compare the magnitude of these shifts between the initial orientation and the filter exit and again between the filter exit and the reorientation. The paired tests are a statistical tool with which researchers can determine whether paired observations — shift magnitudes in this case — differ between two samples.
- While the nocturnal bull ants were found to use polarised moonlight throughout the lunar cycle, their heading shift magnitudes dropped during the waning phases. The researchers called this finding “unexpected”.
- Likewise, foraging ants had substantially higher shift magnitudes during the waxing full moon and waxing quarter moon phases compared to the waning phases.
- Under the new moon, when the ambient moonlight e-vector disappeared, the paths of the foraging ants didn't change significantly when the polarisation filter was rotated in either direction. The ants also didn't reorient their paths to a meaningful degree once they exited the filter.

- The researchers used another statistical test to compare the differences in shift magnitudes when the filter was rotated clockwise and counter-clockwise across lunar phases.

Update on TB- Mukt Bharat Abhiyan

- Since the launch of the 100-day Intensified TB-Mukt Bharat Abhiyan on December 7, 2024, by the Honourable Union Minister for Health and Family Welfare Shri Jagat Prakash Nadda, over 5.1 lakh notifications have been recorded across India.
- A new strategy was designed for early identification of TB by offering X-ray as a screening tool for the population at higher risk of developing TB.
- With the use of ultraportable hand-held X-ray and intensified efforts to reach door to door, in congregate settings, identifying risk groups such as Diabetics, smokers, alcoholics, people living with HIV, those with TB in the past, geriatric population, house-hold contacts of TB patients and screening both asymptomatic and symptomatic with X-ray followed by confirmation using Nucleic Acid Amplification Testing (NAAT) has identified several asymptomatic TB patients.
- Till date, the campaign has made remarkable progress. Over 3.5 lakh TB patients have been notified across 455 intervention districts, and more than 10 crore vulnerable individuals have been screened as a result of accelerated case detection efforts, reduced diagnostic delays, identifying drug-resistant cases early and improving treatment outcomes..
- Among those identified, 2.4 lakh patients have been notified from public health institutions, while 1.1 lakh were identified through private healthcare facilities. Additionally, over 10 lakh Ni-kshay Shivirs have been organized, and 836 Ni-kshay Vahans have been deployed to extend the reach of TB services, ensuring that even the most remote areas are covered.
- Over 38 lakh people have been screened using chest x-rays, including a substantial population that did not exhibit the typical symptoms or any symptoms of TB. Alongside, the campaign is working to ensure complete treatment, scale up differentiated TB care for identifying patients in immediate need for care, hospital admission, the undernourished TB patients, and offer preventive TB treatment for the vulnerable population.
- These results are an outcome of a “whole-of-government approach” to ensure the success of the campaign; the Union Minister for Health and Family Welfare, Shri Jagat Prakash Nadda, has chaired meetings with Chief Ministers and Cabinet Ministers and senior officials from 22 ministries.
- Furthermore, the Ministry of Health and Family Welfare organized a sensitization session which was attended by over 250 parliamentarians across states and Union Territories to inform them about the campaign and encourage their involvement and support at the state and district levels.
- The Union Minister urged Chief Ministers of all states to closely monitor the progress of the campaign at the state level. High-level administrative officers have been identified to oversee the implementation of activities across various departments to ensure seamless coordination.

- Building on the success of the Jan Bhagidaari approach, the campaign emphasizes the active participation of community members. **Through Ni-kshay Shapaths – individuals, community leaders, NGOs, and corporates are being encouraged to become Ni-kshay Mitras and support TB patients** with nutritional baskets, psychosocial and vocational support. Since the launch of the campaign, over 2.4 lakh Ni-kshay Mitras have registered and over 2.3 lakh food baskets have been distributed.
- India's commitment to fighting TB is evident in the nation's achievements to date. In 2024, India notified over 26 lakh TB patients, thereby closing the gap in the estimated incidence and those notified to the programme.
- It is worth noting that over 36% of notifications were registered from the private sector, reflecting the success of the progressive policy changes, innovative strategies and interventions deployed by the programme over the course of the last ten years.
- The new strategy adopted under the 100-Day TB-Mukt Bharat Abhiyaan is contributing in a big way by identifying sub-clinical or asymptomatic TB which contributes to TB transmission in the community, leading to a reduction in incidence by breaking the chains of transmission and reduction in mortality by early identification and treatment of TB. The strategy is furthering acceleration of the progress and bringing India closer to its goal of eliminating TB.

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Microsoft creates chip it says shows quantum computers are 'years, not decades' away

- Microsoft, on Wednesday unveiled a new chip that it said showed quantum computing is "years, not decades" away, joining Google and IBM in predicting that a fundamental change in computing technology is much closer than recently believed.
- Quantum computing holds the promise of carrying out calculations that would take today's systems millions of years and could unlock discoveries in medicine, chemistry and many other fields where near-infinite seas of possible combinations of molecules confound classical computers.
- Quantum computers also hold the danger of upending today's cybersecurity systems, where most encryption relies on the assumption that it would take too long to brute force gain access.
- The **biggest challenge of quantum computers is that a fundamental building block called a qubit, which is similar to a bit in classical computing, is incredibly fast but also extremely difficult to control and prone to errors.**
- Microsoft said the Majorana 1 chip it has developed is less prone to those errors than rivals and provided as evidence a scientific paper set to be published in academic journal Nature.
- When useful quantum computers will arrive has become a topic of debate in the upper echelons of the tech industry

- Those remarks prompted Google, which last year showed off its own new quantum chip, to say that commercial quantum computing applications are only five years away. IBM has said large-scale quantum computers will be online by 2033.
- Microsoft's Majorana 1 has been in the works for nearly two decades and relies on a **subatomic particle called the Majorana fermion whose existence was first theorized in the 1930s**. That particle has properties that make it less prone to the errors that plague quantum computers, but it has been hard for physicists to find and control.
- Microsoft said it **created the Majorana 1 chip with indium arsenide and aluminum**. The device uses a superconducting nanowire to observe the particles and can be controlled with standard computing equipment.
- The chip Microsoft revealed Wednesday has far fewer qubits than rival chips from Google, opens new tab and IBM, opens new tab, but Microsoft believes that far fewer of its Majorana-based qubits will be needed to make useful computers because the error rates are lower.
- Microsoft did not give a timeline for when the chip would be scaled up to create quantum computers that can outstrip today's machines, but the company said in a blog post that point was "years, not decades" away.
- Jason Zander, the Microsoft executive vice president who oversees the company's long-term strategic bets, described Majorana 1 as a "high risk, high reward" strategy.
- The chip was fabricated at Microsoft labs in Washington state and Denmark.
- "The hardest part has been solving the physics. There is no textbook for this, and we had to invent it," Zander said in an interview with Reuters. "We literally have invented the ability to go create this thing, atom by atom, layer by layer."
- Philip Kim, a professor of physics at Harvard University who was not involved in Microsoft's research, said that **Majorana fermions have been a hot topic among** physicists for decades and called Microsoft's work an "exciting development" that put the company at the forefront of quantum research.
- He also said that Microsoft's use of a hybrid between traditional semiconductors and exotic superconductors appeared to be a good route toward chips that can be scaled up into more powerful chips.
- **Quantum computers are not just the next generation of superfast computers**. These are very different in the way they work, the way they handle and process information, and even in the way they look.
- They are designed to utilise the very special properties that tiny particles, smaller than an atom, exhibit.

- One **such property is superposition, or the ability of a quantum particle to exist** in multiple states at the same time.
- This property is used in a quantum computer to supercharge calculations in a way that traditional computers are incapable of doing. In traditional computers, data are stored and processed through billions of small transistors that can each handle only one bit of information (0 or 1) at a time.
- Quantum computers use electrons or other similar particles to process data. Superposition allows these particles, or qubits, to be in both 0 and 1 state at the same time. In fact, they can exist in every combination of 0 and 1 simultaneously.
- Interaction with other qubits allows for a kind of parallel processing that is not possible in a normal computer where data processing happens one step at a time, even though at lightning speeds.
- However, quantum computing faces big challenges. The quantum behaviour of a particle collapses into normal behaviour the moment the system is observed or measured.
- This is because any act of measurement, or observation, is not possible without disturbing these extremely tiny systems. Any other external disturbance, such as deviations in temperature or pressure, also collapses the system. Maintaining the stability of qubits is a huge issue.
- The other challenge pertains to the integrity of the outcome. The multiple states of a qubit lead to multiple outcomes, only one of which is desirable. Getting the quantum computer to throw this correct outcome, instead of millions of other possibilities, is also a challenge. Disturbances caused in any qubit can result in errors in calculations, and algorithms need to correct for these, which, in turn, require many more qubits. The more stable the qubits are, the fewer the errors.

What Microsoft has done

- There are several ways in which quantum computers are being designed. One of the major differences is how qubits are created and controlled.
- Microsoft has said the qubits created through its novel process are more resilient, and make significant advances over alternative platforms in terms of scalability, error generation and error correction. It has also said this opens up the pathway for creating a million-qubit system within a few years

What is black plastic — and should you get rid of it?

- Used to make cooking spatulas, takeout boxes and kitchen peelers, black plastic made headlines after a study last year claimed that the material contained toxic flame retardants which could be leaching into food at hazardous levels.
- However, recently it was found that the study had miscalculated the levels of one of the toxic chemicals, and the researchers had to issue a correction.
- Here is a look at what black plastic is, the toxic chemicals it contains, and if one should be using black plastic spatulas and other utensils from it.

What is black plastic?

- **Black plastic is often made from recycled electronic waste** such as computers, TVs, and appliances. The issue is that these electronics typically contain substances such as **the flame retardant bromine; antimony; and heavy metals such as lead, cadmium, and mercury**. These electronics comprise flame retardants in a bid to prevent fire hazards.
- The aforementioned substances and heavy metals are known to be toxic to humans at high levels of exposure and are now banned in many countries.
- A However, legacy plastics containing some of these chemicals appear to be still making their way through the recycling chain,”
- **What did the study say?**
- The study, which was published October last year, analysed 203 black plastic household products sold in the United States including kitchen utensils, takeaway containers, and toys.
- It found that these products contained **a flame-retardant chemical called decabromodiphenyl ether (BDE-209) that had been linked** to potential human health risks and was phased out in the US more than a decade ago.
- A Moreover, the researchers revealed that “some kitchen utensils would result in a likely dose of 34,700 ng per day of BDE-209, which the scientists warned approaches the safe exposure limit advised by the US Environmental Health Protection Agency (EPA),”
- However, it was later revealed that the researchers **had miscalculated the EPA's reference dose by a factor of 10**. “This brought the estimated BDE-209 exposure from black spoons and spatulas down to less than a tenth of the EPA's recommended limit,” according to the report.

So, are black plastic products safe to use?

- Although **the levels of BDE-209 in the utensils might be below the EPA's limit, researchers suggest that no one** really knows what a “safe dose” of these flame retardants might be. They have even questioned if the exposure limit is accurate, saying it is an old number.
- But throwing away all black plastic products, especially those which are not suitable for recycling, is also not a solution. Adam Herriott, an environmental campaigner group, told The Guardian, “It is better to use what you have got until it no longer has a use then replace it... Do not just go out and replace all your Tupperware and black spatulas.”

How doctors treated a genetic disorder in the womb for the first time

- A two-and-a-half-year-old girl has shown no signs of a genetic disorder — known as **spinal muscular atrophy (SMA) — becoming the first person in the world to** be treated for the disease while in the womb. The girl's mother began taking the gene-targeting drug during late pregnancy, and the child continues to take it.
- Here is a look at what SMA is, and how doctors treated it while the child was in the womb.

What is spinal muscular atrophy?

- SMA is a debilitating **genetic condition** which affects motor neurons that control movement, and leads to progressive muscle weakening. "About one in every 10,000 births have some form of the condition — making it a leading genetic cause of death in infants and children.
- The condition is caused by mutations in the **survival motor neuron gene (SMN1) which causes a deficiency of a protein crucial for** the survival of motor neurons in the spinal cord. "This prevents muscles from receiving signals from the brain, causing them to waste away. In its most severe form, SMA-1, motor skills decline rapidly and patients usually only live two to three years," according to a report in New Atlas.
- **How was SMA treated in the womb?**
- For the treatment, scientists used an oral drug called risdiplam, which is given to patients to slow the progression of SMA. **Risdiplam is typically given to a patient soon after birth — the earlier the intervention**, the better the results seem to be, according to the New Atlas report. Therefore, in the new trial, scientists decided to administer the drug before birth for the first time.
- Richard Finkel, a clinical neuroscientist at St Jude Children's Research Hospital (Tennessee) who led the study, told Nature that the idea of giving the drug in utero came from the parents, who had previously lost a child born with the disease. Through genetic testing the parents learned that their second child in the womb had no copies of the SMN1 gene, indicating a high likelihood of being born with SMA-1.
- A The mother, who was 32 weeks pregnant, took Risdiplam daily for six weeks. The baby started taking the drug from roughly one week old, and will probably continue to take it for the rest of her life,".
- The scientists found that the girl had higher levels of the SMN protein in her bloodstream, compared to those usually born with the condition. The girl "seemed to have lower levels of nerve damage, and even after 30 months had normal muscle development with no sign of atrophy,"

The India-EU Trade and Technology Council first Workshop on Electric Vehicles (EV) Charging Technology paves the way for new advancements in standardisation and sustainable mobility

- The EU and India are deepening their partnership as part of a new strategic agenda to enhance prosperity, stability, security and people-to-people connections, to which the cooperation in the area of research brings a dynamic contribution.
- The first India-EU Workshop on Electric Vehicles Charging Technology was held in Pune, India, on 24th Feb 2025 under the auspices of the India-EU Trade and Technology Council (TTC) Working Group 2 on Green and Clean Energy Technologies, successfully bringing together policy-makers, representatives from electro-mobility industry, standardisation associations and technical testing facilities, to foster harmonised solutions for sustainable transport.

- The workshop was attended by Dr. Monoranjan Mohanty (Adviser) and Dr Hafsa Ahmad (Scientist) from Office of the Principal Scientific Adviser to Government of India, Dr. Reji Mathai (Director) and Mr. Abhihit Mulay (Deputy Director) from the Automotive Research Association of India and Mr. Nitish Kumar Jain, Deputy Director, Bureau of Indian Standards. Participants from European Commission included Dr. Liliana Pasecinic, Dr. Harald Scholz, Mr. Dirk Großmann and Dr. Saki Gerassis, who joined online. Stakeholders from the Indian and European industry also actively participated in the workshop.
- It brought together policymakers, representatives from the electro-mobility industry, standardisation associations and technical testing facilities to foster harmonised solutions for sustainable transport.
- The workshop was organised by the Automotive Research Association of India (ARAI) and the European Commission's Joint Research Centre (JRC), with the support of the Office of the Principal Scientific Adviser to the Government of India, and addressed key policy and technical aspects of EV charging.
- The workshop provided the opportunity to deepen bilateral cooperation on harmonising standards for EV charging infrastructure, including cooperative, pre-normative research for harmonised testing solutions and knowledge exchange in the field of electro-mobility.

India-EU Trade and Technology Council (TTC)

- The India-EU Trade and Technology Council (TTC) was launched by Prime Minister Narendra Modi and President of the European Commission Ursula von der Leyen during the latter's visit to India in April 2022.

It led to the creation of three Working Groups:

- i) Working Group on Strategic Technologies, Digital Governance and Digital Connectivity
- ii) Working Group on Green and Clean Energy Technologies
- iii) Working Group on Trade, Investment and Resilient Value Chains.
- The India-EU Trade and Technology Council is the second such bilateral forum for the EU and the first one established with any partner for India. The EU and the US launched a TTC in June 2021.
- The TTC is a key forum to deepen the strategic partnership on trade and technology between the two partners.
- The TTC will help increase India-EU bilateral trade, which is at historical highs.

Scope of TTC

- Rapid changes in the world's geopolitical environment highlight the need for an even deeper strategic partnership between India and the European Union.
- As vibrant democracies, open market economies and pluralistic societies India and the European Union share fundamental values and have a common interest in ensuring security, prosperity and

sustainable development in a multi-polar world. Both partners also face a challenging and volatile global political, economic and security landscape.

- The TTC was set up as a key coordination platform to address key trade, trusted technology and security challenges, to promote a human-centric approach to the digital transformation, and to deepen their bilateral relationship in these fields.
- The TTC will allow both partners to tackle challenges at the nexus of trade, trusted technology and security, and thus deepen cooperation in these fields.
- The choice of this format reflects the strategic nature both sides attach to their bilateral relationship, the desire to guide their cooperation towards tangible results and the geo-political significance of their trade and technology links in the context of a more contested and rapidly evolving international environment.
- They reaffirm that international rules-based approaches to trade, technology, and innovation that are founded on solid democratic principles and values can improve the lives of their citizens and generate greater prosperity for people around the world.
- Cooperation within the TTC will also feed into coordination in multilateral bodies and wider efforts with like-minded partners, with the aim of promoting a democratic model of digital governance.
- It will provide the political steer and the necessary structure to operationalise political decisions, coordinate technical work, and report to the political level to ensure implementation and follow-up in areas that are important for the sustainable progress of European and Indian economies.
- Ministerial meetings of the TTC take place at least once a year, with the venue alternating between the EU and India.

What is ACADA system that Indian Army is set to procure to enhance its CBRN defence capability

- The Indian Army is set to procure 223 Automatic Chemical Agent Detection and Alarm (ACADA) systems at a cost of ₹80.43 crore.
- The contract for the procurement was signed on Tuesday with L&T Ltd under the Buy Indian (IDDM) category.
- The ACADA system is used to detect chemical warfare agents and programmed toxic industrial chemicals by sampling the air from the surrounding environment.
- The system works on the principle of Ion Mobility Spectrometry (IMS) and contains two highly sensitive IMS cells for continuous detection and simultaneous monitoring of harmful or toxic substances.
- The induction of ACADA systems in the field units will significantly boost the Indian Army's CBRN (Chemical, biological, radiological, and nuclear) defense capability for operations. These will also

be helpful in peacetime, especially when responding to disaster relief situations related to industrial accidents.

- According to a defence ministry release, the contract is expected to give a significant boost to the government of India's Atamnirbharta drive as more than 80 per cent of the components and sub-systems of the equipment will be sourced locally.
- **ACADA has been designed and developed by DRDO's Defence Research and Development Establishment, Gwalior.**
- The ministry said the development of the system marks a significant milestone in the nation's indigenisation initiative in the niche CBRN domain.

CBRN weapons

- The prospect of non-State actors, including terrorists and their supporters, gaining access to and using Weapons of Mass Destruction (WMD)/Chemical Biological, Radiological and Nuclear (CBRN) materials is a serious threat to international peace and security.
- Over the years, terrorist groups have tested new ways and means to acquire and use more dangerous weapons to maximise damage and incite terror, including weapons incorporating CBRN materials.
- With advancements being made in technology and the expansion of legal and illegal commercial channels, including on the dark web, some of these weapons have become increasingly accessible.
- This **encompasses a wide range of agents and materials** including corrosive substances, poisons, toxins, biological organisms and radioactive sources. These materials can be harmful to humans in a variety of ways when inhaled, ingested or absorbed.
- **CBRN weapons have been used since antiquity.** Examples of their recent use include war fighting (World War I and the Iran-Iraq War), ethnic conflict (chemical weapon use against the Iraqi Kurds and in Syria), terrorism (release of sarin in the Tokyo underground, US anthrax letters) and **assassination (ricin, polonium-210).**
- In addition, CBRN incidents have also included accidental releases during peacetime operations, and many of the principles for CBRN incident response can be applied to **other hazardous material (HAZMAT) incidents.**
- The impact of such weapons may have a range of implications for medical personnel both military and civilians.
- Chemical: Poisoning or injury caused by chemical substances, including household chemicals or harmful industrial chemicals, as well as agents used during armed conflict.
- Biological: Exposure to harmful bacteria, viruses or toxins and the illness or disease they cause.
- Radiological: Exposure to harmful radioactive materials.

- Nuclear: Exposure to thermal or blast effects arising from a nuclear detonation (including secondary effects from radioactive fallout). Release of the energy resulting from a nuclear chain reaction. For example, nuclear power plant accidents, such as Chernobyl and Fukushima.

Countering CBRN weapons

- The risk of chemical, biological, radiological and nuclear (CBRN) weapons or related materials being used by non-State actors for terrorist or other criminal purposes is one of the gravest concerns of our time. In response, the international community is pursuing a common legislative framework to counter this threat.
- Seven of the 19 international legal instruments against terrorism deal, to varying degrees, with CBRN terrorism:
 - i) 1980 Convention on the Physical Protection of Nuclear Material.
 - ii) 1997 International Convention for the Suppression of Terrorist Bombings.
 - iii) 2005 International Convention for the Suppression of Acts of Nuclear Terrorism.
 - iv) 2005 Amendment to the Convention on the Physical Protection of Nuclear Material.
 - v) 2005 Protocol to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation.
 - vi) 2005 Protocol to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms located on the Continental Shelf.
 - vii) 2010 Convention on the Suppression of Unlawful Acts relating to International Civil Aviation.
- The promotion of the universal adoption and effective implementation of these legal instruments is among United Nations Office on Drugs and Crime's (UNODC) highest priorities.
- By incorporating the seven international legal instruments related to CBRN terrorism into national legislation, the UN Member States are better able to fulfil their obligations set forth by United Nations Security Council resolution (2004) on the risk of proliferation of nuclear, chemical and biological weapons by non-State actors.

National Science Day: What is Raman Effect, what are some of its uses

- TNational Science Day 2025: February 28 is marked as National Science Day in India. Unlike many commemorative days, this day is not the birth or death anniversary of a person, but the anniversary of a scientific discovery — on this day in 1928, Sir Chandrasekhara Venkata Raman discovered a new way light scatters. This was later known as the 'Raman Effect', and won him the Nobel Prize in Physics 1930. Till date, **this remains the only science Nobel won by an Indian** working in India.
- What is the Raman Effect, and what are some of its applications? How did CV Raman discover it? We explain all this, and other interesting facts related to the discovery of the Raman Effect.

- **Since when has February 28 been National Science Day?**
- According to the National Council of Science Museums (NCSM), in 1986, the National Council for Science and Technology Communication asked the Government of India to designate February 28 as National Science Day.
- The government accepted, and the first National Science Day was celebrated on February 28, 1987. "The basic objective of the observation of National Science Day is to spread the message of the importance of science and its application among the people,"
- A The theme of this year's National Science Day is 'Empowering Indian Youth for Global Leadership in Science & Innovation for Viksit Bharat.'
- **What is Raman Effect?**
- Put simply, when light strikes a material, it interacts with the materials' molecules and exchanges energy. Now when this light is scattered by the material, a portion of the light is of a different wavelength, and thus of a different colour. An example of this — and the phenomenon that led Raman to his discovery — is the blue colour of oceans, which is the result of the scattering of sunlight by water molecules. Similarly, the blue of the sky is a result of the scattering of sunlight by air molecules.
- **How did Raman come about his discovery?**
- Raman was born in Trichy in 1888. He **showed an early talent in science, receiving a BA degree from Presidency College** in Madras at the age of 16. He eventually took up a job as an assistant accountant general in Calcutta, but continued scientific experiments. When he travelled to London in 1921, he already had a reputation as a great scientific mind, thanks to his work studying the vibrations and sounds of instruments like the veena, the tabla and the mridangam
- A It was on his return trip from London to Bombay aboard the ship SS Narkunda that the striking blue colour of the Mediterranean Sea caught his attention, eventually leading to his great discovery.
- The American Chemical Society (ACS) has described how Raman conducted his experiment, "The violet light of the solar spectrum is isolated with a violet filter and passed through the liquid sample. Most of the light emerging from the liquid sample is the same colour as the incident violet beam... However, Raman and KS Krishnan [his student] were able to show that some of the scattered light was a different colour, which they could isolate by using a green filter placed between the observer and the sample."
- Raman's lab the year before had acquired a refracting telescope, using which Raman managed to condense sunlight to get a beam powerful enough for his experiments.
- **What are the applications of the Raman Effect?**

- If we can read how light is scattered by a substance, whether solid, liquid, or gaseous, we also get an idea about the structure of the substance, without breaking it apart for examination.
- A Once the use of lasers took off in the 1960s, the uses of the Raman Effect multiplied. As the ACS puts it, "Illegal drugs captured at a crime scene can be analysed rapidly without breaking the evidence seal on the plastic bag. Chemists can watch paint dry and understand what reactions are occurring as the paint hardens. Using a fiber-optic probe, they can analyse nuclear waste material from a safe distance."

Connecting people from the moon? Behind NASA's bid to put a lunar Nokia cellular network

A year after Intuitive Machines **became the first private company** to land on the moon, it launched its second mission from NASA's Kennedy Space Center in Florida on Wednesday (February 26) evening.

- The Athena moon lander, built by Intuitive Machines, has since detached from the SpaceX Falcon 9 rocket it was attached to, and is expected to reach the moon on March 6.
- While the ten-day IM-2 mission is primarily focused on mining for precious resources on the far side of the moon, it will also attempt to deploy the first lunar surface cellular network.
- The mobile network was developed as a partnership between NASA and Finnish telecom company Nokia.

Lunar cellular connectivity

- Until now, the mode of communication from the moon has been via radio waves, with a clear line of sight needed between transmitting antennas on the lunar surface and the receiving antennas on Earth. This is not feasible on the far side of the moon, the lunar surface which never faces Earth.
- A Building a lunar communications network that allows for real-time viewing of high-resolution video and science data is critical to NASA's Artemis programme, which aims to return astronauts to the moon before 2030.
- Cellular technology was thus mooted as an alternative, and Nokia Bell Labs was awarded a contract by NASA in 2020 to create an "ultra-compact, low-power, space-hardened, end-to-end LTE solution",
- A Nokia announced that it had fully integrated its Lunar Surface Communication System (LSCS) into the Athena lander. The LSCS will reportedly use the 4G/LTE technology widely used on Earth. The network was favoured by Nokia for being "well-established in terrestrial networks", its "excellent performance and economies of scale", and for offering a "well-defined path to 5G."
- The LSCS comprises two device modules – a lunar rover and a hopper. Once Athena makes its landing, these devices will attempt to connect to its cellular network while exploring the lunar surface. Athena will also be connected to the Earth, enabling high-definition video streaming and command and control operations,

- The LSCS is designed to fit all the components in a single “network in a box” except for the antenna and a power source. “We have the antenna on the lander, so together with the box that’s essentially your base station and your tower”, Thierry Klein, president of Nokia Bell Labs Solutions Research, told MIT Technology Review. The box will be powered by the lander’s solar panels.

What to know about the IM-2 Mission

- The Texas-based Intuitive Machines became the first private company to complete a successful moon landing last February, carrying six NASA payloads, including one at the moon’s south pole.
- Its second mission, IM-2, is part of the NASA Commercial Lunar Payload Services Programme, designed to support private sector-led moon landings. IM-2 intends to build on its 2024 success and land on Mons Mouton, a mountain at the moon’s south pole.
- The moon’s south pole has been of interest to space agencies worldwide as it is believed to contain ice and rare minerals, seen as crucial for further space exploration. The IM-2 will explore this in part, deploying a pair of NASA instruments which will drill three feet into the lunar surface to specifically look for water and carbon dioxide. The presence of water could help to establish a permanent lunar base, or at least assist manned missions to the moon.