RAJA SIR's
Cracking IAS Academy
Since 2005 - Feel The Pulse of UPSC

MONTHLY EDITORIALS MAY 2023

IAS GOOGLE

IAS GOOGLE
Redefining your Google
Led by Raja Sir's Cracking IAS

CONTENTS

India's DPIs, catching the next wave

- Over the last few years, the world has been troubled by many challenges, like the pandemic, the**war in Ukraine** and its aftermath, the climate crisis, the sovereign debt crisis, and the recent cost of living crisis. Through this, our societies have been challenged to the core. However, there has been one silver lining on the horizon: The power of carefully designed **Digital Public Infrastructure (DPI) to provide transformational solutions.** The potential for DPI to contribute to positive change in the world has now become a major focus of India''s G20 leadership.
- The **DPI initiative, also known as the India Stack**, is a collection of digital platforms such as **Aadhaar, Digital Locker, DigiYatra,UPI,** and technologies that have been developed through collaboration between different entities, including governments, regulators, the private sector, volunteers, startups, and academic institutions The goal of DPI is to provide a seamless and efficient way for citizens to access government services and promote inclusive development.

Initiatives

- **Initiatives for Development of Digital Public Infrastructure in India:**
  - **Aadhaar:**
    - The **Aadhaar program**is a unique identification system that provides a 12-digit identification number to Indian residents. It serves as a digital identity and is used to authenticate individuals for various services, including financial services.
  - **DigiLocker:**
    - The**DigiLocker** program is a digital locker that enables Indian citizens to store and share their documents online. It provides a secure and convenient way to store and access important documents such as Aadhaar, PAN, and driving license.
      - The platform provides a secure and cloud-based repository for these documents, which can be accessed from anywhere and shared with government agencies or other entities when required.
    - **DigiYatra:**
      - It is a digital initiative launched by the Indian government to **provide a seamless and hassle-free travel experience to air passengers.**The initiative aims to leverage digital technologies to **minimize physical contact and provide a contactless travel experience to passengers.**

- Under **DigiYatra**, passengers can pre-register themselves using their Aadhaar or passport and avail a range of digital services such as **self-bag drop, e-boarding pass, biometric verification, and self-identification at check-in and security points.**

- **Unified Payments Interface (UPI):**
  - The**UPI** is a mobile payment system that enables instant fund transfer between bank accounts using a mobile device. It has transformed the digital payment landscape in India and has facilitated the adoption of digital payments across the country.
- **BharatNet:**
  - The **BharatNet program**aims to **connect all villages in India with high-speed internet connectivity.** It is a crucial initiative that aims to bridge the digital divide and bring the benefits of digital infrastructure to rural India.
- **AarogyaSetu:**
  - It is a mobile application launched by the Government of India in April 2020 as a part of its **efforts to contain the spread of COVID-19**. The app is designed to **help users assess their risk of contracting COVID-19 based on their interaction with other individuals and provide information on COVID-19 related health services.**
    - It also provides users with**real-time updates on the number of COVID-19 cases in their area and alerts them if they have been in close proximity to someone who has tested positive.**
  - **CoWIN :**
    - It is an online platform developed by the Government of India to facilitate the registration and scheduling of **COVID-19 vaccination appointments for Indian citizens.**The platform was launched in January 2021 as a part of India''s vaccination drive against COVID-19.
      - Through the **CoWIN**portal, Indian citizens can register themselves for the COVID-19 vaccine and **schedule an**

appointment at a vaccination centre near their location.

- The**platform allows citizens to search for vaccination centres based on their location and availability of the vaccine. CoWIN also provides information on the types of vaccines available at each centre.**

- **Data Protection Initiatives for Digital Public Infrastructure:**
- **Aadhaar Act, 2016:**
- The Aadhaar Act provides a legal framework for the Aadhaar program and sets out provisions for the collection, storage, and use of personal data. It also establishes the Unique Identification Authority of India (UIDAI) as the central authority responsible for managing the Aadhaar program.
- **Personal Data Protection Bill, 2019:**
- The **Personal Data Protection Bill**aims to protect the privacy of personal data and establish a framework for its processing and transfer. It seeks to establish a Data Protection Authority of India to oversee and enforce data protection regulations.
- **National Cyber Security Policy, 2013:**
- The National Cyber Security Policy provides a framework for the protection of critical information infrastructure and the prevention of cyber-attacks.
- **Cyber Swachhta Kendra:**
- The**Cyber Swachhta Kendra** is a project launched by the government to secure digital devices and networks by providing free tools and security solutions.

Challenges Related to Digital Public Infrastructure India

- **Political challenges:**
  - The development and implementation of digital public infrastructure require **significant political will and support**, as it often involves **substantial investments of public funds**. Governments may face challenges in securing the necessary resources and gaining public buy-in for such initiatives.

- **Funding challenges:**
  - The**creation and maintenance of a robust digital public infrastructure require significant investment,** and governments may face budget constraints in funding these projects. Additionally, financing models that support the long-term sustainability of the infrastructure may be difficult to establish.
- **Privacy and security challenges:**
  - Digital public infrastructure involves the **collection, storage, and use of large amounts of sensitive data, which increases the risk of privacy and security breaches**. Governments must ensure that the infrastructure is designed and implemented with strong privacy and security measures to protect citizens'' information.
- **Digital divide challenges:**
  - There is a risk that digital public infrastructure could widen the digital divide, as those who do not have access to digital technologies will not be able to benefit from the services provided. Governments must ensure that the **infrastructure is accessible to all citizens, including those in rural or remote areas and those with disabilities.**
- **Legal challenges:**
  - The creation of digital public infrastructure may require changes to existing legal frameworks to enable the sharing of data and the provision of digital services. Governments must navigate complex legal issues such as data protection, intellectual property rights, and liability for data breaches.

Looking forward

- **Strengthen Cybersecurity:**
  - The Government needs to invest in **cybersecurity** measures to protect digital systems from cyber threats. This includes developing robust security protocols and implementing regular audits to identify vulnerabilities.
  - Cyber security can be strengthened by building a comprehensive legal and regulatory framework to combat cyber threats, including laws on data protection, **cybercrime**, and information security.
- **Expand Digital Infrastructure:**
  - To reach the maximum population, there is a need for the government to expand the digital infrastructure across the country. This includes improving internet connectivity, building data centres, and providing digital access points.

- Investing in emerging technologies, such as **5G, artificial intelligence, the Internet of Things (IoT) and, Blockchain Technology** can be very much helpful for expanding digital infrastructure.

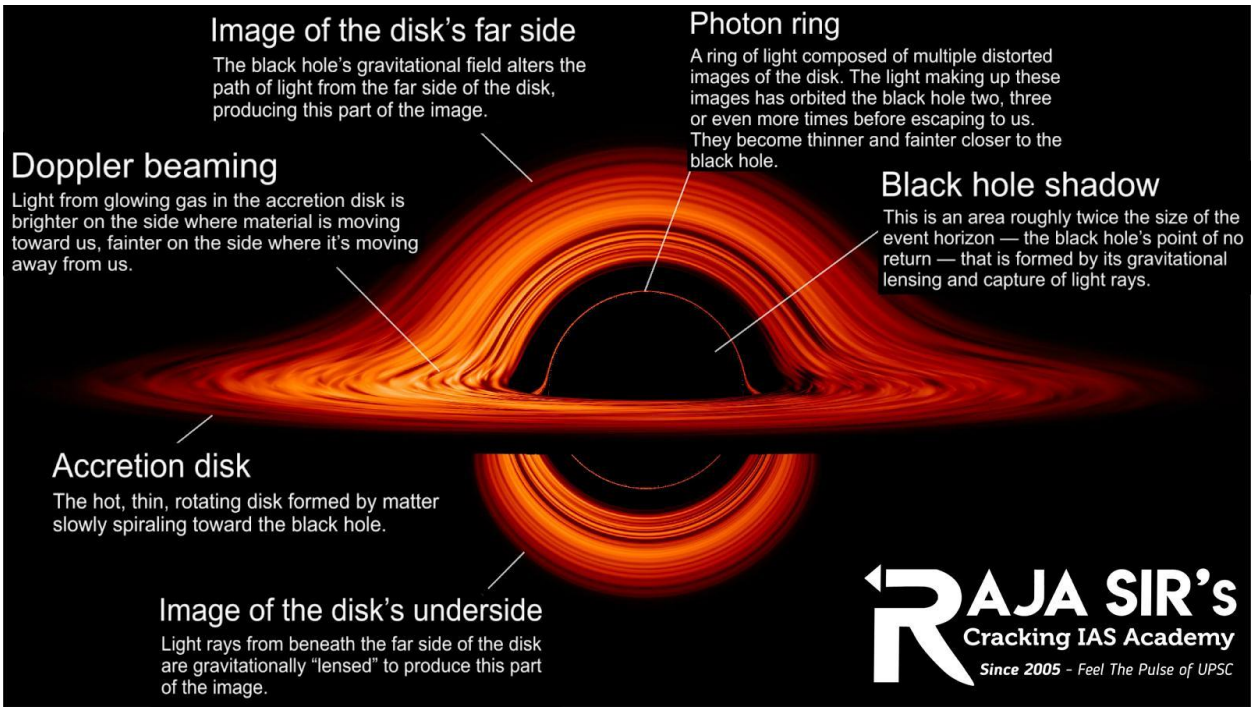
- **Increase Access to Digital Services:**
  - The government must ensure that digital services are accessible to all citizens, regardless of their socio-economic status or geographic location.
    - **Expanding internet connectivity to rural and remote areas**using innovative technologies such as **satellite broadband**, **Gigamesh networks.**
  - Creating **user-friendly digital interfaces and supporting the creation of local language applications**and content will **increase the accessibility of digital services to non-English speaking populations** so that even those with low levels of digital literacy can use them.
  - Establishing community centres and digital literacy programs to educate and train people on how to use digital services.
- **Promote Data Protection:**
  - The government must enforce strict data protection regulations to protect personal information from misuse. This includes establishing clear guidelines on data usage, storage, and sharing.
  - Implementation of **Data protection bill**to regulate the collection, storage, processing, and sharing of personal data of individuals can be very much helpful in data protection.
- **Encourage Digital Skills:**
  - The digital economy requires a workforce with the necessary digital skills. The government must promote digital literacy and provide training and upskilling opportunities to create a skilled workforce.
- **Improve Interoperability:**
  - The government must ensure that digital systems are interoperable with each other, enabling seamless integration between different digital platforms.
- **Foster Public-Private Partnerships:**
  - The government must collaborate with the private sector to drive innovation, investment, and knowledge-sharing, to develop more effective and sustainable digital public infrastructure.

The largest black hole ever discovered can fit 30 billion suns

Astronomers have discovered an **ultramassive black hole using gravitational lensing**, a phenomenon where a **foreground object bends light from a distant object behind it.**

Ultramassive Black Hole

- Researchers used **supercomputer simulations**to **simulate light from a distant galaxy travelling through the Universe**, each simulation had a **black hole** of a different mass.
- The path taken by the light in one simulation matched the path seen in actual images captured by the **Hubble Space Telescope,**leading to the discovery of an **ultramassive black hole in the foreground galaxy.**
    - The ultramassive black hole is over **30 billion times**the mass of our Sun.
- This new approach using gravitational lensing could make it possible to study **inactive black holes in distant galaxies.**
    - However, most black holes that are currently known are in an**active state**, pulling in matter from their surroundings and **releasing energy as light, X-rays and other radiation.**



Black Hole

- Black holes are regions of space-time where **gravity is so strong that nothing, not even light, can escape from them.**
- They are formed when a**massive star collapses in on itself at the end of its life,** creating an incredibly dense object with a gravitational pull that is so strong that it **warps space-time around it.**

Types of Black Holes:

- **Stellar Black Hole:**It is formed by the **collapse of a single massive star**
- **Intermediate Black Hole:**Their masses are between **100 and 100,000 times that of the sun.**
- **Supermassive Black Hole:**Their masses ranging from **millions to billions of times that of the sun**, found at the centres of most galaxies including our own **Milky Way galaxy.**

Importance:

- Black holes are important for **understanding the universe and its evolution.**
- They play a role in the **formation and evolution of galaxies**and the distribution of matter throughout the universe.
    - Studying black holes can also help us **understand the fundamental properties of space, time, and gravity.**

Gravitational Lensing

- **Gravitational lensing**is a phenomenon where the **path of light from a distant object is bent by the gravitational field** of a massive object, such as a **galaxy or a black hole.**
    - This bending of light can **cause distant objects to appear distorted or magnified**, depending on the alignment of the massive object and the observer.
- The effect of gravitational lensing was first predicted by**Albert Einstein in his theory of general relativity**, and has since been observed and studied by astronomers.

The discovery of this ultramassive black hole using gravitational lensing is an **exciting development in the study of black holes.** The technique used could lead to the discovery and study of more **inactive black holes in distant galaxies.**

Antiquities abroad: What Indian, international laws say?.

Antiquity

- The **Antiquities and Art Treasures Act, 1972**, defined "antiquity" as "any coin, sculpture, painting, epigraph or other work of art or craftsmanship; any article, object or thing detached from a building or cave; any article, object or thing illustrative of science, art, crafts, literature, religion, customs, morals or politics in bygone ages; any article, object or thing of historical interest" that "has been in **existence for not less than one hundred years"**
- **For "manuscript**, record or other documents which is of scientific, historical, literary or aesthetic value", this duration is "**not less than 75 years**."

International conventions say

- The UNESCO 1970 Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property defined "cultural property" as the property designated by countries having "importance for archaeology, prehistory, history, literature, art or science.

Indian laws say

- **Item-67 of the Union List**, **Item-12 of the State List**, and **Item-40 of the Concurrent List** of the Constitution deal with the country's heritage.
- **Antiquities (Export Control) Act 1947** to ensure that "no antiquity could be exported **without a license**.
- **Ancient Monuments and Archaeological Sites and Remains Act 1958** to provide for the **preservation of** ancient and **historical monuments and archaeological sites** and remains of national importance, for the regulation of archaeological excavations and for the protection of sculptures, carvings and other like objects.
- **The Antiquities and Art Treasures Act, 1972 (AATA) to regulate the export trade** in antiquities and art treasures.

Steps undertaken by the government for protecting antiquities

- -Before Independence, an Antiquities (Export Control) Act had been passed in April 1947 to ensure that "no antiquity could be exported without license."
- -Item-67 of the Union List, Item-12 of the State List, and Item-40 of the Concurrent List of the Constitution deal with the country's heritage.

- – In 1958, The Ancient Monuments and Archaeological Sites and Remains Act was enacted.
- -The government also enacted the Antiquities and Art Treasures Act, 1972 (AATA). It has been implemented since 1976. Under AATA, "Every person who owns, controls or is in possession of any antiquity" shall register such antiquity before the registering officer "and obtain a certificate in token of such registration."

India can bring back antiquities from other countries

- There are three categories of antiquities. These are **a)**antiquities taken out of India pre-independence; **b)** Those which were taken out since independence until March 1976, i.e. before the implementation of AATA; and **c)** Antiquities taken out of the country since April 1976.
- For items in the first two categories, requests have to be raised bilaterally or on international fora. Antiquities in the second and third categories can be retrieved easily by raising an issue bilaterally with proof of ownership and with the help of the UNESCO convention.

Challenges in Retrieving Stolen Idols and Artefacts

- **Non-availability of FIR**: According to the UNESCO Convention, the first thing to prove the ownership of the artefacts of the country is the complaint report (FIR in India). But in many cases, there is no FIR in India.
- **Lack of proper data**: Since Independence, only 486 artefacts have been reported missing from the monuments preserved by the Archaeological Survey of India (ASI). But there is a large gap between what is reported as missing and what is surfacing now in foreign museums.
- **The inefficiency of the ASI**: **a)**2013 report of CAG highlighted that the agency "has no vigilance or monitoring cell to function as a deterrence against theft of antiquities", **b)** the 2005 report of the Parliamentary Standing Committee highlighted that the ASI's inability to access the latest technology.

Time to rake in more biomass in thermal plants

- India has **set ambitious targets for renewable energy and reducing greenhouse gas emissions** from the power sector, and the **Biomass Co-firing Policy** is a critical step towards achieving these goals.
- However, the **policy has not yet been widely accepted, despite the fact that using biomass is still a cheaper option than importing coal** and offers an economically viable alternative for all thermal power plants.
- The slow progress of State Generating Companies and Electricity Regulatory Commissions in using biomass in their power plants has **prompted the Ministry of Power to consider suitable provisions that will encourage thermal power plants to use biomass along with coal as fuel.**
- The **Revised Biomass Co-firing Policy** of the Ministry of Power in 2021, is expected to have a significant impact on various sectors such as power, coal, agriculture, **Micro, Small and Medium Enterprises (MSME)** and the environment.
- So, the **issues with the India"s biomass co-firing policy needs to be addressed** to achieve the ambitious targets for renewable energy.

Biomass Co-firing

- Biomass co-firing is the practice of substituting a part of the fuel with biomass at **coal thermal plants.**
  - Coal and biomass are combusted together in boilers that have been designed to burn coal. For this purpose, the existing coal power plant has to be partly reconstructed and retrofitted.
  - Co-firing is an option to convert biomass to electricity, in an efficient and clean way, and to reduce **GHG (Green house Gases) emissions**of the power plant.
- Biomass co-firing is a globally accepted cost-effective method for **decarbonising**a coal fleets.
- India is a country where biomass is usually burnt on the field which reflects apathy towards resolving the problem of clean coal using a very simple solution that is readily available.

Significance

- Biomass co-firing is an **effective way to curb emissions from open burning of crop residue**, it also decarbonised the process of electricity generation using coal.

- Substituting 5-7 % of coal with biomass in coal-based power plants can save 38 million tonnes of carbon dioxide emissions.

- It can **help cut emissions from combustion of fossil fuels, address India's burgeoning problem of farm stubble burning**to some extent, reduce waste burden while also creating jobs in rural areas.
- India has large biomass availability as well as rapid growth in coal-fired capacity.

Challenges related to the Biomass Co-firing

- **Availability:**
  - The availability and quality of biomass vary across regions in India.
  - While**some regions have an abundance of biomass, others face a shortage.**
  - Moreover, the quality of biomass also varies, which can affect its combustion efficiency and emissions.
    - **Biomass pellets are difficult to store at plant locations for extended periods of time**because they quickly collect moisture from the air, making them unusable for co-firing.
    - **Only pellets with a moisture content of less than 13-14% typically**can be burned alongside coal.
  - **Infrastructure and Logistics:**
    - The transport and storage of biomass can be challenging, especially in areas where infrastructure is inadequate. This requires **specialised equipment and facilities, which can increase the cost of biomass co-firing.**
    - Also, **Biomass co-firing requires specialised equipment,**such as biomass grinders, conveyors, and storage systems.
    - Additionally, power plants need to be retrofitted to enable biomass co-firing.
  - **Combustion Characteristics:**
    - Biomass has **different combustion characteristics than fossil fuels**, which can create challenges for power plant operators.
    - For example,**biomass may have higher moisture content,** lower energy density, and higher ash content than coal, which can impact combustion efficiency and emissions.
  - **Emissions:**
    - Co-firing **can reduce emissions of greenhouse gases and other pollutants,**but it can also introduce new emissions challenges.

- For example, **biomass combustion can produce emissions of particulate matter, nitrogen oxides**, and sulfur dioxide, which can impact air quality and human health.

- **Cost:**
  - **Biomass co-firing can be more expensive than traditional fossil fuel-based power generation,**especially if significant modifications to the power plant are required.
  - This can make it challenging for biomass co-firing to compete economically with other renewable energy sources such as wind and solar.

Initiatives by the Government

- **National Mission on use of Biomass in Coal Based Thermal Power Plants**
- **Carbon Capture and Storage**
- **Coal Beneficiation**

Looking Forward

- **Ensuring a Steady Supply of Biomass to Power Plants:**
  - **Steady supply of biomass to power plants**can be ensured by developing a reliable supply chain that can transport biomass from source to plant.
    - This **could involve partnering with farmers, forestry companies, or other biomass suppliers**to secure a steady supply of biomass.
  - Another way to ensure a **steady supply of biomass is to focus on surplus biomass,**which is biomass that is not being used for other purposes.
    - This could include agricultural residues, such as straw or corn stover, or forestry residues, such as branches or sawdust.
  - By using surplus biomass, **we can avoid competing with other uses of biomass,**such as food production or the manufacture of paper products.
- **Building Infrastructure and Logistics**:
  - Developing the necessary infrastructure and logistics to transport, store, and process biomass is critical to the success of biomass co-firing.
  - This could**involve building new storage facilities, upgrading transportation networks, or investing in new processing technologies.**

- **Robust Regulatory Framework:**
  - The Biomass Co-firing Policy **needs to be backed by a strong policy and regulatory framework**that provides incentives and support for biomass co-firing.
  - Also, there **needs to be a clear, competitive market for biomass**to make sure that prices and distribution are fair.
- **Developing and Deploying the Necessary Technology and Equipment:**
  - Developing and deploying technology and equipment is crucial for the success of biomass co-firing.
  - This includes **developing specialized boilers, burners, and control systems that can handle the unique characteristics of biomass,**as well as retrofitting existing equipment to accommodate biomass co-firing.

CBI's credibility crisis

The Central Bureau of Investigation (CBI) is the premier investigation agency in India, responsible for investigating major economic offenses, corruption cases, and other high-profile crimes. However, its credibility has been questioned such as by former Chief justice of India N V Ramanna in April 2022.

Factors responsible for CBI's declining credibility

- **Political involvement:** The current administration''s political intervention and influence have harmed the integrity and independence of the CBI. For instance, concerns about political influence were raised in 2018 when CBI head Alok Verma was fired.
- **Lack of transparency**: It has been criticized for operating in an opaque manner and for lacking transparency in its inquiry process. For instance, the 2015 Vyapam scam investigation''s management came under fire for its lack of transparency.
- **Efficiency:** Slow in wrapping its investigations and bringing charges against the accused. For instance, the inquiry into the 2020 AugustaWestland fraud was condemned for moving slowly and being ineffective.
- **Corruption**: The CBI has been the target of several charges of corruption, and its employees have been charged with accepting bribes. In May 2022, CBI arrested its four officials for corruption charges.
- **Lack of resources:** It lacks the facilities and staff necessary to conduct investigations efficiently. Lack of adequate housing discourages officers from states to join the CBI which is facing a staff crunch, a parliamentary panel report stated in 2017.
- **Legal issues:** The CBI has encountered legal issues that have questioned its integrity, including claims of prejudice and erroneous arrests. For instance, the CBI''s probe into the Malegaon bombings in 2008 came under fire for making erroneous arrests.
- The **appointment of CBI directors has become politicized**, which harms the agency''s reputation and independence.
- **Lack of accountability:** lack of oversight procedures, and employees being charged for acting outside the bounds of the law. For instance, the way the investigation into Sushant Singh Rajput''s death in 2020 was handled was condemned for lacking accountability.
- **Poor coordination:** CBI''s coordination with other law enforcement agencies is poor, which causes delays and inefficiency in investigations. For instance, the 2012 Nirbhaya gang rape case handling received criticism for lacking collaboration.
- Concerns are raised about CBI due to its **inconsistent approach** to investigations and prosecution. One instance of inconsistent handling was the

disproportionate asset lawsuit against former Tamil Nadu Chief Minister J Jayalalithaa.

Looking forward

- **Non-Intervention:** The central government should refrain from meddling with the CBI''s investigations and operations in order to stop the central bureau of inquiry in India from losing credibility. The Supreme court also asked the government to give the CBI additional autonomy in 2019.
- **Process of appointment:** The CBI director''s appointment procedure has to be more **open and merit-based.**
- **Adequate funding:** The central government must give the CBI enough money to cover the cost of its facilities, staff, and other resources. For instance, the CBI received funding for a new headquarters building in 2018.
- **Accountability:** The national government must make sure that any misbehaviour by CBI agents is punished.
- **Legal framework**: To ensure the CBI''s independence and openness, the central government should tighten its laws. As an illustration, the Lokpal and Lokayuktas Act, 2013, which created a separate anti-corruption authority, was passed.
- **Process streamlining:** To avoid delays, the CBI should be encouraged to streamline its investigation and prosecution procedures.
- **Specialized training:** To improve the skills and capabilities of CBI officials, the central government should offer them specialized training. The CBI should start an ongoing online training program for its officers.
- **Collaboration:** The central government should promote better CBI-other law enforcement agency coordination.
- **Public confidence:** The central government should endeavour to restore public confidence in the CBI by guaranteeing accountability and transparency. For instance, the CBI should start a fresh campaign to educate the public about corruption and related crimes.
- **Implementation of recommendations**: To enhance effectiveness, the government should implement the recommendations of various committees and commissions into practice.

The CBI should regain its credibility to enhance its effectiveness in fighting crimes. This would lead to increased public confidence in the agency''s ability to bring the guilty to justice, deter others from engaging in corrupt activities and improve law and order. It would also help restore the credibility of the Indian government, as the CBI is a key agency in ensuring accountability and transparency in public institutions.

What was the 1984 Bhopal Gas tragedy? Why the Supreme Court dismissed Centre's curative petition for more compensation.

- Post-midnight on December 3, 1984, **Methyl Isocyanate (MIC) (Chemical formula- CH3NCO or C2H3NO)**leaked from the **pesticide plant of Union Carbide (now Dow Chemicals)**, an **MNC**, in Madhya Pradesh capital Bhopal.
  - It is estimated that about **40 tonnes of gas and other chemicals leaked**from the Union Carbide factory.
  - Methyl isocyanate is **extremely toxic gas**and if its concentration in the air touches **21ppm**(parts per million), it can cause death within minutes of inhaling the gas.
- It is one of the worst chemical disasters globally and still continues to have its ill effects on the people of the affected areas.
- After the tragedy, the government of India enacted a **Public Liability Insurance Act (1991),**making it mandatory for industries to get insurance the premium for this insurance would contribute to an **Environment Relief Fund**to provide compensation to victims of a Bhopal-like disaster.

Methyl Isocyanate (MIC)

- Methyl isocyanate is a **colourless highly flammable** liquid that **evaporates quickly** when exposed to the air. It has a **sharp, strong odour.**
- It is used in the **production of pesticides, polyurethane foam, and plastics**.
- MIC is safe when **maintained properly**. The chemical is **highly reactive** to heat. When exposed to water, the compounds in **MIC react with each other causing a heat reaction.**
- Chemical **reaction"s impact on health**
  - **Immediate health effects** include ulcers, photophobia, respiratory issues, anorexia, persistent abdominal pain, genetic issue, neuroses, impaired audio and visual memory, impaired reasoning ability, and a lot more.
  - **Long-term health effects** include chronic conjunctivitis, decreased lung function, increased pregnancy loss, increased infant mortality, increased chromosomal abnormalities, impaired associate learning and more.

Supreme Court dismissed a curative petition

- In the '***Union of India And Others. v. M/s. Union Carbide Corporation And Others***', the Centre sought ***7,844 crores from the US-based firms*** through a ***curative petition it filed in 2010***, for additional compensation for the victims of the Bhopal Gas Tragedy. A ***curative petition can be filed after a review plea against the final conviction is dismissed.*** It is meant to ensure there is ***no miscarriage of justice*** and ***to prevent abuse of the process.***
- The ***Centre's claim for a curative petition*** was based on a demand for ***additional compensation***, in a ***reexamination of the Supreme Court's 1989 order*** where compensation was decided as Rs. 750 crores.
- The plea also sought a ***relook at the Court's orders*** relating to modes of payment and settlement, on grounds that ***the settlement was based on an incorrect estimate of the total number of deaths, injuries, and losses.*** The Centre also said that the ***environmental damage caused was never factored in***, and thus sought to reopen the settlement on the basis of fresh documents.
- According to the plea, the ***previous figure for deaths stood at 3,000*** and for ***injuries at 70,000.*** However, the Central government contended that the actual number of deaths was 5,295, whereas injuries reached 5,27,894.

What did the court decide today?

- A ***Constitution Bench of the Supreme Court*** headed by Justice SK Kaul and comprising Justices Sanjiv Khanna, Abhay S Oka, Vikram Nath, and JK Maheshwar ***dismissed the petition filed by the Centre.*** Reading out the last two paragraphs of the main judgment, the bench stated, "***It is the Union's own stand that the commissioner has adjudicated all claims to the procedure established by law*** where the possibility of reimbursement was provided."
- Further, it was admitted in the proceedings culminating in the court's order of 19 July 2004 that the ***amount of settlement was found to be in surplus of the actual requirement.*** The claimants had been provided ***more compensation*** than what was reasonably awarded to them under the law, the court said, adding that "***this reinforced the position*** that the settlement amount was sufficient to compensate the claimants".
- The Court also noticed ***the absence of an insurance policy by the Central government*** and said, "***Responsibility was placed on the Union of India***, being a welfare state, to make good the deficiency and to take out the ***relevant insurance policy.*** Surprisingly, we were informed that ***no such insurance policy was taken out.*** This is gross negligence on part of the UOI and is in breach of the directions made in the ***review judgment.*** The Union cannot be

negligent on this aspect and then seek a prayer from this court to fix such responsibility on the UCC."

- Moreover, ***the court found no legal basis to revisit the claim***after three decades of the tragedy and said that doing so could open up ***Pandora's box.*** "Either a settlement is valid or to be set aside in cases where it is vitiated by fraud," the Court reasoned, adding that there was no such fraud in this case.
- The Court was equally ***dissatisfied with the Centre***being unable to produce any rationale for raking up this issue decades later. "Even assuming that the figures of affected persons turned out larger than contemplated earlier. ***An excess amount of funds remain available to satisfy such claims***," the Court said pointing to a sum of "***Rs 50 crores lying with the RBI***", while directing it to be utilized by the government for the satisfaction of pending claims, if any, in accordance with the ***Bhopal Gas Leak Disaster (Processing of Claims) Act, 1985*** and the schemes under it.

India's Energy Independence

When a country is able to produce enough of its own fuel to meet its own demands, then it is referred to as being energy independent. Energy independence is important because it affects not just fuel, but also politics. Currently, foreign policy is somewhat linked to import relationships a country has with other countries. Countries that supply fuel to other countries have more political leverage on those countries as those countries rely on the imported fuel to meet their own demands. If a foreign country decides to stop selling oil to other countries, those other countries would suffer because they would not have enough fuel to meet their demands. Shipping departments would be impacted and so would defense departments that rely on transportation to get around.

- India's energy imports are estimated to **grow 43.6 %** in FY2023 over the previous year.
  - Energy imports include **coal, coke, crude oil, LNG, and LPG.**
- **Energy-related products** account for **36.6 %** of the **total merchandise import bill.**
  - India's energy import bill for FY23 is estimated to b**e $260 billion.**
- If the present energy import growth rate continues, the energy import bill will exceed the bill for **all remaining merchandise imports** in the next two years.
  - At this rate, bill could very well exceed the **$1 trillion mark by December 2026.**
- Thus, to cater the growing energy prices and increasing import bills, India must see its options in the **domestic production of coal and crude oil.**

Factors affecting the surge in energy sources

- High growth in energy-related imports is mainly due to the **challenging external environment.**
- These are the **disruption of oil supply chains** due to the US sanctions on Russia post the Russian invasion of Ukraine
- Weakening of the **US-Saudi Arabia 1970s deal** that led to the dollar becoming the world's reserve currency and leading to the sale of oil and currencies other than the dollar.
- **High inflation in developed countries**, including the US, Canada, Germany, and the UK, and the US.

India's Petroleum crude and products data

1. *Petroleum crude and products:*

- The estimated values of petroleum imports for FY 2023 are **$210 billion.**

- It includes **crude oil** with an import value of **$163 billion** and **LNG** and **LPG of $17.6 billion and $14 billion**, respectively.

- In the 1980s, India met 85 % of its crude oil needs mainly from **ONGC's Bombay High offshore oil field,** but now 85 % is imported.
- **Top 5 suppliers of crude to India: Iraq** ($36billion), Saudi Arabia ($31billion), Russia ($21billion), UAE ($17billion), US ($11.9billion).
- Crude imports **grew by 53 %** over the last fiscal.
- Imports from Russia grew by **850 %** over last year.
- India paid prices ranging from **$90-92 per barrel** for imports from **Iraq, Russia, and the US.**
  - It paid a price ranging from **$101-103 per barrel** for imports from **Saudi Arabia and UAE.**
    - One tonne of crude equals **7.35 barrels**
- **Export of crude oil:** India used its refining capacity to process part of the imported crude oil and exported products worth **$96 billion.**

2. *Coke and coal*

- Coal imports have increased mainly because of **demand from new power plants** that use only **high-grade imported coal**.
- **Several issues favor imports such as:**
  - Low quality (high ash content of 30-40 %) Indian coal,
  - Inability of Coal India Ltd to increase production and use technology to increase the calorific value of coal, and
  - Transport restrictions within-country
  - **Disruption in oil trade** due to **sanctions on Russia** and the **weakening of the US-Saudi Arabia 1970 oil deal** put pressure on governments to secure **long-term coal supplies.**
- India's estimated coke and coal imports for FY2023 are **$51 billion.**
- India imports both **coking coal and thermal coal.**
  - **Coking coal** is used as **raw material for making steel,** and **thermal coal** is used to **generate electricity.**
- The coking coal imports may exceed **$20.4 billion,** an **87 % increase** over last year.
- India imports about **60 %** of coking coal from **Australia** ($11.8 billion). India also bought coking coal from the **US ($2.7 billion) and Singapore ($2.1 billion).**
  - Singapore does not mine coal.

3. *Steam Coal*

- **Estimated Steam coal imports (FY2023):** more than 23.2 billion, a **105 % increase** over last year.

- India imports about **59 %** of steam coal from **Indonesia** ($13.6 billion). Other significant suppliers are **South Africa** ($3.8 billion), Australia ($1.7 billion), and Russia ($1.6 billion).
- The **most increase in imports** is on account of the **rise in prices.**
- **Country-wise price rise in 2022 over 2021:** Indonesia (22 %), South Africa (49 %), Australia (35 %), Russia (46 %).

How India can reduce its energy import bill?

1. *Domestic Production*

- India must reenergize the **exploration of local oil fields** and enhance production through **coal mines.**
- Increased domestic production will substantially cut the energy import bill and **improve the current account.**

2. *Sedimentary basins*

- India has **26 sedimentary basins** divided into the following **four categories:**
  - **Category I (7 Basins):** established commercial production.
  - **Category II (3 Basins)**: known accumulation of hydrocarbons but no commercial production as yet.
  - **Category III (6 Basins):** indicated hydrocarbon reserves considered geologically oil-bearing.
  - **Category IV (10 basins):** uncertain potential may be prospective by analogy with similar basins worldwide; and deep-water reserves.
- **Crude oil and natural gas production** in India is from **category-I basins** and deep-water areas.
- **Hydrocarbon discoveries** have been made in **Category-II basins**, but commercial production is **yet to commence.**
  - India must evaluate its options to **increase local production.**

3. *Reducing coal imports*

- There's not enough scope for **reducing the import of coking coal** as India **does not have high-quality reserves.** But, the import of **thermal coal can be managed.**

India's merchandise imports for the fiscal year ending March 2023 are estimated to touch **$710 billion, up from $613 billion in FY2022**, an increase of over **15.8 %** over last year. **Containing energy imports** will ensure that the overall import bill does not strain the current account.

Liquidity Trap

- A liquidity trap is when monetary policy becomes ineffective due to very low interest rates combined with consumers who prefer to save rather than invest in higher-yielding bonds or other investments.
- While a liquidity trap is a function of economic conditions, it is also psychological since consumers are making a choice to hoard cash instead of choosing higher-paying investments because of a negative economic view.
- This isn't limited to bonds. It also affects other areas of the economy, as consumers are spending less on products which means businesses are less likely to hire.
- Some ways to get out of a liquidity trap include raising interest rates, hoping the situation will regulate itself as prices fall to attractive levels, or increased government spending.

Causes

1. *Rates of Interest Getting Low*

- the consistently low rate of interest levels directed by the central bank of a country for a long period of time. Though the main goal of such government policies is to secure robust economic activity, a liquidity trap can soon rise if not operated firmly.

2. *Downturn Trends*

- It emerges when an economy is recuperating from a fall. As governments try to raise economic expansion through expansionary policies to enlarge spending and investment, a diametric effect through an increase in savings level is observed in the market if interest rates are kept too low (close to zero) for a prolonged period.

3. *Unemployment*

- An effect of the downturn is rushing levels of unemployment in a country, which intimate decreased incomes in the hands of customers. With a lower fund base, people tend to save any excess funds for meeting any future expenses, instead of devoting them. Thus, a fall in interest rates leads to yield no outcome concerning the betterment of an economy.

4. *Decrement*

- Depressed customer demand levels lead to turndown in the price level of an economy. Such trends have a bad effect on the economic growth rate of a country, as it degrades producers from producing greater quantities in turn to lower profits. This develops a harsh impact on the GDP of a country.

- One of the most significant strategies of dominating the liquidity trap in economics is through expansionary **fiscal policy.**

5. *Increase in Interest Rates*

- If the economy would decrease prices to such a low point that people just cannot resist themselves from shopping. This can happen with customer products or assets like stocks.
- Investors will start purchasing goods again because they are aware they can hold onto the asset for a long run to survive the slump.

6. *The Policy of Expansionary Fiscal*

- The government can abandon the liquidity trap through expansionary fiscal policy. That's either a tax gash or a rise in government spending, or both.
- That generates motivation that the nation's leaders will assist economic growth. It also directly develops jobs, decreasing unemployment and the need for reserving cash.

7. *Financial Revolution*

- Financial innovation generates fresh market liquidity makes financial assets, like stocks, bonds, or derivatives, more glamorous than hoar.

The liquidity trap develops when people are afraid of investing due to low rates of interest. They prefer hoarding cash to ensure themselves for a better future. The central bank cannot raise the economy because there is no command. There are various formulas to vanish the liquidity trap.

Some methods are dependable on the nation's central bank and federal government. The effective way of decreasing the rate of interest encourages people to invest rather than hoarding cash. The government can spend more and develop motivation in people.

National Infrastructure Pipeline

National Infrastructure Pipeline

- This scheme was brought in so as to improve project preparation and attract investments into infrastructure, which is essential for attaining the **target of becoming a $5 trillion economy by FY 2025**.
- It covers both **economic and social infrastructure projects.** The creation of new infrastructure assets will provide impetus to employment and generate income thus improving the overall competitiveness of the economy.

Need for National Infrastructure Pipeline

- **$5 trillion Goal:** It will help achieve the goal of GDP of $5 trillion by 2024-25, as a nation needs to spend about $1.4 trillion (Rs. 100 lakh crore) over these years on infrastructure.
- **Inclusive growth:** Uniform availability of robust infrastructure facilities is essential to achieve broad-based and inclusive growth on a sustainable basis.
- **Poor infrastructure:** in various sectors of the economy has hampered the growth potential of the nation.
- **Investor confidence:** It will aid in building investor confidence as identified projects are likely to be better prepared, exposures less likely to suffer stress given active project monitoring, thereby less likelihood of NPAs.

Objectives of National Infrastructure Pipeline

- It will facilitate the growth of businesses, create jobs, improve ease of living, and provide equitable access to infrastructure for all, making society more inclusive.
- It will help increase economic activity and create additional **Fiscal space** by improving the revenue base of the government.
- It will provide planned development of projects, better preparation for project bidding, reduce aggressive bids/ failure in project delivery, ensure enhanced access to sources of finance as a result of increased investor confidence.

Significance of National Infrastructure Pipeline

- **Economic growth:** It is anticipated that India will require **$4.5 trillion in infrastructure spending by 2030** to maintain its current growth pace. The **National Infrastructure Pipeline (NIP)** is working to make this happen as quickly as possible.

- **Employment:** A well-planned NIP will allow more infrastructure projects, businesses to develop, jobs to be created, living conditions to improve, and equitable access to infrastructure for all, resulting in more inclusive growth.
- **Fiscal space:** Well-developed infrastructure **boosts economic activity, frees up fiscal space by increasing the government''s tax base**, and guarantees that government spending is concentrated on productive areas.
- **Better Projects:** National Infrastructure Pipeline will ensure that infrastructure projects are properly planned and implemented. It will provide a **clearer picture of project supply, more time to prepare for project bidding, less aggressive bids/project failures**, and improved access to capital sources as a result of higher investor trust.
- **Benefits to agriculture:** It will improve agricultural and rural infrastructure. Irrigation and rural infrastructure projects will cost a total of 7.7 lakh crore.
- **Connection:** It would improve India''s connectivity, particularly in rural areas. Road construction will cost Rs. 19.63 lakh crore, while railway developments will cost Rs. 13.68 lakh crore.
- **Credit:** Due to the ongoing NPA issue and a lack of credit creation in the economy, there is a dearth of private investment. As a result, the **government must invest from its own funds to give the economy a boost.**

Limitations Associated with National Infrastructure Pipeline

- It puts increased pressure on the banking sector as they are recovering from NPA problems and if pushed to fund for this project they may further face the NPA crisis.
- It is a project of immense scale and volume and therefore its implementation will not be easy. Coordination among various levels of government is a must.
- **Land acquisition** is a big challenge for the completion of infrastructure projects.
- Displacement and therefore rehabilitation of millions of people is a difficult task

National Monetisation Pipeline

National Monetisation Pipeline (NMP)

- The pipeline has been developed by NITI Aayog, in consultation with infrastructure line ministries, based on the mandate for **'Asset Monetisation' under Union Budget 2021-22.**
- NMP estimates aggregate monetisation potential of Rs 6.0 lakh crores through core assets of the Central Government, over a four-year period, from FY 2022 to FY 2025.
- It aims to unlock value in brownfield projects by engaging the private sector, transferring to them revenue rights and not ownership in the projects, and using the funds generated for infrastructure creation across the country.
- **Framework of NMP:**
  - The pipeline has been prepared based on inputs and consultations from respective line ministries and departments, along with the assessment of total asset base available therein.
  - **Monetization through disinvestment and monetization of non-core assets have not been included in the NMP.**
- The framework for **monetisation of core asset monetisation** has three key imperatives:
  - **Monetization of rights and not the ownership, assets headed back at the end of transaction life.**
  - **Brownfield de-risked assets, stable revenue streams.**
  - Structured partnerships under defined **contractual frameworks with strict KPIs and performance standards.**

Monetization in NMP

In a monetization deal, the government essentially transfers revenue rights to third parties for a predetermined transaction period in exchange for an upfront payment, a revenue share, and an agreement to invest in the assets.

- The main forms utilized to monetize assets in the road and electricity sectors include real estate investment trusts (REITs) and infrastructure in one investment trusts (InvITs).
- Additionally, because they are registered on stock exchanges, investors can access liquidity via secondary markets.
- While these are organized financing mechanisms, alternative Public Private Partnership (PPP) -based monetization methods include:
  - Operate maintain transfer (OMT)
  - Toll operate transfer (TOT)

- Operations, maintenance, and development (OMD)

· **Greenfield Project**: It refers to investment in a manufacturing, office, or other physical company-related structure or group of structures in an area where no previous facilities exist.

· **Brownfield investment**: The projects which are modified or upgraded are called brownfield projects. The term is used for purchasing or leasing existing production facilities to launch a new production activity.

Sector specific data and associated challenges

Telecom:

- As against the target of Rs 20,180 crore, the department of telecom has not been able to monetise any of telecom assets so far and doubts have emerged if it could achieve anything.
- The original plan was to mobilise Rs 15,780 crore by inviting private investors to bid for **Bharat Broadband Network's** 300,000 km of optical fibre networks to upgrade, operate and maintain across the country, including states.
- Another Rs 4,400 crore was estimated from BSNL/MTNL tower monetisation through **rent-operate-transfer (ROT)** concession model, but bids are yet to be called for these.

Mining sector:

- Previous year, a sum of about Rs 1 trillion was raised through the monetisation route as against the target of Rs 88,200 crore due to the mining sector.

Natural gas and petroleum product pipelines:

- Monetisation of natural gas and petroleum product pipelines were projected to fetch Rs 9,176 crore in FY23.
- However, oil and gas companies have proposed alternate assets such as monetisation of oil fields (on the lines of mines monetisation) through private participation in exploration and with the inflow of technology.

Road Transport and Highways:

- Monetisation by other sectors including road assets by the **National Highways Authority of India (NHAI)** are on track.
- NHAI is expected to meet its target of Rs 32,855 crore from the **securitisation of toll receivables from expressways, Infrastructure Investment Trusts (InvITs) and Transfer-Operate-Transfer (ToT) models.**

Railways:

- Railways is the biggest component of the Rs 6 trillion NMP in the four years through FY25.
- Railways collected just Rs 800 crore via monetisation through redevelopment of one railway station and some railway colonies in the last fiscal year as against the target of Rs 17,810 crore.
- According to the NMP, railways need to monetise 120 stations, 30 trains and 1,400 km track, among others in FY23.

Significance of NMP

- **Innovative way of Private Participation:**
  - Private sector is well known for its efficiency and technology.
  - NMP will provide a way to exploit the strength of the Private sector for infrastructure creation without transfer of ownership.
- **Ensure Further investment in Infrastructure Building:**
  - It will help to properly monetise underutilised brownfield projects
- Revival of the economy and create sustainable demand.
- Spillover effect of infrastructure is high on cycle of demand
- It will create further value for infrastructure creation in the country
- It will enable high economic growth and seamlessly integrating the rural and semi-urban areas for overall public welfare.

Challenges associated with NMP

- Level of capacity utilisation in gas and petroleum pipeline networks.
- Lack of identifiable revenue streams in various assets.
- Absence of Dispute resolution mechanism.
- Analysts also point to issues such as the lack of independent sectoral regulators as potential impediments.

Looking Forward

Thus, the **Asset Monetisation** needs to be viewed not just as a funding mechanism, but as an overall paradigm shift in **infrastructure operations, augmentation and maintenance considering the private sector's resource efficiencies** and its ability to dynamically adapt to the evolving global and economic reality.

Therefore, New models like **Infrastructure Investment Trusts and Real Estate Investment Trusts** will enable not just financial and strategic investors but also common people to participate in this asset class thereby opening new avenues for investment.

For a better deal to smoothen bipartisan trade agreements

- There is a growing concern in India and the world regarding decreasing **Bilateral investment protection agreements (BIPAs).**
- With the G20 presidency, India has an opportunity to **bring clarity** to pressing issues under the international investment regime to **smoothen negotiating BIPAs.**

Trade and Investment Working Group (TIWG) meeting

- The TIWG was established during the **Chinese Presidency in 2016.**
  - In 2016, G20 also adopted a set of **non-binding guiding principles** for Global Investment Policymaking to serve as a reference for national and international investment policymaking.
- **Aim:** to coordinate efforts in strengthening trade and investment.
- The topics under consideration in India include the **increasing trade gap, access to trade finance, resilient global value chains, integrating MSMEs in worldwide trade, and efficient logistics.**
- It is characterized by **bilateral investment protection agreements (BIPAs)** between two countries and multilateral or regional trade agreements.

Bilateral investment protection agreements (BIPAs) or Bilateral Investment Treaty (BIT)

- It is a bilateral agreement in which two countries sit together and decide the **conditions for private investments by citizens and firms** of the two countries.
- The investment discussed under BIT is **Foreign Direct Investment (FDI).**
- The world's first BIT was signed between **Pakistan and Germany in** the late 1950s.
- There are currently **2217 BIPAs** in force, out of which **1,809** have been signed by G20 countries with other states, including **non-G20 members.**
  - Hence, the discussions at the G20 could significantly impact **shaping the international architecture** to protect investments and provide certainty to investors.

Concerns regarding BIPAs

- There is an increasing trend of states **terminating BIPAs.**

- **Example:** a minimum of 393 terminations came into effect in 2021, while the number of BIPAs that were signed **remained less than 30.**

Investor-state dispute settlement (ISDS) cases

- Significant source of concern for states is the steady increase in the number of **ISDS cases** brought by investors against states in response to regulatory measures **viewed inconsistently with the BIPAs.**
- Such rising claims have led to a **'regulatory chill',** where states find it challenging to achieve socially desirable goals as it may go **against the provisions of the BIPAs.**
- The independence and **impartiality of ISDS mechanisms** under BIPAs are also questioned, as it is up to the parties to the dispute to nominate an arbitrator of their choosing.

Primary Rules of international investment law

- The ambiguity of this law is another **cause of worry for states.**
- There is no consensus on the
  - Definition of an investment,
  - Standard of treatment which needs to be accorded to the investors remains ambiguous, and
  - Investors have used the most favored nation clause for treaty benefits
    - A process of importing favorable clauses from other treaties for the most advantageous protections.
- Due to these reasons, countries such as **Bolivia, Ecuador, South Africa, and Venezuela** have terminated their BIPAs.
- India has also **joined these countries.**

Global Concerns over BIPSs

- **India** is not alone in raising concerns over BIPAs.
- **23 members of the European Union** have agreed to **end all intra-EU BIPAs** as they violated **the EU's fundamental principle of autonomy** and are incompatible with EU law.

India's Experience with BIPAs

- It began in the **1990s** when it started entering into agreements with more than **80 countries** to protect investments.
- India's experience **ended on a bitter note** when an international tribunal held it responsible for failing to provide an effective means to assert the claims and enforce the rights of an investor under a BIPA in the **White Industries Case.**
- The government commenced a process of **revisiting its existing BIPAs.**
- As a result, India started adopting a **revised Model BIPA** (a draft version based on which states negotiate BIPAs).
- India terminated **77 BIPAs** in **2017**.
    - However, the recent **Parliamentary Committee on External Affairs** reports have recommended that India take **more proactive measures in negotiating BIPAs** in identified priority areas.

India's 2015 Model BIPA:

- Criticism of this is **state-centric**, placing an **added burden on investors** to exhaust local remedies before approaching an ISDS tribunal, and being ambiguous on some issues.
    - **Model BIPA** is an attempt to **maintain sovereignty** over regulations for public interests while also protecting investors' interests.
- The **definition of key terminologies** has been narrowed down to cover only those investors who have an **actual presence in India.**
- Some controversial provisions related to the **treatment of investors** have been removed from the **Model BIPA**, and the conditions of expropriation have been **explained in detail.**

India's inward Foreign Direct Investment (FDI)

- G20 accounts for roughly **28% of India's inward Foreign Direct Investment (FDI)**.
- Whereas the total amount of outward FDI from January 2022-February 2023 is **$10.2 billion.**

India has an opportunity at G20 to bring clarity to pressing issues under the international investment regime to smoothen negotiating BIPAs. It is thus time for investment agreements to take their place back on the high table.

Awaiting lift-off into the Second Space Age

- First space age began in **1957** with the launch of **satellite Sputnik 1,** and in **1961**, cosmonaut **Yuri Gagarin** became the **world's first person in space.**
  - **Neil Armstrong** made history by **walking on the moon in 1969.**
- Between the 1950s to 1991, **60 to 120 space launches** took place annually.
  - 93% of these were by US and the Union of Soviet Socialist Republic (USSR).
- Three decades later, there are not only many more governments in the space scene, but a majority are also **private companies.**
  - **Example:** In 2022, there were **180 rocket/space launches**, 61 by Elon Musk's Space X.
    - **90%** of global space launches since **2020** are by and for the **private sector.**

India's space journey

India made a modest entry into the **First Space Age** in the **1960s**.
The first sounding rocket, a U.S.-supplied **Nike Apache**, was launched at **Thumba (Kerala)** in **1963**.
Indian Space Research Organisation (ISRO) was set up in **1969**.
ISRO has come a long way since, with over **15,000 employees** and an annual budget between **₹ 12,000 crore-₹ 14,000 crore** in recent years.
Satellite Instructional Television Experiment (SITE): ISRO's first major project was **Satellite Instructional Television Experiment (SITE)** which involved **leasing a U.S. satellite in 1975-76** for educational outreach across **2,400 villages** covering five million people.
Telecommunications and broadcasting: Satellite technology was a new mass communication tool. This led to the **INSAT series** in the 1980s, followed by **GSAT**, which provided the backbone for the country's **telecommunications and broadcasting infrastructure.**
Remote sensing capability development: Use of space-based imagery for weather forecasting, resource mapping of forests, and analyzing agricultural yields, groundwater, and watersheds, gradually expanded to cover fisheries and urban management.
Satellite-aided navigation: It began with **GAGAN**, a joint project between ISRO and the Airports Authority of India, to augment **Global Positioning System (GPS) coverage** of the region, to improve air traffic management over Indian airspace.

- This has now been expanded to a regional navigation satellite system called **Navigation with Indian Constellation (NavIC).**

Satellite launch capabilities: Beginning with the **SLV-1** in the 1980s, it took a decade before ISRO developed the **PSLV series** that has become its workhorse with over **50 successful launches.**

Potential of the space industry

- The origins of the Second Space Age can be traced to the **Internet**.
- In India, the process began accelerating as the **1990s** saw the emergence of **private TV channels, together with cable TV** followed by direct-to-home transmissions.
- The demand for **satellite transponders and ground-based services** exploded.
- Today, **more than half the transponders** beaming into Indian homes are on **foreign satellites.**
- India was in lockstep with the developed world for the **last 15 years.**
- The age of **mobile telephony**, followed by smartphones has shown the world what a **data-hungry and data-rich society** India is.
- **Broadband, OTT, and now 5G** promise a double-digit annual growth in demand for **satellite-based services.**

Space Economy

- In **2020**, the global space economy was estimated at **$450 billion**, growing to **$600 billion** by **2025**.
- **Indian space economy:** estimated at **$9.6 billion in 2020,** is expected to be **$13 billion by 2025.**
  - It could easily **exceed $60 billion by 2030**, directly creating more than **two lakh jobs**.

Reasons behind potential growth

- In terms of end-user revenue, **only a 5th** is generated by the **government**.
- Media and entertainment account for **(26%**) of India's space economy, with consumer and retail services accounting for another **(21%).**
- **Space activities:** downstream activities such as **satellite services and associated ground segments** are dominant, accounting for over **70% of India's space economy**.

- **Upstream activities** of satellite manufacturing and launch services contribute a smaller share. A similar trend can be seen in **developed countries.**

Growing role of the private sector

- Role of the private sector is evident in the **numbers and ownership of satellites.**
- There are **8,261 satellites** in orbit, of which nearly **5,000 are active**.
- Till 2010, about **60 to 100 satellites** were launched annually.
- In 2020, **1,283 satellites** were launched.
- **Starlink** operates a constellation of over **3,500 satellites** and has a **million paying customers.**
- **Both Starlink and OneWeb** (in which Airtel has a stake) project constellations of **40,000 satellites each.**
- **Amazon** has launched **Project Kuiper** to bring **low-latency broadband connectivity** around the globe.

Potential of the Indian Space Industry

- Indian private sector is responding to the demands of the **Second Space Age.**
- From less than a dozen space start-ups **five years ago**, there are **over 100 now.**
- The **pace of investment** is growing. From **$3 million in 2018,** it doubled in 2019 and crossed **$65 million in 2021.**
- The sector is poised for take-off — as a transformative growth multiplier like the **IT industry** did for the **national economy in the 1990s.**

ISRO and private sector

- ISRO manages four to five launches annually.
- It manages **53 operational satellites: 21** for communication, **21** for earth observation, **8** for navigation, and the remaining as scientific experimental satellites.
  - **China** operates **541**.
- ISRO has missions such as **Chandrayaan, Mangalyaan, and Gaganyaan** (manned space mission).
- ISRO has always been an open organization that has worked closely with the **Indian private sector.**

- However, some private sector companies' content as **vendors,** producing to defined **specs and designs.**

ISRO and Indian Space Startups

- Their revenue stream depends on **space-related activities** and they need a different relationship with **ISRO and the government**.
- ISRO today is the **operator, user, service provider, licensor, rule maker**, and also **incubator**.
- ISRO has steered India through the **First Space Age** and needs to do what it can do best now within its **resources and its high-quality manpower** — research.

Government's efforts

- **2017:** the government introduced the **first draft Space Activities Bill** in Parliament but it lapsed in **2019**.
- There has been talk of **commercializing the PSLV and SSLV launch services.**
- **NewSpace India Limited (NSIL)** was set up to replace **Antrix**.
- **IN-SPACe:** the Indian National Space Promotion and Authorization Centre was set up in 2020 as a **single-window-clearance** for the private sector.
    - However, it is unclear whether it will emerge as the **licensing authority or a regulator**.
- **ISpA:** An Indian Space Association (ISpA) was created as an industry association.

India needs legislation (a space activities act), which provides legal grounding for satcom/telecom policy, an earth observation policy, and a foreign direct investment policy. It should help to set up a regulatory authority and create an enabling environment for raising venture capital funding into the Indian space start-up industry.

India set to be the "DPI rule maker" with G20 presidency

- India's G20 presidency has been marked by an emphasis on leveraging **digital public infrastructure (DPI)** for inclusive growth and development
- India has emerged as a global leader in building DPIs such as Aadhaar, Unified Payments Interface, and the Open Network for Digital Commerce.
- As India leads the **conversation on DPIs** at the G20, it is an opportune moment to explore the innovation potential of emerging decentralized technologies like **blockchain** in designing such DPIs.

Benefits of using Blockchain Technology

- Blockchain technology enables **sharing ledgers across multiple parties** for recording information or transactions in a **verifiable and permanent manner.**
- Since the transactions are **recorded and verified** through a **peer-to-peer consensus** mechanism, there is **no reliance on centralized intermediaries.**
- **Decentralised nature** of blockchain eliminates the risk of a **single point of failure**, thereby creating a more secure ledger.
- The ledger can also be **programmed to trigger transactions** automatically through smart contracts.
- This creates vast opportunities for blockchain to offer **new services and revamp existing legacy systems** of recording transactions and information.
- The unique characteristics of blockchain such as **immutability, auditability, and distributed verifiability** promotes **greater transparency and accountability** and can help in **reducing instances of fraud, cutting down costs**, and thereby unlocking newer efficiencies.

Global blockchain technology scenario

- **46 countries** had launched or were planning to launch over **200 blockchain initiatives.**
- It is predicted that by **2025**, blockchain would account for **10% of the global GDP.**
- Blockchain experimentation for public sector use revolves around areas such as **land registries, health registries, and the creation of digital identity.**

Examples

- **Estonia** is a leading example of **blockchain-based e-governance services.**

    - Blockchain forms the basis of select state registries including the **property registry, healthcare registry, and business registry.**
- **Turkey** has also announced its plan to launch **blockchain-based digital identities for citizens.**
- **Singapore** is also exploring the potential of blockchain to revamp its **payment infrastructure.**
- **Colombia** has tested a blockchain-based public procurement system to **increase transparency and accountability** in the public procurement processes, thereby reducing corruption.

What needs to be done before deploying blockchain for DPI in India?

1. **Standardized terms of use**

- Blockchain networks **consist of multiple parties** such as **developers, network operators, end-users, miners, and external gateways.**
- The relationship between such parties is generally governed by **contractual arrangements.**
    - However, for blockchain networks that form the basis of any DPI and **involves multiple parties**, **and processes sensitive personal information**, it is important to have **standardized terms of use.**

2. **Legal clarity and certainty**

- Legal certainty **governing blockchain** use is critical for incentivizing participation in the network and scaling up such solutions.
    - This has also been emphasized by **8 out of 10 countries** that have released a national strategy on a blockchain, including India's National Strategy on Blockchain.
- The failure to account for such legal certainty at the pilot stage has **adversely impacted the scaling of such solutions.**
- Existing **legal and regulatory frameworks** are designed around identifying central points of accountability and responsibility which may be at odds with the decentralized nature of blockchain, thereby affecting the legal feasibility of blockchain solutions.
- Legal recognition of **blockchain-based records** under national laws may also need a separate examination.
- Vidhi Centre for Legal Policy **argues for a Governance framework** that sets out quintessential terms of use for the adoption and operation of any **blockchain-based solution** so that it can function in a legally sustainable manner.
- For countries exploring blockchain technology in developing DPI, these terms of use will create an **enabling environment for blockchain solutions**, protect the rights of users/participants to the **network, and protect the data stored on such systems.**

- Such terms should include the examination of legal recognition of blockchain records under **applicable domestic laws and the legal structure of the entity/entities** developing the solution.
- The terms of use should also lay down data **governance standards, risk management strategies, and the mechanism of removal** and exit of participants from the network.

India must leverage its G20 presidency to deliver global legal certainty for blockchain use, given its innovation-potential for designing Digital Public Infrastructure. By developing a robust governance framework and global standards for emerging technologies, India can lead the way in fostering transparency, accountability, and security. Moving forward, nations must carefully consider the legal and technical aspects of blockchain deployment to ensure scalability while safeguarding users'' rights and data protection.

Building a Blue Economy: Learnings from China

- The Indo-Sri Lankan dispute over fishing rights in the **Palk Strait** has been an emotive issue of long-standing.
  - **Palk Strait:** the water body separating Tamil Nadu from the Jaffna region of Sri Lanka.
- It has evoked loud **complaints from Tamil Nadu** and often led to a diplomatic furor between **India and Sri Lanka.**

India-Sri Lanka maritime boundary

- The Indo-Sri Lankan **maritime boundary agreements** were signed in **1974 and 1976.**
- It allowed fishermen of both nations to enjoy in **each other's waters such rights** as they have traditionally enjoyed therein.

Issues

- Since maritime boundaries **lack physical demarcation**, the lull in fishing activity, during the **civil war in Sri Lanka**, encouraged Indian fishermen to **encroach into Sri Lankan waters.**
- After the end of the civil war in **2009**, the Sri Lankan fishing community sought to **reclaim their rights,** bringing them into **conflict with Indian fishers.**
- Intervention by the Sri Lankan Navy has often resulted in **arrests, and even fatal shootings** of Indian fishermen.
- **Due to dwindling fish stocks, rising fuel costs, and growing tensions,** fishing communities of both countries are in **acute distress** but remain **confined to the Palk Strait for lack of finances.**

Fishing fleet and the sea power of the country

- The fishing fleet is an **important component of the sea power** of the state.
- The role of this fleet has grown sharply, and its most important task consists in ensuring a solution to the **acute food problem facing mankind.**
- In the world wars, fishing vessels were widely used as **part of the navy for combat** tasks such as **port defense and minesweeping.**

How China grew its fishing industry?

- The **dwindling availability of farmland** forced China to become a **net importer of food grain.**
- Thus, to reduce import, it has **mobilized the fishing industry** to meet the rising demand for protein in the Chinese diet.
- China is owning the **world's largest deep-water fishing (DWF) fleet**.
- **In 2016,** while China consumed **38 %** of the **global fish production**, its DWF fleet brought home only **20 % of the world's catch.**
- To bridge this gap, China had begun **distant deepwater fishing**, as far back as **1985**, and, struck contracts to fish in the exclusive economic zones (EEZ) of other many countries in A**sia and Africa.**
- China also uses a part of its fishing fleet as a **"maritime militia",** which assists the **navy and coast guard in their tasks.**

India and its fishing industry

- In India too, fish, being an **affordable and rich source of animal protein**, is one of the healthiest options to **mitigate hunger and malnutrition.**
- India's fisheries are being transformed into a **commercial enterprise.**
- It has shown steady growth and has become a major contributor to **foreign exchange.**
- India ranks amongst the **world's leading seafood exporting nations**.
- Fisheries provide a livelihood to about **15 million fishers and fish farmers** at the primary level, and generates **almost twice the number of jobs**, along the value chain — in **transportation, cold storage, and marketing.**

Problems associated with Indian Fishing Industry

- India's marine fishery has been dominated by the poor, small-scale fishers who can afford only **small sailboats or canoes** to fish for subsistence.
- India's fishers deliver **only 2 %** of marine fish to the market, while **98 %** is caught by **mechanized and motorized craft.**
- Indian fishermen do not venture into **rich fishing grounds**, most of the fishing is undertaken in **coastal waters.**
- Even in restricted fishing grounds, they have to compete with those of neighbors, **Sri Lanka and Pakistan.**
- Fishing vessels often **drift, inadvertently or otherwise**, into foreign waters leading to **apprehension by navies/coast guards and prolonged imprisonment of the crew.**

- Also, the rich resources in India's EEZ **remain underexploited,** and much of the catch from our fishing grounds is taken away by the better-equipped fishing fleets of other **Indo-Pacific countries.**
    - Some of these countries are indulging in **illegal, unregulated, and unreported (IUU) fishing.**

What needs to be done?

Improving Fishing Vessels

- **Mechanisation and modernization of fishing vessels** by providing communication links and electronic fish-detection devices, with artisanal fishers being funded for this.

Deep Water Fleets

- **Developing deep-water fishing fleets**, with bigger, sea-going trawlers equipped with refrigeration facilities.

Mother ship concept

- DWF fleet will have to be built around the **"mother ship" concept**, wherein a large vessel would accompany the fleet to provide fuel, medical and on-board preservation/processing facilities.

Modern Fishing Harbours

- Development of modern fishing harbors with adequate berthing and post-harvest facilities, including cold storage, preservation, and packaging of fish.

Government's effort:

Pradhan Mantri Matsya Sampada Yojana

- The government announced this scheme in **September 2020.**
- It is a **flagship scheme** for sustainable **development of India's fisheries sector** with an estimated investment of **Rs 20,000 crores** over the **next five years.**

Using schemes like PMMSY to form an "Indo-Sri Lankan Fishing Corporation", with a deepwater fishing fleet and dedicated fishing harbors, could not only provide a huge boost to the fishing industries but also send out a positive message of SAGAR: "Security and Growth for All in the Region".

Know about Ocean currents

- Ocean currents are the continuous, predictable, directional movement of seawater. It is a massive movement of ocean water that is caused and influenced by various forces. They are like river flows in oceans.
- Ocean water moves in two directions: horizontally and vertically.
    - Horizontal movements are referred to as currents, while vertical changes are called upwellings or downwellings.
- Ocean currents impact humankind and the biosphere due to their influence on climate.

Factors that Influences Ocean Current

- Ocean currents are influenced by two types of forces namely:
    - **Primary forces:**
        - **Heating by solar energy:**Heating by solar energy causes the water to expand. That is why, near the equator the ocean water is about 8 cm higher in level than in the middle latitudes. This causes a very slight gradient and water tends to flow down the slope.
        - **Wind**: Wind blowing on the surface of the ocean pushes the water to move. Friction between the wind and the water surface affects the movement of the water body in its course.
        - **Gravity:**Gravity tends to pull the water down the pile and create gradient variation.
        - **Coriolis force**. The Coriolis force intervenes and causes the water to move to the right in the northern hemisphere and to the left in the southern hemisphere.
            - These large accumulations of water and the flow around them are called Gyres.
            - These produce large circular currents in all the ocean basins.
        - **Secondary forces:**
            - **Differences in water density:**It affects vertical mobility of ocean currents.
                - Water with high salinity is denser than water with low salinity and in the same way cold water is denser than warm water.
                - Denser water tends to sink, while relatively lighter water tends to rise.

- **Temperature of water:**Cold-water ocean currents occur when the cold water at the poles sinks and slowly moves towards the equator.
    - Warm-water currents travel out from the equator along the surface, flowing towards the poles to replace the sinking cold water.

Types of Ocean Currents

- The ocean currents may be classified based on their depth:
    - **Surface currents:**Large-scale surface ocean currents are driven by global wind systems that are fueled by energy from the sun.
        - These currents transfer heat from the tropics to the polar regions, influencing local and global climate.
        - It constitute about 10% of all the water in the ocean, these waters are the upper 400 m of the ocean.
    - **Deep water currents:**Differences in water density, **resulting from the variability of water temperature (thermo)** and **salinity (haline)**, also cause ocean currents. This process is known as thermohaline circulation.
        - It makes up the other 90% of the ocean water.
        - These waters move around the ocean basins due to variations in the density and gravity.
        - Deep waters sink into the deep ocean basins at high latitudes, where the temperatures are cold enough to cause the density to increase.
        - This starts"" the **global conveyor belt**, a connected system of deep and surface currents that circulate around the globe on a 1000 year time span.
        - This global set of ocean currents is a critical part of Earth's climate system as well as the ocean nutrient and carbon dioxide cycles.
    - Ocean currents can also be classified based on temperature:
        - **Cold currents**: It brings cold water into warm water areas. These currents are usually found on the west coast of the continents in the low and middle latitudes (true in both hemispheres) and on the east coast in the higher latitudes in the Northern Hemisphere.
        - **Warm currents**: It brings warm water into cold water areas and is usually observed on the east coast of continents in the low and middle latitudes (true in both hemispheres).

- In the northern hemisphere they are found on the west coasts of continents in high latitudes.

Characteristics of Ocean Currents

- Major ocean currents are greatly **influenced by the stresses exerted by the prevailing winds and coriolis** The oceanic circulation pattern roughly corresponds to the earth's atmospheric circulation pattern.
- The air circulation over the oceans in the **middle latitudes is mainly anticyclonic**(more pronounced in the southern hemisphere than in the northern hemisphere). The oceanic circulation pattern also corresponds with the same.
- At**higher latitudes**, where the **wind flow is mostly cyclonic**, the oceanic circulation follows this pattern.
- In regions of pronounced monsoonal flow, the **monsoon winds influence the current movements.**
- **Due to the coriolis force,**the **warm currents from low latitudes tend to move to the right in the northern hemisphere** and to **their left in the southern hemisphere.**
- The oceanic circulation **transports heat from one latitude belt to another**in a manner similar to the heat transported by the general circulation of the atmosphere.
- The **cold waters of the Arctic and Antarctic circles move towards warmer water in tropical and equatorial regions,** while the**warm waters of the lower latitudes move polewards.**

Various Ocean Currents

- **Equatorial Currents System**: Every ocean, except the Arctic Ocean, has a North Equatorial Current, a South Equatorial Current and an Equatorial Counter Current.
  - The North and South equatorial currents flow from east to west.
- **Equatorial Counter Current**: It is located between the North and South equatorial currents and flows in opposition to them, that is, from west to east.
- **Antarctic Circumpolar Current (ACC):**The ACC is an ocean current that flows clockwise from west to east around Antarctica. An alternative name for the ACC is the West Wind Drift.
- **Humboldt or Peruvian Current:**This low-salinity current has a large marine ecosystem and serves as one of the major nutrient systems of the world.

    - Flows from the southernmost tip of Chile to northern Peru, along the west coast of South America.
- **Kurile or Oyashio Current**: This sub-arctic ocean current circulates in a counterclockwise direction.
    - It originates in the Arctic Ocean flows south via the Bering Sea in the western North Pacific Ocean.
    - It is a nutrient-rich current.
    - It collides with Kurioshio off the Japanese eastern shore to form the North Pacific Drift.
- **California Current:**It is the extension of the Aleutian Current along the west coast of North America in a southward flowing direction.
    - It is a part of North Pacific Gyre.
    - Region of strong Upwelling.
- **Labrador Current:**It flows from the Arctic Ocean towards the south and meets the warm northward moving Gulf Stream.
    - The combination of cold Labrador Current and warm Gulf Stream is known for creating one of the richest fishing grounds of the world.
- **Canary Current:**Low salinity current extending between Fram Strait and Cape Farewell.
    - It connects the Arctic directly to the North Atlantic.
    - Major freshwater sink for the Arctic.
    - It is a major contributor to sea-ice export out of the Arctic.
- **Benguela Current:**Branch of West Wind Drift of the Southern Hemisphere.
    - Eastern portion of South Atlantic Ocean Gyre.
    - Low salinity, presence of upwelling- excellent fishing zone.
- **Falkland Current:**It is a branch of Antarctic Circumpolar Current.
    - It is also known as Malvinas Current.
    - It is named after the Falkland Islands.
    - This cold current mixes with warm Brazil current and forms the Brazil-Malvinas Confluence Zone which is responsible for the region's temperate climate.
- **Northeast Monsoon Current:**Indian North Equatorial Current flows southwest and west, crossing the Equator.
- **Somali Current:**Analogous to the Gulf Stream in the Atlantic Ocean.
    - The Current is heavily influenced by monsoon.
    - Region of major upwelling system.
- **Western Australian Current:**It is also known as West Wind Drift.
    - It is a part of the Antarctic Circumpolar Current.
    - It is a seasonal current- strong in summer and weak in winter.'

- **Kuroshio Current:**This west boundary current is also known as Japan current or Black Current. The term **"Kuroshio" in Japanese means "Black Stream "**.
  - It is the Pacific analogue of the Gulf Stream in the Atlantic Ocean.
  - The average surface temperature of this current is warmer than the surrounding ocean.
  - This also helps in regulating the temperature of Japan, which is relatively warmer.
- **North Pacific Current:**It is formed by the collision of Kurioshio & Oyashio.
  - It circulates counterclockwise along the Western North Pacific Ocean.
- **Alaskan Current:**It results from a northward diversion of a part of the North Pacific Ocean.
- **East Australian Current:**Acts to transport tropical marine fauna to habitats in sub-tropical regions along the southeast Australian coast.
- **Florida Current:**Flows around Florida Peninsula and joins the Gulf Stream at Cape Hatteras.
- **Gulf Stream**: Western intensified current-driven mainly by wind stress.
  - It splits into North Atlantic Drift (crossing Northern Europe & southern stream) and Canary Current (recirculating of West Africa)
- **Norwegian Current:**This wedge-shaped current is one of the two dominant Arctic inflows of water.
  - It is a branch of North Atlantic Drift and sometimes also considered as an extension of the Gulf Stream.
- **Brazilian Current:**Flows along the south coast of Brazil till Rio de la Palta.
  - It joins the cold Falkland Current at the Argentine Sea making it a temperate sea.
- **Mozambique Current:**Flows between Mozambique and the island of Madagascar along the African east coast in the Mozambique Channel.
- **Agulhas Current:**Largest western boundary ocean current.
  - Flows south along the east coast of Africa.
- **Southwest Monsoon Current:**It dominates the Indian Ocean during the southwest monsoon season (June–October).
  - It is a broad eastward flowing ocean current that extends into the Arabian Sea and Bay of Bengal.

Effects of Ocean Currents

- **Climatic Conditions:**Currents influence the climatic conditions of the regions in which they flow.

    - The warm Equatorial currents raise the temperature of the region in which they flow. Similarly, the cold currents lower the temperature of the places where they flow.
    - For example, the British Isles would have been extremely cold without the warm North Atlantic Drift.
    - The hot climate of Peru is cooled by the cold Peru Current.
- **Rainfall:**The winds blowing over warm currents pick up and carry moisture and bring rainfall like the North Atlantic Drift brings rainfall in some areas located along the western coasts of Europe.
    - On the contrary, cold currents do not bring rainfall and make the region cooler and drier.
    - The Kalahari Desert hardly experiences rainfall due to the cold Benguela current.
- **Fog Formation:**The meeting of the warm and the cool currents results in the formation of fog.
    - The ship""s face danger due to the fogs caused by the meeting of the warm currents with the cold currents.
    - This has resulted in the wreckage of many ships in the past as they are not able to view icebergs due to poor visibility.
- **Creates Fishing Zone:**The mixing of warm and cold currents results in the deposition of planktons. Therefore, at such places, fishes can be found in abundance.
- **Desert formation:**Cold Ocean currents have a direct effect on desert formation in west coast regions of the tropical and subtropical continents.
    - There is fog and most of the areas are arid due to**desiccating effects** (loss of moisture).
- **Trade and Commerce:**Currents help ships to sail if they follow the directions of the currents.
    - Many warm currents keep the ports of Europe ice free even during the winters. This helps in trade and commerce.
- **Violent Storms:**At times the meeting line of a warm and a cold current may result in a violent storm.
    - The hurricanes which occur off the coast of the U.S.A. follow the line where the Gulf Stream merges with the Labrador Current.

Marburg virus disease outbreak

- Five people have died and three others are infected with the Marburg virus – a highly infectious, Ebola-like disease – in Tanzania's north-west Kagera region, authorities said earlier this week.
- According to the World Health Organization (WHO), around 161 people have been identified as at risk of infection through contact tracing and are currently being monitored. An emergency response team has been deployed in the area and no other cases of the virus have been reported in the country outside Kagera, The Guardian said.
- "The efforts by Tanzania's health authorities to establish the cause of the disease are a clear indication of the determination to effectively respond to the outbreak. We are working with the government to rapidly scale up control measures to halt the spread of the virus and end the outbreak as soon as possible," said Dr Matshidiso Moeti, WHO Regional Director for Africa, in a statement.
- The cases in Tanzania have come just over a month after another African country, Equatorial Guinea, reported its first case of the Marburg virus disease. Local authorities have confirmed seven deaths out of nine cases since 13 February, The Washington Post reported.
- "These emerging and re-emerging infectious diseases are a sign that the health security of the continent needs to be strengthened to cope with the disease threats," said Ahmed Ogwell Ouma, the director of Africa Centres for Disease Control and Prevention (Africa CDC). "We urge members of the public to continue sharing information in a timely manner with the authorities to enable a most effective response."

Marburg virus disease

- The Marburg Virus disease is an infectious haemorrhagic fever. It belongs to same family as Ebola. The virus is transmitted to people via fruit bats. People to people transmission also takes place, if the uninfected person comes in direct contact with bodily fluids of infected person or surfaces. Marburg virus has an incubation period of 2-21 days. This disease is potentially very harmful and deadly. Fatality rates in previous outbreaks have ranged from 24% to 88%.

Previous outbreaks of the disease

- Earlier, Marburg Virus disease has been reported in Angola, Democratic Republic of the Congo, Uganda, Kenya and South Africa. Single case was confirmed in Guinea, in September 2021.

Symptoms of Marburg virus disease

- Common symptoms of Marburg virus disease include- high fever, severe malaise, severe headache, Muscle aches and pains. Patient may also see severe watery diarrhoea, nausea & vomiting, abdominal pain & cramping on the third day following the contracting. These symptoms persist for a week.

Treatment of the disease

- No treatment or vaccine has been developed for Marburg, yet. Patients are treated through rehydration with oral or intravenous fluids.

Viral hemorrhagic fevers (VHFs)

- VHFs are a group of diseases that are **caused by several distinct families of viruses.**
- The term "viral hemorrhagic fever" refers to a **condition that affects many organ systems of the body, damages the overall cardiovascular system**, and reduces the body's ability to function on its own.
- **Some VHFs cause mild illnesses**, while others can cause severe, **life-threatening diseases.**
- **Most VHFs have no known cure** or vaccine.

The key to achieving sustainable growth

- The food, fuel, finance, and fever (pandemic) crises all impact the poor disproportionately.
- A just green transition must rest on four pillars of **finance, technology, people, and partnerships**, which are embedded in several G20 working groups and the agenda items put forward by India's presidency.
- However, financial policy makers in USA must solve three market failures and three political failures.

Three Market Failures and their solutions

1. **Lack of insurance cover**

- Lack of insurance coverage against **non-linear climate risks** is the biggest market failure.
- Insurance works on **averages and probabilities,** with risks spread across **different entities and geographies.**

Challenges

- A super cyclone that occurs once in **30 years** becomes normal **10 years** from now (with more **frequent and intense cyclones**).
- It is this **nonlinearity** that makes it difficult to insure against **climate shocks.**
- Countries don't just need disaster relief but also a **mechanism to increase resilience** and **allow economies to bounce** back after shocks above a threshold.

Solution

- A **Global Resilience Reserve Fund (GRRF)** could be a multilateral mechanism for countries with varying levels of vulnerability to pool their risks to climate shocks to lower the peaks of risk curves.
- After assuming an **initial loss**, GRRF would transfer the **bulk of the subscribed risk** to existing **market insurance mechanisms.**

2. **Gap between perceived and real risks**

- There is no doubt that there is some **risk involved** in investing in poorer countries.
- But it is also true that the risks **perceived by institutional investors** are higher than what is often observed.

Challenges

- Challenge is associated with **non-project risks,** particularly **currency risks** as well as **off-taker risks, or policy uncertainty.**
- Although Off-taker risks could be mitigated by **standardized contracting** and **first-loss guarantees,** currency risk continues to **plague developing countries.**
- When interest rates rise in developed countries in response to **domestic inflation**, project developers in developing economies suffer.

Solution

- A **Global Clean Investment Risk Mitigation Mechanism (GCI-RMM)** could offer de-risking solutions at scale.
- Risks could be pooled **across projects and across countries.**
- The double pooling would **spread the risks and lower the cost of hedging currency** (and other non-project) risks.

3. **Unpriced or under-priced externalities**

- Under-priced externalities relate to not just carbon but also **land, water, air, and biodiversity.**
- Not accounting for the **real value of ecosystem services** deprives many countries in the Global South of access to **financial resources** for preserving natural resources that contribute to the **global commons.**

Solution

- In order to mobilize **capital for developing countries**, the world could tap the proceeds of **carbon markets** (voluntary and international compliance markets).
- The rules for international carbon markets under the Paris Agreement's **Article 6.4** mechanism provide for a **5% share** of proceeds at issuance to be transferred to the Adaptation Fund.

Three Political failures and their solutions

1. **Technology Mercantilism**

- It could result in a **widening clean tech divide.**
- **Trade in renewable energy products** has become increasingly **concentrated**.
- **Four countries** dominate more than **70% of solar photovoltaic cells** and lithium-ion batteries exports and more than **80% of wind gensets exports.**

- **Only 15 countries** produce **70-95%** of critical minerals for **low-carbon technologies.**
- Import concentration levels vulnerabilities are particularly high for **middle-income countries.**

Solution

- The response must be to **increase the capacity of developing countries** to participate in clean tech manufacturing and have a stake in more **diversified and resilient supply chains.**
- **Ways to overcome Technology Mercantilism:**
  - Sectoral cooperation,
  - Technology co-development pooling financial, technical, and human resources
  - Co-owning intellectual property, and
  - coordinating green procurement policies at scale

2. **Energy security architecture**

- Energy security architecture for the **fuels of the future** is not there.
- Whether it is solar modules, wind turbines, green hydrogen electrolysers, or critical minerals embedded in these products, the **lack of common standards and definitions** makes it harder to develop energy-secure supply chains where standards are interoperable.

Solution

- An **architecture of rules** is needed to respond to the needs of emerging energy demanders, reduce non-tariff trade barriers and increase the security of the supply of emerging energy fuels.

3. **Politically viable approach**

- Politically viable approach to an orderly transition away from fossil fuels is yet to be found.
- This matters not just for stranded **physical or financial assets**, but also for communities that are dependent on **fossil fuel mining, extraction, processing, and use.**
- As much as **large-scale renewable energy deployment** could generate **net additional jobs,** they might be in **places far away** from the concentrated **sources of fossil fuels.**

Solution

- One response should be to bring the **energy transition** closer to **people and communities.**
- **Distributed renewable energy** could power livelihoods at scale (a market opportunity worth at least **$11 billion** in Sub-Saharan Africa or over **$50 billion in India**).
- When **livelihoods are created** and entrepreneurs and **micro-entrepreneurs supported**, **communities** become empowered as **subjects of the energy transition**.

The finance policymakers meeting in World Bank's spring meetings must realize that the greatest political failure is a lack of accountability and trust that promises made will be delivered. Reforms of multilateral development banks must deliver outcomes that are substantial in scale and credible in delivery.

Same-sex marriages: A matter for Parliament

- The Supreme Court, in Supriyo v. Union of India, has referred the matter relating to legalisation of same-sex marriages to a Constitution Bench.

Position of the centre on same-sex marriage

- As per the arguments of center, the same -sex marriage is **notrecognised by** Indian traditions, ethos, culture and the **societal conception** of the institution of marriage. Marriage is a **holy union** between a biological male and a biological female to form **to conceive Children.**
- If same-sex marriages should be legalised, Parliament is the **right institution to debate and decide**and not the Court.

It is a duty of the Court to address the **violations of fundamental right**s, which is arising due to non -recognition of same-sex marriages.

The question of same-sex marriages involves **conflict between** the **rights of a society** to conserve traditions and the **right of an individual** to enjoy his constitutional freedoms.

Arguments in support of the centre position on this matter

Marriage is predominantly a social institution. Therefore, it should be the domain of government to legislate. This point stregthens by the following 4 arguments:

- **First,**the question of same-sex marriage has the potential to change the **concept of a fami**ly which is the **building block of society**. Most of the conventional definitions of marriage adhere to the Centre's conceptualisation of the institution.
- While same-sex marriages are not a threat to this understanding, they demand a **nuanced alteration**of it.
- **Second,**the **current legislative framework** promotes the **conventional understanding** of marriage. Marriages in India are governed by the **Hindu Marriage Act, 1955; the Parsi Marriage and Divorce Act, 1936; the Christian Marriage and Divorce Act, 1957; and Muslim Personal Laws.** All marriage laws recognize marriages between a man and a woman. Although the Special Marriage Act (SMA) of 1954, uses gender-neutral language, it cannot be presumed to faour same-sex marriage.
- **Third, religious and societal morality**still conceptualises intercourse as a **procreative activity.** Various laws pertaining to marriage requires the

consummation of marriage for its validation. Consummation for purposes other than procreation is not considered a **moral thing.**

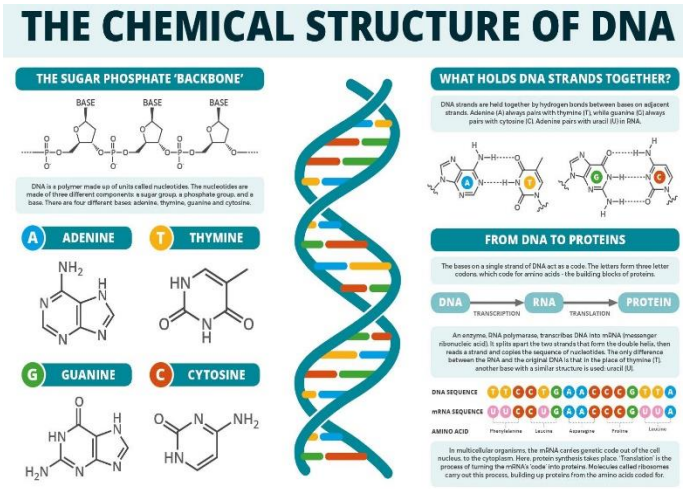
- In the **legal concept of marriage**, **procreation**is a basic requirement. **Section 12 of the Hindu Marriage Act** provides that where a marriage has not been consummated owing to the impotence of one of the parties, the said marriage is voidable.
- **Fourth,**center's concerns regarding alteration of family unit are not as regressive as they looks. It is iin line with the broader social acceptability. For example, Live-in relationships are judicially recognised, but they are not equated to marriage under the law. The social acceptability of such relationships remains debated.

Looking ahead

- The issue of legal recognition of same-sex unions requires a **broader debate**in society and the legislature.
- The **rights issues**related to same sex marriages are **substantial** and must be addressed immediately. The push to formalise the institution of same-sex unions must come from representative bodies such as Parliament.

Human Genome Sequence at 20

- Twenty years ago on April 14, an international group of scientists in the Human Genome Project (HGP) published the very first sequence of the human genome. "This is the most important, most wondrous map ever produced by humankind," then-US president Bill Clinton said in June 2000, when the first draft of the human genome sequence was revealed at the White House.
- The map itself consisted of three billion units of DNA, essentially a blueprint of a human being. While the sequence was partially incomplete and assembled from bits of several people's DNA, the HGP was a monumental achievement of technology and science.
- Genome mapping promised many things. We would discover our ancestral histories. We would discover how genes are involved in diseases. We would read our genome sequences like coffee grains in a cup to predict if we develop diseases in the future. But by then we would have developed the therapies needed to treat those diseases.
- Some of these developments have come to pass, others were fanciful. But a revolution in biological sciences began in 2003, as genome technologies transformed our understanding of human disease, our evolutionary history, and what it means to be human.



The medical genetics revolution

- Genomic medicine has been at the heart of the biological revolution. By sequencing the genomes of more than a million people since 2003, scientists have seen how genetic variation between people affects the risk of disease.
- "The idea that you can get the whole genome sequence of a sick baby and understand why they're sick within days is remarkable," said David Curtis, a professor of medical genetics at University College London, UK.
- For Curtis, it is this routine use of genetic technology in clinical practice that is the biggest benefit to come from the HGP. "In the last few years of big sequencing studies, we've found the first gene for schizophrenia. Now we have

10. If these genes are damaged, it has a huge effect on your schizophrenia risk," Curtis told DW.

- And it is not just schizophrenia where we have linked genes with diseases. Scientists have found mutated genes that cause cancers, heart disease, diabetes—you name it. The next big benefit lies in being able to create new therapies by studying the genetic mutations in the lab.
- We have already seen some success in gene-based therapies, from retraining immune cells to fight cancer to using CRISPR-Cas9 gene editing tools to treat sickle cell disease. "Genetics is very helpful to study diseases and there's massive scope for genetic therapies," said Curtis.

The limits of medical genetics

- But the new boom has also shown the limits of genetic medicine. The fact remains that genes are just one factor in disease outcome, and few inherited diseases are caused by mutation in a single gene.
- In the case of schizophrenia, Curtis said, only about 1 per cent of people with the disease have a mutation in one of those 10 identified genes. In total, there are more than 250 genetic "risk factors" for schizophrenia. The sheer number of risk factors, plus the fact we do not understand how these contribute to the disease, create a real challenge for medicine.
- "Some people have a mutation and they haven't got schizophrenia, or they've got a different disease entirely. The whole relationship between genetic mutation and disease has gotten shakier [since genome sequencing]," said Curtis.

Grandad was a neanderthal, and other human evolutionary tales

- Where genome sequencing has been truly groundbreaking is in evolutionary biology. "We can compare the human genome sequence to those of our close relatives and place our species within that broader evolutionary context. It's shown us that human history was much more dynamic than anyone could have predicted," Anders Bergstrom, an evolutionary biologist at the University of East Anglia, UK, told DW.
- Scientists studying the genome sequences of early and modern humans have shown that our ancestors interbred with other hominins like Neanderthals and Denisovans. We now have insights into the lives of Neanderthal communities in central Europe, providing clues about their population decline, as well as tracing the genetic heritage of long-lost people like the Minoans in modern-day Cretans.

- By studying ancient DNA and the little traces of ancestors inside of us, we are understanding how our species has expanded across the world, brought cultural advances like farming to distant lands, and developed resistances to diseases along the way.

What is a human?

- The biggest questions about genetics have yet to be answered. For one, only about 1 per cent of the genome codes proteins—we do not really understand what much of the other 99 per cent does.
- For Bergstrom, the biggest question genetics can answer is what makes us human. "Almost all of the progress that has been made in genetics in the last 20 years is about explaining differences among humans, but it doesn't tell us about what's universal among us," he said.
- Genome sequencing has changed how we view ourselves, but mostly by giving scientific backing for the idea of individualism. The thinking goes that everyone's genetic code is different (even identical twins do not have exactly the same code), so by identifying all the tiny genetic variations between people, we can see what makes each of us different.
- This is often productive. Genome sequencing has shown, for example, that "race" is a social construct not rooted in genetics (there is more genetic variation within racial groupings than between them). But by always looking for differences, we lose track of what makes us collectively humans rather than 8 billion individual ape-like beings on the same planet.
- Take chimpanzees. We know we have 96 per cent genetic similarity to them, but we do not really understand how the 4 per cent difference makes us more "human" than our lice-grooming cousins.
- "It's a fundamental question," said Bergstrom. "What is it that makes us humans and unique as a species?"

Increasing genome diversity

- The progress made in the last twenty years was not without its failings. More than a million genomes have been sequenced so far, but 95.2 per cent of the data in genetics studies comes from European genomes.
- "It didn't represent diversity among humans at all. If our science is biased towards people of a particular type of ancestry, then we won't be able to offer the same quality of personalized medicine to different people," said Bergstrom.
- Things are changing. The **Nigerian 100k Genome Project** aims to sequence, well, 100,000 genomes in Nigeria. Similar efforts are underway elsewhere in

Africa, and Asia and South America. The hope is that more routine and cheaper genome sequencing technologies around the world will benefit all of humanity.

A reminder about unfettered constitutional posts

- In his recent comment the Supreme Court (SC) expressed its "serious concern" over the active **role being played by Governors in State politics**, observing that Governors becoming part of political processes is disconcerting.
- SC earlier also divested the executive of its sole discretion in appointing the **Chief Election Commissioner (CEC) and Election Commissioners (ECs)** by forming a committee to suggest suitable names to man these constitutional posts.

Need for an Independent institution in the democracy

- A democracy requires a **system of checks and balances** to prevent the arbitrary use of power by the elected government.
- India's democracy provides for various constitutional authorities such as the Public Service Commission, the Comptroller and Auditor General of India **(CAG),** the ECI, the Finance Commission and the National Commissions for Scheduled Castes **(SC),** Scheduled Tribes **(ST)** and Backward Classes **(BC),** etc.
- Constituent Assembly of India had recognized the **need for such independent institutions** to regulate sectors of national importance **without any executive interference.**
- It is necessary that such constitutional bodies are provided with **complete independence** to enable them to function **without fear or favor** and in the **larger interests of the nation.**
- **The President** is empowered to appoint **all constitutional authorities.**
- But the makers of the constitution kept in mind those institutions whose independence is of paramount importance to the country and the manner in which the independence of these authorities could be safeguarded from the whims of the executive.

Constitutional provisions on various appointments

- The Constitution-makers have used simple words such as '**shall be appointed by the President** in the appointment of:
  - Prime Minister (Article 75),
  - Attorney-General for India (Article 76),
  - Chairman and other members of the Finance Commission (Article 280),
  - Chairman and other members of the Public Service Commission (Article 316), and
  - Special Officer for Linguistic Minorities (Article 350B)

- **Article 324** provides that the President will **appoint the CEC and ECs** 'subject to any law made on that behalf by Parliament'.
- The words **'shall be appointed by the President by warrant under his hand and seal'** are used while authorizing the President for appointment of:
  - Judges of the Supreme Court and the High Court (Articles 124 and 217),
  - CAG (Article 148), and
  - Appointment of the Governor (Article 155)
- Similar words have been used in **Articles 338, 338A, and 338B** authorising the President for appointing a chairman and members of the **National Commissions for SCs, STs, and BCs.**
  - However, the **original Article, Article 338**, had stated that 'there shall be a Special Officer for the Scheduled Castes and Scheduled Tribes to be **appointed by the President'.**

What did the supreme court say?

- **N. Gopalaswami and Ors vs The Union of India**: Supreme Court held that the President acts on the **aid and advice of the Council of Ministers,** with the Prime Minister as the head in all matters which vests in the executive.
- However, in cases where the **appointment of a particular constitutional authority** is to be kept independent of the executive.
- The question arises whether such an interpretation would be in line with the thinking which prevailed during the relevant Constituent Assembly debates.

How Constitution gave special status to some appointments?

- Constitution affixes the phrase **"by warrant under his hand and seal"** only to refer to appointment to positions **(Judges, the CAG, and the Governors).**
- It assigns a **special status** to distinguish them from other constitutional positions.
- Constitutional authorities such as the **Judges of the Supreme Court and the High Court and the CAG of India** are to be kept free from political or executive pressure.

Other appointments by the President

- Appointments made by the President **(Articles 75, 76, 280(2), 316, and 324(2)),** the Constitution provides for certain conditions to be fulfilled by those who may be considered for such appointments.

- In these articles, the words used are – **'To be appointed by the President'**, and as such the President must **act on the advice of the Prime Minister** after ensuring that the requisite qualifications are fulfilled.

Constituent Assembly on the appointment of Comptroller and Auditor General of India

- **In the draft Constitution,** the article for **appointment of the CAG (Article 124)** had provided that 'There shall be an Auditor General who shall be appointed by the President ....'
- While moving an amendment to this Article "That in **clause (1) of Article 124** after the word **'Present' ['President']** the words **'by warrant under his hand and seal'** be inserted".
- The Constituent Assembly had discussed that Auditor-General is to be **appointed by the President** and therefore it is essential that the words **'by warrant under his hand and seal'** should be introduced.
- The Auditor-General should always be **independent of the legislature or the executive.**
    - He is the watchdog of **finances**, and his position must be **made so strong** that he **cannot be influenced by anyone**.

Suggestion on the appointment of CAG

- The process of selecting a person to be appointed as the CAG of India should begin by appointing a committee consisting of the **Speaker of the Lok Sabha, the Chief Justice of India, and the Chairman of the Public Accounts Committee.**
- Committee will shortlist names to be considered for appointment as the CAG of India.
- A panel of three names should be forwarded to the President for him to make the final selection as in **Article 148 of the Constitution of India.**

Constituent Assembly on the appointment of the Governor

- **Article 131 of the draft Constitution** was moved to substitute the following that: 'The Governor of a State shall be appointed by the President by warrant **under his hand and seal'.**
- Constituent Assembly discussed the following: "To say that the President may **nominate from a panel of names** really means **restricting the choice of President**".

- It gives power into the **hands of the Legislature.**
- It is necessary that the President should be free from the influence of the Legislature, So the choice of the President should be **unrestricted and unfettered.**
- **Both amendments were passed.**

Keeping in view the intention of the framers of the Constitution, the appointment of judges and the ECs have been made free from the influence of the executive, the need is to set up well-defined criteria and procedures for the appointment of the CAG of India.

The terrorist-drug nexus

- The narcotics trade is assuming dangerous proportions all over the world.
- It is a social problem that **harms youth and families** and the money it generates is diverted for disruptive activities that have bearings on **national security.**
- The issue has kept security agencies and law enforcement agencies on the tenterhooks.

Drug Trafficking Challenge in India

- **Golden Crescent & Golden Triangle:** India has been seen as sandwiched between them.
  - The country is being flooded with drugs, especially **heroin, and methamphetamine**, from these two regions by drug lords indirectly supported by intelligence setups.
  - Nearly **90 percent** of the world's demand for these drugs is being met from these two regions.
- India is both a **big market and a transit route** for other countries.
- **Afghanistan & Pakistan:** there are indications that **parts of Pakistan adjoining Afghanistan** are also used by Pakistani drug traffickers to convert **Afghan opium to heroin.**
- **Myanmar:** the **Shan and Kachin provinces** bordering China also pose challenges.
  - These heroin and methamphetamine-producing areas have porous borders and are under the control of rebel groups, indirectly supported by the Chinese.
  - **Illicit arms** are manufactured here and supplied to **underground groups active in India.**
- The **use of drones** to supply drugs and weapons across the border in Punjab is a new phenomenon and law enforcement agencies are working out strategies to neutralize this.
- Also, the maritime route became very active after the **recent developments in Jammu and Kashmir.**

How Indian Coast Guard (ICG) responded to Maritime drug trafficking?

- The Indian Coast Guard (ICG), in conjunction with the intelligence agencies, has been making **big seizures frequently.**

- ICG has developed a good synergy not only with the security agencies but also with the **coast guards of Sri Lanka, Maldives, and Bangladesh.**
- It seized **2,160 kgs of meth** in two different instances recently near the **Andaman and Nicobar Islands.**
    - The drugs were destined for **Thailand from Myanmar.**
- Investigations have indicated the connection of drug traffickers from across borders with terrorist organizations like **Lashkar-e-Toiba and Hizbul Mujahideen.**
    - The illegal money is used for terror activities **sponsored by the ISI.**

Cocaine:

- India has surprisingly also become a hot destination for **cocaine.**
- The supply of Cocaine is controlled by **South American drug cartels.**
- Investigations have revealed the connection of these cartels with **NRIs based in Canada, Australia, Singapore, Hong Kong, and several European countries** along with local drug lords and gangsters in India.
    - They have links with **Khalistani terrorists and the ISI in Pakistan.**

How drug markets are growing?

Use of Darknet in drug trafficking

- **62 percent** of the darknet is being used for **illicit drug trafficking.**
- Darknet markets are **disrupting traditional drug markets** because of their **anonymity and low risks.**
- **Cryptocurrency payments and doorstep deliveries** have made darknet transactions attractive.

How to tackle the threat posed by Darknet in drug trafficking?

- **Concerted and coordinated efforts** of all the agencies will be required to tackle this.
- The success rate in catching traffickers using the darknet has been very low the world over.
- However, the Narcotics Control Bureau busted an organized **racket of darknet vendors** and **arrested several Indian nationals.**
    - **Technical surveillance** followed by **basic policing methods** led to the seizure of large consignments of drugs and the arrest of the gang.
    - The operation exposed various international connections.

- Drug cartels are networked and are using the darknet for **trafficking narcotics,** especially **pharmaceutical opioids/synthetic drugs** made in labs using deadly chemical precursors.

Use of organized gangs

- Organised gangs, which are primarily used to carry out **extortion activities** in their local areas, are being used for **drug trafficking and gun running.**
- **Money** attracts them to such activities, but knowingly or unknowingly they are getting into the trap of **ISI and Khalistani elements** settled abroad, especially in **Canada, Germany, the UK, USA.**
- It is easier for these terrorist groups to use these networks because they get **ready-made logistics** to carry out their activities.

The nexus between terrorists and organized gangs/ underworld is new and disturbing. It poses new challenge for security agencies. However, dealing with drug trafficking is necessary not just for national security but also to protect the youth of the country.

Different models of PPP

Public-private partnerships involve collaboration between a government agency and a private-sector company that can be used to finance, build, and operate projects, such as public transportation networks, parks, and convention centers. Financing a project through a public-private partnership can allow a project to be completed sooner or make it a possibility in the first place.

- In recent years, Indian government has given a greater impetus to metro rail expansion. In 2018 itself, 6 new metro rail projects have been sanctioned.
- In recent policy regime change there is a greater involvement of private sector in financing and developing these projects.
- In this context, concerns have been raised due to public–private partnerships in financing and developing metro projects, and the possible implications of these on patterns of urban land use.

Genesis

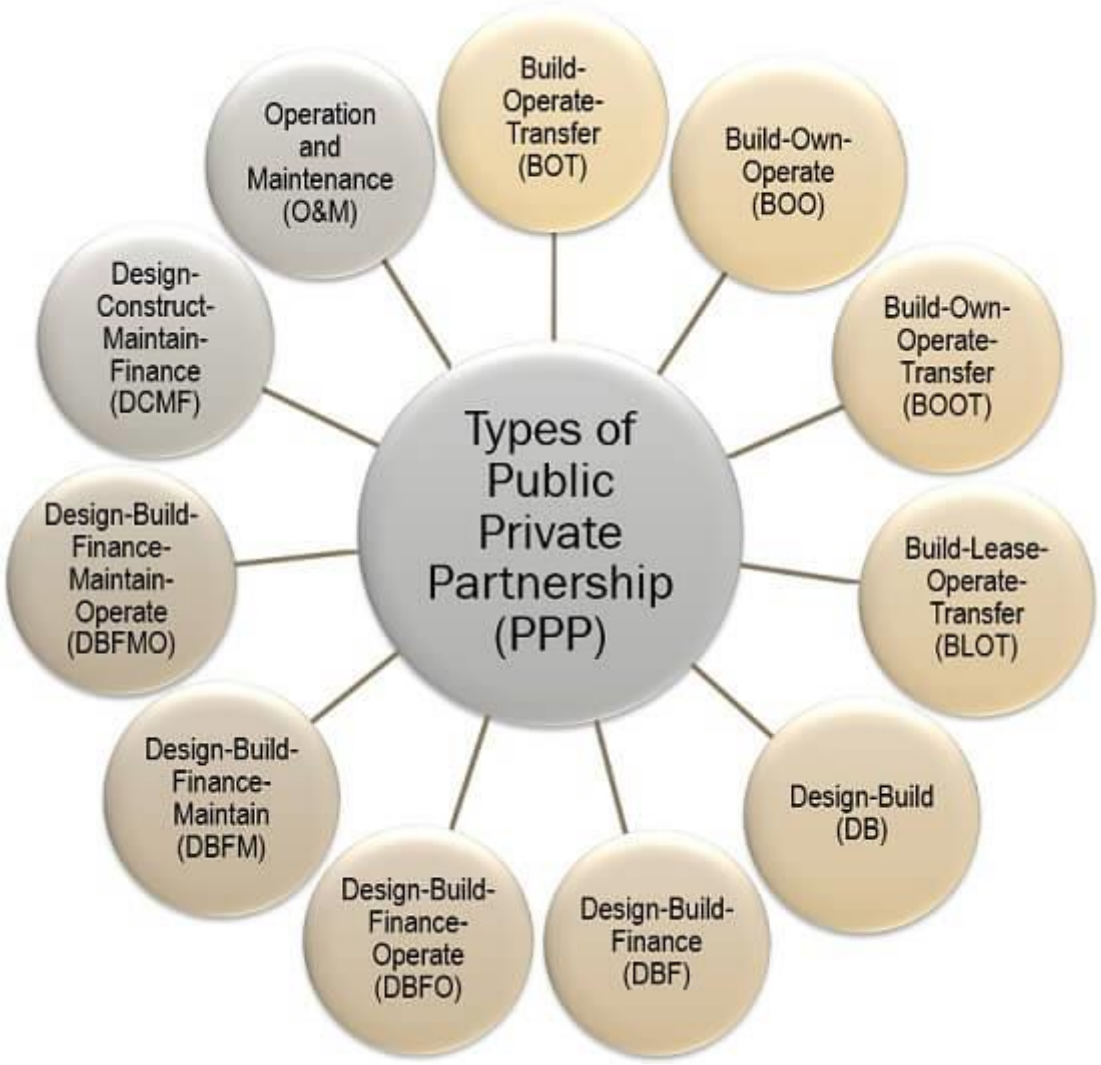
- Metro rail projects in India, until 2017, were broadly guided by a consolidated framework decided by the Ministry of Urban Development.
- The consolidated framework had set its preference for executing metro rail projects primarily through government funding.
- This framework duly recognised the limitations of PPP models due to risks associated with the metro rail systems and the limited experience of India in executing metro rail systems on a PPP basis.
- On 16 August 2017, the Union Cabinet approved a **new Metro Rail Policy**which opens a big window for **private investments in metro operations by making PPP component mandatory** for availing central assistance on metro projects.
- Private participation has its own cost because projects are undertaken only if they are able to generate profits in return for their investments.
- Therefore, in the current policy framework it appears that expansion of metro rail projects across the country will only accelerate the process of conversion of land in urban and semi-urban areas for consumer-oriented use.

Types of Investment Models

- **Public Investment Model:**In this model Government requires revenue for investment that mainly comes through taxes.
    - As the world is facing the prospect of an extended period of weak economic growth, by enhancing public-sector investment large pools of savings can be channelized into productivity.
    - Properly targeted public investment can do much to boost economic performance, generating aggregate demand quickly, fueling productivity growth by improving human capital, encouraging technological innovation, and spurring private-sector investment by increasing returns.
    - Though public investment cannot fix a large demand shortfall overnight, it can accelerate the recovery and establish more sustainable growth patterns.
- **Private Investment Model:**For a country to grow and increase its production investment is required. Presently tax revenue of India is not adequate to meet this demand so government requires private investment.
    - Private investment can be source from domestic or international market.
    - From abroad private investment comes in the form of FDI or FPI.
    - Private investment can generate more efficiency by creating more competition, realization of economies of scale and greater flexibility than is available to the public sector.
- **Public-Private Partnership Model:**PPP is an arrangement between government and private sector for the provision of public assets and/or public services. Public-private partnerships allow large-scale government projects, such as roads, bridges, or hospitals, to be completed with private funding.
    - In this type of partnership, investments are undertaken by the private sector entity, for a specified period of time.
    - These partnerships work well when private sector technology and innovation combine with public sector incentives to complete work on time and within budget.
    - As PPP involves full retention of responsibility by the government for providing the services, it doesn't amount to privatization.
    - There is a well defined allocation of risk between the private sector and the public entity.
    - Private entity is chosen on the basis of open competitive bidding and receives performance linked payments.
    - PPP route can be alternative in developing countries where governments face various constraints on borrowing money for important projects.

- It can also give required expertise in planning or executing large projects.

Models of Public Private Partnership (PPP)



- Commonly adopted model of PPPs include Build-Operate-Transfer (BOT) ,Build-Own-Operate (BOO), Build-Operate-Lease-Transfer (BOLT), Design-Build-Operate-Transfer (DBFOT), Lease-Develop-Operate (LDO), Operate-Maintain-Transfer (OMT), etc.
- These models are different on level of investment, ownership control, risk sharing, technical collaboration, duration, financing etc.
- **BOT:** It is **conventional PPP model**in which private partner is responsible to design, build, operate (during the contracted period) and transfer back the

facility to the public sector.

- Private sector partner has to bring the finance for the project and take the responsibility to construct and maintain it.
- Public sector will allow private sector partner to collect revenue from the users. The national highway projects contracted out by NHAI under PPP mode is a major example for the BOT model.

- **BOO:**In this model ownership of the newly built facility will rest with the private party.
  - On mutually agreed terms and conditions public sector partner agrees to 'purchase' the goods and services produced by the project.
- **BOOT:**In this variant of BOT, after the negotiated period of time, project is ransferred to the government or to the private operator.
  - BOOT model is used for the development of highways and ports.
- **BOLT:**In this approach, the government gives a concession to a private entity to build a facility (and possibly design it as well), own the facility, lease the facility to the public sector and then at the end of the lease period transfer the ownership of the facility to the government.
- **DBFO:**In this model, entire responsibility for the design, construction, finance, and operation of the project for the period of concession lies with the private party.
- **LDO:**In this type of investment model either the government or the public sector entity retains ownership of the newly created infrastructure facility and receives payments in terms of a lease agreement with the private promoter.
  - It is mostly followed in the development of airport facilities.

Problems with PPP Projects

- PPP projects have been stuck in issues such as disputes in existing contracts, non-availability of capital and regulatory hurdles related to the acquisition of land.
- Indian government has a poor record in regulating PPPs in practice.
- Metro projects become sites of crony capitalism and a means for accumulating land by private companies.
- Across the world PPPs are facing problems, performance of PPPs has been very mixed according to study conducted by various research bodies.

- It is also argued that PPP is mere a "language game" by governments who find it difficult to push privatization, or when politically it is difficult to contracting out.
- Loans for infrastructure projects are believed to comprise a large share of the non-performing asset portfolio of public sector banks in India.
- In many sectors, PPP projects have turned into conduits of crony capitalism.
- Many PPP projects in infrastructure sector are run by "politically connected firms" which have used political connections to win contracts.
- PPP firms use every opportunity for renegotiating contracts by citing reasons like lower revenue or rise in costs which becomes a norm in India.
- Frequent renegotiations also resulted into drain of larger share of public resources.
- These firms create a moral hazard by their opportunistic behavior.

Vijay Kelkar Committee Report on Revisiting and Revitalising PPP Model

- Finance Minister in the Union Budget 2015-16 announced that the PPP mode of infrastructure development has to be revisited and revitalised.
- In pursuance of this announcement, a Committee on Revisiting & Revitalising the PPP model of Infrastructure Development was set-up which was chaired by Dr. Vijay Kelkar.

Key recommendations of the committee:

- Contracts need to focus more on **service delivery instead of fiscal benefits**.
- Better identification and **allocation of risks**between stakeholders
- Prudent utilization of **viability gap funds**where user charges cannot guarantee a robust revenue stream.
- **Improved fiscal reporting**practices and careful monitoring of performance.
- Given the urgency of India's demographic transition, and the experience India has already gathered in managing PPPs, the government must move the PPP model to the next level of maturity and sophistication.
- Cost effectiveness of managing the risk needs to be evaluated.
- An Infrastructure **PPP Adjudication Tribunal ("IPAT")**chaired by a Judicial Member (former Judge SC/Chief Justice HC) with a Technical and/or a Financial member, where benches will be constituted by the Chairperson as per needs of the matter in question.
- Projects that have not achieved a prescribed percentage of progress on the ground should be scrapped. Re-bid them once issues have been resolved or

complete them through public funds and if viable, bid out for Operations and Maintenance.

- Sector specific institutional frameworks may be developed to address issues for PPP infrastructure projects.
- **Umbrella guidelines may be developed for stressed projects**that provide an overall framework for development and functioning of the sector specific frameworks.
- **Unsolicited Proposals ("Swiss Challenge")**to be discouraged to avoid information asymmetries and lack of transparency.
- **Amend the Prevention of Corruption Act, 1988**to distinguish between genuine errors in decision-making and acts of corruption.
- Set up an institution for invigorating private investments in infrastructure, providing guidance for a national PPP policy and developments in PPP.
- An institutionalized mechanism like the **National Facilitation Committee (NFC)**to ensure time bound resolution of issues.
- Ensure adoption of principles of good governance by the **Special Purpose Vehicle (SPV)**.
- Discourage government participation in SPVs that implement PPP projects unless strategically essential.
- Ministry of Finance to allow banks and financial institutions to issue Zero Coupon Bonds which will also help to achieve soft landing for user charges in infrastructure sector.
- Encourage use of PPPs in sectors like Railways, Urban, etc. Railways to have an independent tariff regulator.
- Set up an **institute of excellence in PPP**to inter alia guide the sector, provide policy input, timely advice and undertake sustainable capacity building.
- Ensure integrated development of infrastructure with roadmaps for delivery of projects.

Looking Forward

- New projects especially large-scale transit projects are significant for increasing mobility and for the series of changes in land use patterns. PPPs have the potential to deliver infrastructure projects better and faster. Currently, PPP contracts focus more on fiscal benefits.
- There is need for a serious assessment of the efficacy and the likely benefits of increasing private sector participation in metro rail projects before the adoption of this model.

- NITI Aayog in its document "**Strategy for New India @75**", targeted investment rates to 36 per cent by 2022-23 from 28 percent of 2017-2018.
- To raise the rate of investment (gross fixed capital formation as a share of GDP) slew of measures will be required to boost both private and public investment.
- Private investment needs be encouraged in infrastructure through a renewed public-private partnership (PPP) mechanism on the lines suggested by the Kelkar Committee.
- A mature PPP framework, along with a robust enabling ecosystem shall enable the Government to accomplish, to a considerable extent, what our Prime Minister, has said “The Government has no business to do business” and thereby promote private sector investments and participation towards the nation building.

Solid-fuel technology and North Korea

North Korea says it has tested a new solid-fuel intercontinental ballistic missile (ICBM), its first known use of the propellant in a longer-range projectile, as it seeks the capability to launch with little preparation.

North Korea said the development of its new solid-fuel ICBM, the Hwasong-18, would "radically promote" its nuclear counterattack capability.

South Korea's defence ministry sought to downplay the testing, saying the North would need "extra time and effort" to master the technology.

Panda said the North could face difficulties ensuring such a large missile does not break apart when the diameter of the booster becomes larger.

Although the Hwasong-18 might not be a "game changer", he said, it will most likely complicate the calculations of the United States and its allies during a conflict.

"The most important interest the United States and its allies have is to reduce the risks of nuclear use and escalation stemming from North Korea's possession of these weapons"'.

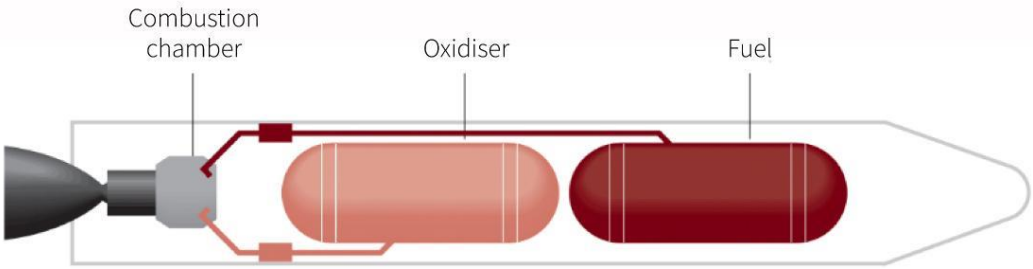
- Solid propellants are a **mixture of fuel and oxidizer.**
- Metallic powders such as **aluminum** often serve as fuel.
- **Ammonium perchlorate**, which is the salt of perchloric acid and ammonia, is the **most common oxidizer.**

Solid- and liquid-fuel systems

North Korea claims to have tested a new solid-fuel intercontinental ballistic missile (ICBM), the Hwasong-18, to "radically promote" the country's nuclear counterattack capability, state media reported. Here's how solid- and liquid-fuel systems differ.

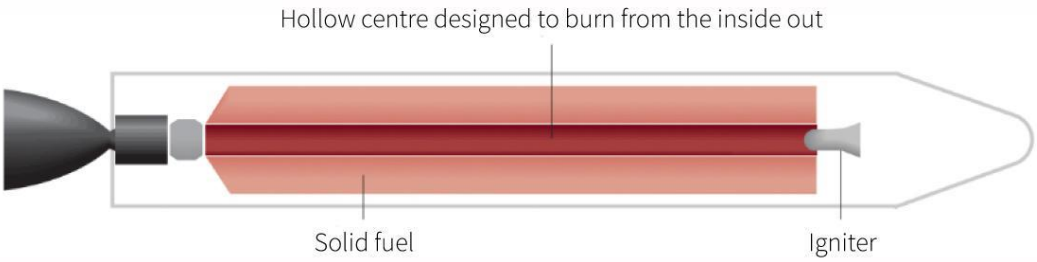
Liquid-fuel system

Requires a propellant and an oxidizer, or two fuel components that combust when mixed. They are often volatile and must be loaded just before flight.



Solid-fuel system

This fuel is more stable to transport and can be easily stored over long periods of time, meaning the missiles can be ready to launch at short notice.



Use

- Both **fuel and oxidizer** are bound together by a hard rubbery material and **packed into a metal casing.**
- When solid propellant burns, **oxygen from the ammonium perchlorate** combines with aluminum to generate **enormous amounts of energy and temperatures** of more than **5,000 degrees Fahrenheit** (2,760 degrees Celsius), creating **thrust and lifting the missile** from the launch pad.

Who has Solid-Fuel Technology?

- The technology can be dated back to **fireworks** developed by the **Chinese centuries ago.**
- **The United States** developed more powerful propellants.
- **Soviet Union** fielded its first solid-fuel ICBM, **the RT-2**, in the early **1970s**, followed by **France"s development** of its S3, also known as **SSBS**, a medium-range ballistic missile.
- **China** started testing solid-fuel ICBMs in the late **1990s**.
- **South Korea** had already secured "**efficient and advanced**" solid-propellant ballistic missile technology.

Solid .vs. Liquid fuels

- **Liquid propellants** provide **greater propulsive thrust and power** but require **more complex technology and extra weight.**
- **Solid fuel** is dense and burns quite quickly, **generating thrust over a short time.**
- Solid fuel can remain in storage **without degrading or breaking down**.
    - Whereas liquid fuel has a common issue with storage.

Benefits associated with using Solid Fuel Missiles

- **Solid-fuel missiles** are easier and safer to operate, and require less logistical support, making them **harder to detect** and more survivable than liquid-fuel weapons.
- It **does not need to be fuelled immediately** ahead of launch.

Slash and Save

- **World Earth Day** is observed on **22nd April every year,** to promote awareness and act toward protecting planet.
- It gives emphasizes the need for **urgent action to address the environmental challenges.**
- There is a growing need to devote our **efforts, finances, and time** to addressing **climate change and other ecological problems.**
- **Food loss and waste** is one of such problems which need to be addressed to **overcome food insecurity** as well as to **mitigate climate change.**

Food Loss and Waste

- Food loss and waste have been major problems for both the **developed and the developing world** around world.
- The ever-growing global population coupled with **expanding demand for food products** has exerted extreme pressure on **natural resources** and also impacted the **climate and the food system.**
- **Curtailing food loss and waste** can help address **food insecurity** in underprivileged communities **and mitigate climate change.**
- **17 %** of the food generated globally from **food service, households, and retail sectors** is discarded annually.
    - It is equivalent to almost **one billion tonnes.**
- **14 %** of the world's total food supply is **lost between harvest and retail.**

Food Loss and Waste in India

- **India** accounts for **7 % of global food waste.**
    - It is projected **68.8 million tonnes of food waste** each year.
- As per the report by the Consumer Affairs, Food, and Public Distribution Ministry, an Indian household wastes around **50 kg of food per year,** which is substantially **lower than in many developed countries.**
- Despite this, **one out of every four malnourished individuals** across the globe is **from India**.

Reasons for food loss in India

- In India, the reasons behind food loss are:
    - **Inadequate storage and cold chain facilities**

- **Social customs**
- **Insufficient consumer awareness**
- **Availability of bulk packaging and promotional deals**

- However, the government has launched several measures in response to the global demand of reducing food loss and waste.

Government's efforts to reduce food loss and waste

1. PM Kisan SAMPADA Yojana

- It was launched in **2016.**
- It was aimed at **developing modern infrastructure** with an **effective supply chain network** that spans from the farm to the retail store.
- This initiative is expected to benefit the **food processing industry, increase farmers' incomes, reduce agricultural waste, improve processing capabilities, and boost exports of processed food products.**

2. Eat Right India Movement

- The Eat Right India Movement was launched by the **Food Safety and Standards Authority of India (FSSAI) and the central government.**
- This scheme was **launched in 2018**.
- The goal was **'Sahi Bhojan, Bethar Jeevan'.**
- It is a flagship program in line with other initiatives including:
  - Ayushmaan Bharat
  - Poshan Abhiyaan
  - Anemia Mukt Bharat
  - Swachh Bharat Mission
- Aiming till 2050, to create a culture of **safe, healthy, and sustainable food for all.**

3. Other efforts by the Ministry of Food Processing Industries

- The Ministry is entrusted with **developing post-harvest infrastructure and processing facilities.**
  - It is for supporting the sector's **overall development**, including **reducing post-harvest losses and increasing value addition.**
- The Ministry uses **numerous studies** built on primary surveys to estimate **post-harvest losses** in a variety of agricultural commodities.

- A recent study by **NABCONS 2022** highlighted that **fruit crops** experience the **highest %age losses** (6.02-15.05 %) followed by **vegetables** (4.87-11.61 %) **and fisheries (Marine)** (8.76 %).

Impact of Food Loss and Waste

- Food loss and waste have significant **economic, social, and environmental impacts.**
- It gives **rise to food insecurity, food prices,** and waste of valuable resources like **land, water, and energy**.
- It also **generates methane gas,** which is a powerful greenhouse gas responsible for causing climate change.
    - Hence, decreasing food waste and loss is critical for accomplishing sustainable development goals and minimizing the consequences of climate change.

Steps to reduce food loss and waste

- Educating and raising awareness about food loss and waste among the citizens.
- It is important to invest in the required **infrastructure and technology**, especially in the **food supply chain** where such losses are higher.
- It is time to promoted not only **sustainable consumption** but also **constantly and rigorously endeavor** to implement measures and **steps to reduce food waste.**
- There is a need to support **food recovery and redistribution initiatives** to minimize food loss and waste and **reduce carbon footprints for our planet Earth.**

Saving food can be one way among many to save planet Earth among many others. World Earth Day 2023 provides a chance for people, corporations, and governments to act toward decreasing food loss and waste. Such acts can improve food security, reduce economic losses, and protect our planet's resources.

The G20 transition can be led by an all-round consensus

- India has set its sights on becoming **energy independent by 2047** and achieving n**et zero CO2 emissions by 2070.**
- An energy transition will play a critical role in achieving these targets.
- This calls for a complete transformation of how India **produce, transport, and consume energy**.

Energy Transition in G20

G20:

- G20 member countries account for about **75% of global energy demand and 80% of global greenhouse gas emissions.**
- The Energy Ministers Communiqué issued during **Italy's G20 presidency** announced a **target of net-zero carbon emissions** and this goal was reiterated during **Indonesia's 2022 presidency** as well.

India:

- Despite being home to over **1.4 billion people**, India's contribution to the **world's cumulative emissions** is **less than 4%**.
- India's annual per capita emissions are about **one-third of the global average**.
- India is the **only G20 nation** that is well **ahead of its climate-change mitigation targets**

Key Challenges in Energy Transition

1. **Energy Production**

- Even after doubling renewable energy production in the past decade, its share of total primary energy consumption has grown from **10% in 2015 to 13% in 2021,**
- The **use of fossil fuels** is also expanding to meet the growing energy demand. it grew by **10% from 2015 to 2021.**
- **The highest growth in renewable capacity** was seen in **lower-middle-income countries** (solar 1,298%; wind 134%; and hydro 24%), followed by **upper-middle-income countries** (solar 702%; wind239%; and hydro 14%) and then **high-income countries** (solar 163%; wind 72%; and hydro 1%).
    - Hence, to close a gap between the current emissions trajectory and a path towards capping **global average temperatures at 1.5 ° Celsius**

above pre-industrial levels, the **production of clean and green energy** is vital.

- The deployment of renewable energy capacities in the energy mix **must almost triple** over the coming decade, to **500 Gigawatts (GW) annually,** from an average of about **180GW from 2015 to 2021.**
- India is the **world's third largest producer of renewable energy**, with about **43%** of its installed capacity **(roughly 175GW) being renewable**.
- **Key Challenges:** intermittency and grid stabilization**.**

How Energy storage technologies can solve these challenges?

- It will play a key role in **ensuring a continuous supply of renewable energy**, **by reducing peak energy needs**, and help us deal with the problem of intermittency, and **improving overall grid management.**
- **New advances in storage technology** will provide **long-term energy-storage solutions**. It includes:
  - Electrochemical (primarily battery technologies like sodium-ion and flow batteries),
  - Mechanical (pumped hydro, flywheel),
  - Chemical (hydrogen or derived biofuels, ammonia) and
  - Electrical (super-capacitors and cryogenic super-conducting magnets), will provide long-term energy-storage solutions.
- Unlocking economies of scale is a prerequisite for integrating high levels of variable renewable energy sources.
- It will not be possible without the **development, transfer, and deployment** of a full range of emerging technologies in energy storage through **collaborative actions** to realize a **cost-effective and time-bound transition** along with the development of a diversified **renewable-energy supply chain.**

2. **Energy Transportation**

- **Decarbonizing of the economy** requires more cohesive action toward transforming hard-to-abate sectors, including power, transportation, fertilizers, cement, steel, real estate, aviation, and agriculture.
- The world's big CO2-emitting sectors are:
  - **Energy systems (34%),**
  - Industry (24%),
  - Agriculture (22%),
  - Transport (15%) and
  - Buildings (6%).

How Hydrogen can solve issues related to energy transportation?

- **Hydrogen** will offer a solution for **industrial and transport needs** that are hard to meet through direct electrification, mitigating close to **12% and 26% of CO2 emissions,** respectively.
- **Benefits:**
  - Energy basket diversified,
  - Increase in energy security, and
  - Reduced import dependency.
- **India** presently contributes about **10% to global hydrogen demand** and there is a strong desire to shift to green fuels including **biofuels, green hydrogen, and green ammonia.**
- **Global demand for green hydrogen:** It is projected to be 100 million metric tonnes (MMT) by 2030, of which about 10% could be satisfied by India.

What does India need to do to achieve this?

- There is a critical need to **scale up the production and deployment of high-performance electrolyzers** from the existing **2-4GW per annum capacity to 25-30GW per annum** in the next 3-5 years.
- There is a need to **address cost economics**, ensure that **regulations** are in place, and see that **adequate private and public finance** is provided, with the **required supply-chain arrangements** and necessary **backup infrastructure** to go with it.

3. **Energy Consumption**

- **Sustainable energy consumption** also has a major role to play in the energy transition**.**
- **'Lifestyle for Environment' (LiFE),** a mantra given by the Indian Prime Minister at the CoP-26 summit**,** there is an urgency to bring about a paradigm shift from mindless and destructive consumption to **mindful and deliberate** utilization of resources.
  - **Mission LiFE** has had an enthusiastic response from world leaders, who have lauded India's initiative of blending its spiritual idea of **"Vasudhaiva kutumbakam"** (the world is a family) to drive a **green transformation.**

While a shift to clean energy is critical to restrict global warming, it is equally important to remain cognizant of the social and economic impact of any such transition. The movement away from fossil fuels needs to be orderly, time-bound, and by nationally defined development priorities. It must recognize both "existing dependencies" and "existing deprivations."

How is a 'national party' in India defined?

- The ***Election Commission*** 10 April 2023 ***recognised the Aam Aadmi Party (AAP)*** as a ***national party***, while ***revoking that status*** of the ***All-India Trinamool Congress***, ***Nationalist Congress Party (NCP)*** and the ***Communist Party of India (CPI)***.
- The Commission also ***revoked the state party status granted to RLD in Uttar Pradesh***, ***BRS in Andhra Pradesh***, PDA in Manipur, PMK in Puducherry, RSP in West Bengal and MPC in Mizoram.
- The Commission said that ***NCP and Trinamool Congress will be recognised as state parties*** in Nagaland and Meghalaya respectively based on their performance in the recently concluded Assembly elections.
- It also granted "***recognised state political party***" status to the ***Lok Janshakti Party (Ram Vilas) in Nagaland***, Voice of the People Party in Meghalaya, and the Tipra Motha in Tripura.
- ***The BJP***, ***Congress***, ***CPI(M)***, ***Bahujan Samaj Party (BSP)***, ***National People's Party (NPP)*** and the ***AAP*** are the remaining national parties now.

What is a national party?

- The name suggests that a ***national party would be one that has a presence 'nationally'***, as opposed to a regional party whose presence is restricted to only a particular state or region.
- ***National parties are usually India's bigger parties***, such as the ***Congress and BJP***. However, some smaller parties are also recognised as national parties. A certain stature is sometimes associated with being a national party, but this does not necessarily translate into having a lot of national political clout.
- Some parties, despite being dominant in a major state — such as the ***DMK in Tamil Nadu***, ***BJD in Odisha***, YSRCP in Andhra Pradesh, RJD in Bihar, or TRS in Telangana — and having a major say in national affairs, remain regional parties.

So how is a national party defined?

The ECI has laid down the ***technical criterion*** for a party to be recognised as a national party. A party ***may gain or lose national party status*** from time to time, depending on the fulfilment of these ***laid-down conditions.***

As per the ***ECI's Political Parties and Election Symbols, 2019 handbook***, a political party would be considered a national party if:

1. ***it is 'recognised' in four or more states***; or
2. if its***candidates polled at least 6% of total valid votes in any four or more states***in the ***last Lok Sabha or Assembly elections*** and has at least four MPs in the last Lok Sabha polls; or
3. ***if it has won at least 2% of the total seats in the Lok Sabha***from ***not less than three states.***

To be recognised as a state party, a party needs:

1. ***at least 6% vote-share in the last Assembly election***and ***have at least 2 MLAs***; or

have 6% vote-share in the last Lok Sabha elections from that state and ***at least one MP*** from that state; or

1. ***at least 3% of the total number of seats or three seats***, whichever is more, in the last Assembly elections; or
2. ***at least one MP for every 25 members***or any fraction allotted to the state in the Lok Sabha; or
3. ***have at least 8% of the total valid votes in the last Assembly election***or Lok Sabha election from the state.

Where does the AAP fit into this scheme?

- The ***AAP is in power with big majorities*** — and ***very large vote shares*** — in Delhi and Punjab. In the ***Goa Assembly elections*** in March last year, ***it received 6.77% of the vote.***
- This meant that going into the Gujarat-Himachal elections towards the end of 2022, the party already fulfilled the criteria for ***recognition as a state party in three states.*** It then ***required 6% of the vote in the Assembly elections in either Himachal or Gujarat to be recognised in a fourth state*** — which would qualify it for recognition as a national party.
- While the ***AAP got only 1% of the vote in Himachal***, the ***almost 13% vote it got in Gujarat*** was more than double required to be recognised as a state party there. That made it four states.

India has a crucial role in settling international statistical standards

- India's membership at UNSC will begin in **January 2024, and also** there is a possibility of India **chairing the** United Nations Statistical Commission during this tenure.
- In its membership, India needs to deliberate the key issues related to the **System of National Accounts (SNA) 2008.**
- India can be the voice of the **global south or developing countries or emerging economies at the UNSC.**
    - These countries are affected by the **current measurement methods** of the **international statistical standards.**

United Nations Statistical Commission (UNSC)

- It was established in **1947**.
- The **headquarters** are located in **New York.**
- It is the **highest decision-making body** for international statistical activities.
- It oversees the work of the **United Nations Statistics Division (UNSD).**
- It is a Functional Commission of the **UN Economic and Social Council.**

Functions:

- It is responsible for **setting statistical standards and the development of concepts and methods,** including their implementation at the national and international levels.
- One of the best-known subunits of the Statistics Division is the **United Nations Group of Experts on Geographical Names (UNGEGN),** also known as the United Nations Conference on the Standardization of Geographical Names (UNCSGN).
    - This unit attempts to standardize the **names of locations across languages, alphabets, and cultures.**
- **India**, as a UN member and **signatory to statistical standards** issued by the Commission on various thematic areas, adopts these to implement; and the statistics so developed play a critical role in our planning processes.
- Statistics also enable **comparability across countries** through various indicators such as **Gross Domestic Product (GDP), Gross Value Addition (GVA), and other measures**.
    - It also includes household survey data, employment-unemployment statistics, price statistics, health accounts, tourism accounts, environment accounts, etc.

Members:

- There are 24 member states.
- They are elected by the Economic and Social Council based on the following geographical distribution:
    - African states (5)
    - Asian States (4)
    - Eastern European States (4)
    - Latin American and Caribbean States (4)
    - Western European and other States (7)

Composition:

- There is a chairman, **3 Vice-chairmen, and a Rapporteur.**
- They are elected for one year by the members of the Commission at the beginning of a session.

India and its Contribution to the UNSC

India had **two prominent statisticians** chairing the UNSC:

P.C. Mahalanobis

- He was the **first Indian** to hold UNSC **for its eighth and ninth sessions** held in **1954 and 1956 respectively**.
- He created a **sub-commission on statistical sampling**, which paved the way for the application of sample surveys in various fields of official statistics.

V.R Rao

- He chaired the **19th session in 1976.**
- He strengthened the **statistical organizations of many developing countries**, especially for carrying out **household sample surveys**.
- He is also credited with having chaired the **only ever session of the UNSC** held **outside a UN duty station.**
    - It was held in **New Delhi, in 1976**.

India's agenda in its UNSC tenure

In its membership, India needs deliberate issues related to the **System of National Accounts (SNA).**

System of National Accounts (SNA):

- The finalization and implementation of the **SNA 2025 will be one of the most important agendas.**
- This refers to the **framework adopted by UN member countries** for the formulation of national accounts, based on which India estimates its **GDP, GVA, and other macroeconomic aggregates.**
- The current estimates of National Income are based on **SNA, 2008,** with **2011-12 as the base year.**

Issues related to the System of National Accounts (SNA):

Measurement of unpaid work:

- The global south countries like India are in a **disadvantageous position** on account of the non-measurement of certain economic activities, such as **unpaid work by women.**
- **Example:** Women's labor participation rate in **India is just about 20%**, compared to about **70% in the US, UK, and other developed countries.**
    - A large **contribution of women engaged in economic activities**, such as family labour in **agriculture and small shops and tea stalls**, remains **unaccounted** for.
- This makes the size of **GDP and per-capita income smaller** than it is.
- There is a need to **redefine it** and develop methods to measure the **value addition of unpaid work.**

Measurement of digitalization

- The basic structure of **production, consumption, and expenditure** has changed since the SNA 2008 was **developed and implemented.**
- The internet is almost **ubiquitous and technology disruptions are frequent**, amid rapid digitalization in India and other countries.
- Firms that are dependent on **digital intermediary platforms** also known as **the 'gig economy'** has independent service providers, such as **bicycle couriers, ghost kitchens, and ride-hailing cab drivers.**
    - Currently, their value addition **remains outside the system's accounting ambit.**
- There are a **few products and services** which are **beyond SNA 2008,** like **data, digital services provided by enterprises, and those provided by communities**.

- In developed countries the **growth of digital-economy industries** is estimated at around **10-12%**, while **India's is around 21%.**
- India should play a key role to bring about a consensus on **including additional digital industries and products** and enabling countries to measure the **contribution of digitalization.**

Other issues

- There are other important issues relating to the **measurement of our well-being**, of the **impact of climate change.**

India's four-year membership tenure at the Commission comes at an opportune time. If India could incorporate unpaid work, digitization, and other issues into the revised SNA of 2025 and implement the same, then India's $5 trillion economy with a $1 trillion digital economy will not be a distant aim.

India's Prehistoric Paintings

Prehistoric paintings were usually painted on rocks, and these rock carvings were referred to as Petroglyphs. The first prehistoric paintings were uncovered in **Madhya Pradesh"s Bhimbetka caves**. Paintings and sketches were the earliest art forms used by humans to express themselves on a cave wall as a canvas.

Historical Background

- Seven historical periods may be identified in the sketches and paintings.
- **V.S.Wakankar**, an archaeologist, **discovered the Bhimbetaka paintings** in **1957-58**.
- These paintings typically depict animals such as bison, beers, and tigers. They are known as the **"Zoo Rock Shelter"** because they depict elephants, rhinoceroses, cattle, snakes, spotted deer, barasingha, and other animals.
- Prehistoric paintings can be divided into three major phases:
  - Palaeolithic Period
  - Mesolithic Period
  - Chalcolithic Period

Upper Palaeolithic Period (40000–10000 BC)

- Since the walls of the rock shelter caves were **formed of quartzite,** minerals were employed as paints.
- **Ochre or geru**, when mixed with lime and water, was one of the most frequent minerals.
- They broadened their palette by using other minerals to create colours like r**ed, white, yellow, and green.**
- Large animals such as bison, elephants, rhinos, tigers, and others were shown in white, dark red, and green.
- Red was utilised for hunters and green was used largely for dancers in human sculptures.
- Remains of rock paintings have been discovered on the **walls of caves** in Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, Telangana, Karnataka, Bihar, and Uttarakhand in India.
- Lakhudiyar in Uttarakhand, Kupgallu in Telangana, Piklihal and Tekkalkotta in Karnataka, Bhimbetka and Jogimara in Madhya Pradesh, and others are examples of early rock painting locations.
- Man, Animal, and Geometric Symbols are the three categories of paintings featured here.

Features of these early works of art

- Humans are depicted as a stick-like figure.
- In the early paintings, a long-snouted animal, a fox, and a multi-legged lizard are common animal motifs (later many animals were drawn).
- There are additional wavy lines, rectangular-filled geometric shapes, and a group of dots.
- Paintings are superimposed one on top of the other, starting with black, then red, and finally white.
- **Bhimbetka** is one of India''s and the world''s oldest paintings (Upper paleolithic).

Mesolithic Period (10000–4000 BC)

- **This is the period with the greatest amount of artwork. Themes are numerous, yet the paintings are modest.**
- The majority of the scenes are of **hunters**. Hunters wielded barbed spears, pointed sticks, arrows, and bows in groups.
- Some paintings depict traps and snares used to catch animals.
- Animal pointing was a popular pastime among **Mesolithic people**. Animals are chasing men in some photographs, while hunters are chasing them in others.

- The **colour red** was heavily used throughout this time period.
- The scale of the paintings shrank throughout this period in comparison to the **Upper Paleolithic epoch.**
- **Group hunting i**s one of the most common scenarios represented in these paintings, and several others depict grazing and riding activities.

Chalcolithic Period

- The number of paintings employing the colors green and yellow increased throughout this time period.
- The majority of the paintings are depictions of battle scenes. Many paintings depict men riding elephants and horses.
- Some of them even have bows and arrows, indicating that they are ready for conflicts.
- They feature drawings of spotted deer skins drying, which supports the hypothesis that man perfected the art of tanning skins for shelter and clothing.
- **Musical instruments** such as the harp are also depicted in other artworks from this time period.
- Complex geometrical shapes such as the spiral, rhomboid, and circle appear in several of the paintings.
- The **Jogimara caves** in the Ramgarh hills in the Surguja district of Chhattisgarh include some paintings from the later period. These are thought to have been painted about the year 1000 BCE.
- In the **Kanker area** of Chhattisgarh, caves such as the refuge of Udkuda, Garagodi, Khaperkheda, Gotitola, Kulgaon, and others may be found.
- **Human figurines,** animals, palm prints, bullock carts, and other depictions of a higher and sedentary way of life can be found in these shelters.
- Similar paintings may be found in the **Koriya district"s Ghodasar and Kohabaur** rock art sites.
- Another intriguing location is **Chitwa Dongri** (Durg district), where we can see a Chinese figure riding a donkey, as well as dragon paintings and agricultural scenes.

Significance

- **White, yellow, orange, red ochre, purple, brown, green, and black** were among the colours used.
- However, their favorite colors were white and red. These folks manufactured their paints by crushing a variety of colored pebbles. **Haematite** turned them red (Geru in India).

- **Chalcedony,** a green-coloured rock, was used to make this green. **Limestone** was most likely the source of white.
- When mixing rock powder with water, sticky substances such as animal fat, gum, or tree resin may be employed. Plant fiber brushes were used.
- The **chemical reaction** of the oxide existing on the surface of rocks is thought to have kept these colours for thousands of years.
- Paintings have been discovered in both occupied and vacant caves.
- It suggests that these artworks were occasionally utilized as signals, warnings, and other similar purposes.
- Many of the new rock art sites have been painted over an older painting. Nearly 20 layers of paintings are visible at **Bhimbetka**, one on top of the other.
- It depicts the human being''s progressive evolution from one period to the next. Nature''s inspiration is combined with a hint of **mysticism in symbology**.
- Only a few drawings are used to express ideas (representation of men by the stick-like drawings). Many geometrical patterns are used.
- The majority of the scenes depicted hunting, as well as people''s economic and social lives. **Flora, fauna, humans,** legendary creatures, carts, chariots, and other figures can be observed.
- The **colours red and white are more important.**

The Prehistoric period is defined as a time in the far past when there was no paper, language, or written word, and hence no books or written documents. Until scholars began excavating Prehistoric sites, it was difficult to comprehend how Prehistoric people lived. Scholars have pieced together information gleaned from old artefacts, environment, animal and human bones, and artwork on cave walls to create a pretty accurate picture of what happened and how people lived in prehistoric periods.

108 years of Armenian 'genocide' - what, why and how?

108 years ago, on April 24, 1915, the Ottoman Empire (now Turkey) began rounding up Armenian political and cultural leaders in Constantinople, marking the beginning of what would come to be known as the Armenian genocide. Over the next year or so, over a million Armenians would die — executed, murdered, or left to die of exhaustion and starvation. Many others would be exiled, losing their homeland forever. Turkey, meanwhile, insists what happened was not genocide, contests the number of victims, and punishes citizens who dispute the official version: Nobel Laureate **Orhan Pamuk and Booker Prize nominee Elif Shafak**, both of whom faced legal proceedings, are a case in point.

According to **Article II of the United Nations (UN) Convention on Genocide of December 1948,**genocide has been described as **carrying out acts intended "to destroy, in whole or in part, a national, ethnic, racial or religious group".**

Raphael Lemkin,the Polish lawyer, **coined the term "genocide" in 1943.**

- The Armenian Genocide is **called the first genocide of the 20th Century.**
- It refers to the **systematic annihilation of Armenians in the Ottoman Empire from 1915 to 1917.**
- After the **First World War**broke out in **November 1914,** the Ottoman Turks participated in the war, siding with Germany and the Austro-Hungarian empire.
- The Ottoman Turks **believed the Armenians would side with Russia**in the war. This resulted in the **Ottoman Turks engaging in a mass-removal campaign of Armenians from the border** areas along the Eastern Front.
- On **24thApril, 1915, Ottoman Turkish** government officials **arrested and executed thousands of Armenian intellectuals.** It was the **start of the Armenian Genocide.**
- **Armenian families,**including small children, were forced to walk for days without food, water and shelter in the deserts of Syria and Arabia.
- According to estimates, **approximately 1.5 million Armenians died**during the genocide, either in massacres and in killings, or from ill treatment, abuse and starvation.

Significance of this Recognition:

- The acknowledgement by the US government will have **little legal impact on Turkey,**other than becoming a cause for embarrassment for

the country and **giving other countries the impetus to also acknowledge the genocide.**

- According to the Armenian National Institute,**30 countries officially recognise the Armenian Genocide.**
- **Turkey's Response:**
- Such moves would**only set back the already strained relationship between US and Turkey,** both of whom are **North Atlantic Treaty Organization allies.**
- Ties between the US and Turkey have been strained over**a range of issues** that include Turkey's purchase of Russian **S-400** defence systems, foreign policy differences with regard to Syria, human rights and other intersecting legal issues.
- Turkey has **acknowledged that atrocities were committed against Armenians, but denies it was a genocide**(which comes with legal implications) and challenges the estimates that 1.5 million were killed.

India's Stand:

India, that has **not formally recognised the Armenian Genocide** has primarily adopted this stance **in the interests of its wider foreign policy decisions** and **geo-political interests in the region.** India **does not have any domestic law on genocide,**even though it **has ratified the United Nations Convention on Genocide.** This was even observed by the Delhi High Court in***State v. Sajjan Kumar*** (2018). The case **concerned the mass killing of Sikhs during the anti-Sikh riots in 1984 in Delhi —** and throughout the country.

Genocide Convention:

The Genocide Convention, also known as the Convention on the Prevention and Punishment of the Crime of Genocide, is an international treaty that was adopted by the UNGA on December 9, 1948. The purpose is to prevent and punish the crime of genocide and requires signatory nations to take action to prevent and punish genocide, including by enacting laws that criminalize the crime of genocide and by cooperating with other nations in the investigation and prosecution of individuals suspected of committing genocide. The Convention also establishes the International Court of Justice as the primary judicial body responsible for interpreting and enforcing the Convention. It was the first human rights treaty adopted by the General Assembly of the UN on 9 December 1948.

Looking ahead

The prevention and punishment of genocide is a complex issue that requires a multi-faceted approach. Some possible ways forward include:

- ***Strengthening legal frameworks***: Countries should continue to adopt and enforce laws that criminalize genocide and related crimes. Governments should also ensure that these laws are in line with international legal standards, such as the Genocide Convention.
- ***Education and awareness-raising***: Education and awareness-raising campaigns can help to promote tolerance and understanding between different groups and reduce the likelihood of discrimination and violence. Governments, civil society organizations, and other stakeholders should work together to promote these initiatives.
- ***Early warning systems***: The development of early warning systems can help to detect and prevent the escalation of tensions between different groups. These systems can include the monitoring of hate speech, social media platforms, and other indicators of potential violence.
- ***International cooperation***: International cooperation is essential in the prevention and punishment of genocide. Countries should work together to share information, resources, and expertise in order to prevent and respond to potential instances of genocide.
- ***Support for victims***: The provision of support and reparations to victims of genocide is essential in promoting healing and reconciliation. Governments and other stakeholders should work together to provide support to victims, including access to justice, reparations, and mental health services.
- ***Addressing root cause***: Addressing the root causes of discrimination and violence is essential in the prevention of genocide. This can include addressing poverty, inequality, and social exclusion, as well as promoting inclusive governance and democratic institutions.

Pending Bills, the issue of gubernatorial inaction

- **Article 200 of the constitution** gives the Governor options to act on the bill passed by the State Assembly.
  - But there is **no timeline given** for the Governor to give assent on the bills.
- In many states, the governor does not exercise their power under Article 200 and they do not decide any options available to them.
  - This move is resisting state governments to act according to the Constitution.
- Tamil Nadu Assembly passed a resolution urging the President of India, to fix a timeline for assent to be given to Bills passed by the Assembly.

How a resolution of Tamil Nadu is legitimate?

- **Article 355 of the Constitution** says that it shall be the **duty of the Union** to ensure that the government of every State is carried on in **accordance with the provisions of the Constitution.**
  - **Purpose:** to provide justification for the **"invasion of the provincial field"** which the Union government may have to do.
- **Article 200 of the constitution** requires Governor to act when a Bill is passed by the Assembly and present it to him.
- If the governor **does not act in accordance with the Constitution** and pockets the Bills **indefinitely**, then the governance of the state cannot be carried on in accordance with constitutional provisions.
- In such situations, the state government has a **constitutional duty to invoke Article 355** and inform the President about it, and request her to give suitable instructions to the Governor.

What are the options provided to the governor?

- **Article 200 of the constitution** provides options to the Governor when a Bill is presented to him after being passed by the legislature.
- **These options are:**
  - To give assent,
  - To withhold assent,
  - To send it back to the Assembly to reconsider it, or
  - To send the Bill to the President for his consideration.

- If the Assembly reconsiders the Bill as per the **3rd option** and sends the bill again to the governor, he **has to give assent** even if the Assembly passes it again without accepting any of the suggestions of the Governor.
- **Sitting on a Bill passed by the Assembly** is not an option given by the Constitution, the Governor, by doing so, is only acting against the constitutional direction.

Governor's assent a discretion or advice?

Practice followed in the United Kingdom:

- The position of the Governor in this respect is that of the **sovereign in England**.
- The Governor can **refuse to give his assent** but this right has not been exercised since the **reign of Queen Anne.**
- The veto could now **only be exercised on ministerial advice** and no government would veto Bills for which it was responsible.

Is the governor's assent to the bill a discretionary power?

- **Under Article 154 of the Constitution**, the Governor can exercise his executive powers only on the advice of the Council of Ministers.
    - Therefore, there is a view that the Governor can withhold assent to a Bill only on ministerial advice.

Can the government advice the governor to withhold assent?

- **Yes,** the government can advise the Governor to withhold assent if it has second thoughts on the Bill after it has been passed.
- This can be **seen in the U.K.** where the sovereign refuses assent **only on ministerial advice.**
- However, it seems that under the Indian Constitution, it is **vested in the Governor to withhold assent**.

Supreme Courts Judgements on Governor's Assent

- As per the judgments of the Supreme Court, it is **not justiciable for governor to sit on the bills passed by the State Assembly.**

Purushothaman Namboothiri vs State of Kerala (1962):

- Issue, in this case, was that a Bill which is pending with the Governor **does not lapse on the dissolution of the Assembly.**
- This judgment **does not** deal with the **justiciability of the process of assent.**

Hoechst Pharmaceuticals Ltd. And ... vs State Of Bihar And Others (1983):

- It deals with the **power of the Governor to reserve a Bill for the consideration of the President.**
- SC held that a Governor reserves a Bill for the consideration of the President in **exercise of his discretion.**
- Court **cannot go into the question** of whether it was necessary for the Governor to reserve the Bill for the consideration of the President.
- This case too **does not deal with the justiciability of assent.**

The clarity on the Governors sitting on the bill and not exercising the options given in Article 200 is **not given in the Constitution or in Supreme Court's judgments**. It is a new development that needs to be addressed by the Supreme Court. SC needs to fix a reasonable time frame for Governors to take a decision on a Bill passed by the Assembly in the **larger interest of federalism in the country.**

What is at Hampi?

- Famous for its damaged yet spectacular belongings from the mediaeval Hindu kingdom, Hampi is famous as a UNESCO world heritage site. And it will soon be converted into one of the iconic tourist destinations of India. The government of India aims to develop the city and equip it with improved facilities for visitors in order to protect the remaining architecture of the city from offbeat tourism. This initiative by the government is indeed worthy of appreciation.
- The monuments and monolithic sculptures at Hampi were constructed during the time of the Vijayanagar Empire. The temples and other religious places display evidence of true craftsmanship and culture of that period.
- The architecture of the city displays a Hindu culture that talks of the splendour and magnanimous men of the Vijayanagar Empire. The city carries a historical significance not only through its architecture and culture but also through its landscape that attracts tourists from across the world.
- Hampi is a small town situated in Hospet taluk of the Vijayanagar district of Karnataka. Stationed along the Tungabhadra River, near the border of Andhra Pradesh. The first civilisation in Hampi belongs to the 1st century AD. It was found along with some historical Buddhist sites of that time. Founded by two brother kings Harihar and Bukka in 1336 Vijayanagar became one of the largest Hindu empire in India in opposition to the Islamic sultanate in southern India. Krishnadevaraya is the most remarkable name in the history of Hampi who ruled the majority of the Peninsular region in southern India. It is a site that talks of the grandeur of the empire, through its concrete establishments along with the concentric lines of fortifications that guarded the city against enemies.
- The army of Vijayanagar was huge and strong. Along with political and architectural strength, the kingdom also flourished through trade in cotton and spices so much so that it became the centre of trade in the entire southern region. However, the glory culminated with the death of Krishnadevarya and the combined armies of 5 neighbourhood states conquered the Hampi in 1565.

Famous Sites of Hampi

This temple town of India has innumerable tourist attractions including the following:

Virupaksha Temple

- Dedicated to Lord Virupaksha, an avatar of Shiva, the temple was constructed by Lakkan Dandesha, a commander under Deva Raya II of the Vijayanagara Empire. Its dynamism never fails to attract tourists from all over the world.

- The temple has inscriptions on Lord Shiva engraved in the 9th century. The Virupaksha-Pampa retreat is a part of this place. It was initially a small shrine that was later developed during the reign of Deva Raya II. It is a holy place and the end of the dynasty never restricted the worshippers from visiting the site. It has a hall for worship with numerous pillars and 3 antechambers (rooms connected to the main hall). It has some courtyards, small temples and a pillared monastery. It has some spectacular gateways, the greatest one is nine-tiered and 50m in length! It has multi-storey gopurams (a monumental tower at the entrance of any Hindu temple; It is usually a part of south Indian architecture) that make it an elevated site of worship.
- Even after its initial establishment, the temple is known to have certain additions like the main pillared hall which was added by Krishnadevaraya. The inscriptions pay testimony to his contributions. There are also various unkempt Mandapas (pillared halls which are used for rituals in Hindu temples) interlined with an ancient marketplace in front of the temple.

Vijaya-Vittala Temple

- It is one of the largest and most magnificent temples in Hampi. It is located on the banks of the Tungabhadra River. The temple has remarkable and flabbergasting musical pillars that even amazed the Britishers. The chariots that come to mind while talking of Hampi are also a part of the Vittala temple.
- The temple was built in the 15th century by King Devaraya II which was further expanded and enhanced by Krishnadevaraya. This temple is devoted to Lord Vittala, an incarnation of Lord Vishnu. The legend behind this temple says that it was the abode of Lord Vishnu. But Lord Vishnu returned to live a humble life leaving the grand temple behind. It is one of the grandest of all the architecture in Hampi. It was built in the Dravidian style of architecture. It initially had an enclosed Mandapa and later an open Mandapa was added by Krishnadevaraya.
- The temple has a huge area that is encircled by elevated compound walls and three ascending gateways. It has several halls, mausolea (large rooms) and gazebos (pavilions) placed inside it, all of them constructed from stones.
- The most prominent among these edifices are the Devi shrine, main hall, Ranga Mandapa, marriage hall, Utsava Mandapa and the most remarkable stone chariot.

Monolithic Bull

- The Monolith Bull, also known as the Nandi Bull, is an outstanding element of archaic style that is lodged in a two-storey bower (bower is a shady place with

open sides). This massive configuration, considered the vehicle of Lord Shiva, is located exactly opposite the Virupaksha Temple.

- This Monolithic Bull with its dilapidated structure demonstrates a rough technique of carving. The statue is surrounded by huge pillars and makes for an attractive tourist destination.

Elephant Stables

- The Elephant Stables is amongst some of the places in Hampi that have suffered little dilapidation with the passage of time. It is a lengthy building with chambers where royal elephants were held during the reign. There are a total of 11 chambers and it somewhat reflects the architecture of the temples but has domes that reflect the Islamic style of architecture.

Lotus Mahal

- This Lotus Mahal is located within the Zanana enclosure, which was used by the women of the Vijayanagara Dynasty. Its design resembles that of a lotus. It is also called the Kamal Mahal or Chitragani Mahal. It is also one of those monuments of the city that bears minimal damage. Women in the Zenana enclosure enjoyed recreational activities and gathered together to spend leisurely time. It also served as a council chamber for kings and ministers as marked by some maps from the 18th century. It is said that the Queen of Krishna Deva Raya used to spend most of the time seeking pleasure and peace in the Zanana enclosure. The monument displays a high degree of perfection in architecture and style.

Pushkarani

- Pushkaranis are an important part of Hampi. They are sacred tanks that display the ancient town planning and style of the Vijayanagara era. Many of these Pushkaranis were also used as the event venue for annual boating festivals. They are beautifully designed and surrounded by pillars and arcades. During annual events, idols of Dev and Devis were taken for a coracle (a small boat) ride which connotes the holy significance of these tanks.

Palace Of Vira Harihara

- Among the most spectacular places in the Vijayanagara Empire is the Palace of Vira Harihara, once a colossal structure, which is a great attraction for visitors. However, only its foundational base now remains within the fortified area. This place testifies to the grandeur of the kings of the empire. It displays their admirable lifestyle too. The palace has suffered the ravages of time and history. The few remains have elaborate carvings that tell the tale of the gigantic and beautiful structure that once existed in its place.
- The actual boundary of the Palace can still be discerned along with the remainders of other structures entailing a lofty building with a getaway of steps, apparently wielded as a stage to mount on the royal elephants. The ruins of the royal hall also exist till date.

Hazara Rama Temple

- Built in the early 15th century by Devaraya II. Rama Hazara temple was initially a simple structure. It comprised only a sanctum, a pillared hall and an ardha (half) Mandapa. Later it was remodelled to augment the site through an open veranda and elegant pillars.
- The Hazara Rama Temple is literally translated as a thousand Rama temple, which suggests the abundance of heirlooms portraying the dominant deity of the temple. Its walls have the Ramayana carved on stones and the outer walls have relics of Rama and Krishna. These relics portray parades of royal horses, elephants, servants, combatants and dancing women carrying the celebration of the Dasara festival. These relics are the most extensive ones to be found anywhere in India.

Achyutaraya Temple

- The Achyuta Raya temple, initially known as Tiruvengalanatha Temple was built during the reign of Achyuta Deva Raya, who was one of the monarchs of the Vijayanagara Empire. This temple is dedicated to Lord Tiruvengalanatha who is an incarnation of Lord Vishnu. Later it got famous with the name of the king and came to be known as Achyutaraya temple.
- The prominent shrine of the temple is placed in the centre of a pair of rectangular concentric compartments. There are pillared porches on the inside of the two courtyard walls. Most of its parts are on the verge of collapse and decay. It is located at the end of courtesan street and can be seen from the top of Matanga Hill. At the entrance, there is a chamber that faces the verandah which leads to the main hall. There is a small shrine chamber that once glorified an image of Garuda.

- It has an accessible hall that has massively carved pillars. The sculptures are done on monolithic blocks of rocks. The idols and figures on the planks demonstrate sagas of Lord Vishnu blessing an elephant, Lord Krishna playing his flute while his calves listen, and Infant Krishna dancing while holding a snake by the tail. There is also a Mandapa that is a wedding hall of the Gods and the Goddesses for the perennial betrothal.

Tungabhadra River

- Tungabhadra river originates from the Western Ghats, and flows towards the south-east and joins the Krishna River in Andhra Pradesh. Hampi has many historical sites located on the banks of the Tungabhadra. The Virupaksha temple is closer to the temple. There are lots of events witnessed by the holy waters of the river including the coracle ride of idols of Gods and Goddesses.
- Hampi has lots of historical places that share the saga of the glorious reign of the Vijayanagara empire. Apart from its historical sites it also caters to modern tourism with places like the hippie's island, a bear sanctuary, the Archaeological Museum, and more. Hills and mounts are perhaps the best destinations to view the city and its vast spread of grand ruins. Hampi is also just 13 km away from Hospet which is the district headquarters of Vijayanagara district.
- To conclude, though in ruins, Hampi is among the 10 most spectacular tourist destinations in southern India. Its monuments are also going to be upgraded via the 100 Adarsh Monuments of ASI scheme to make it a more remembered place that testifies to the grandeur of Indian history.

The third-gen web is about public good

- **Web3** is often described as a **series of open-source and interconnected decentralized applications** powered by blockchain computing architecture.
- There is a perception that Web3 is biased toward the **gaming and cryptocurrency industry**.
- However, a 2021 report by the U.S.- India Strategic Partnership Forum states that the third-gen web will be crucial for India to realise its **$1.1 trillion digital asset opportunity by 2032.**

Web 3.0

- It is the **upcoming third generation** of the internet where websites and apps will be able to process information in a smart human-like way through technologies.
- Aim- to create more intelligent, connected and open websites.
- It has potential to **transform internet experience** by directly engaging with users, devices, and systems in smart homes, smart vehicles and workplaces.
- It was originally called the **Semantic Web** by World Wide Web inventor Tim Berners-Lee.
- The three crucial foundations of Web 3.0 are **Artificial intelligence** (AI), **IoT** (Internet of things), and **blockchain technology**.
- It is an upgrade to its precursors: **web 1.0 and 2.0.**

Advantages:

- It will make the web **more intelligent, secure and transparent**, resulting in more efficient browsing and effective machine-human interaction.
- The users will gain **complete ownership** and privacy of their information.
- The possibility of **account suspension** and denial of distributed services will be reduced.
- It will help eliminate **the dependency of users** on the organization that develops the platform.
- The **data will be accessible** from anywhere and from any device.
- Users can create their **own addresses** or interact with the network and they do not need to create individual personal profiles for different platforms.
- It is beneficial for **problem-solving** and intensive knowledge creation tasks.
- It utilizes **artificial intelligence** to filter out valuable information from a huge quantity of data.

1. Data Storage System:

- Web3 advocates **decentralized data storage systems** to unshackle the oligopolistic grip of technology behemoths over data.
- It has file-sharing systems such as the **Inter-Planetary File System** which are cryptographically **protected, more secure, and capable of functioning off the Internet and blockchains.**
    - It seeks to overcome the **data storage barriers of blockchains**

2. Crypto Economies:

- Web3's boldest element is the strategic role it assigns to **non-custodial wallets** that function as **digital passports** for users to **access blockchain-enabled transaction platforms.**
- These wallets aid the **creation of an 'ownership economy,'** whereby creators themselves control their content.

3. Decentralised autonomous organisations (DAOs):

- Web3 will replace micro-economic organisations with **decentralised autonomous organisations (DAOs).**
- It seeks to create a **distributed economic system**, where native **digital tokens and cryptocurrencies** would form the **media of monetary circulation.**
- Web3 platforms would serve to raise the **efficiency of peer-to-peer transactions.**
- Web3 systems also seek to **generate fungible digital assets** to reward local providers of **data storage capacity for their services.**
- **Asset tokens** that are native to the **new-gen web** have the potential to function as capital mobilization tools for Web3 projects.
- **Stakeholders of DAOs** can utilize tokens to **exercise their voting rights.**
- **The NFTs of Web3** are more dynamic as they seek to incorporate improvements brought in by **incremental innovations.**

<u>Disadvantages</u>

- **Personal data management** and **reputation management** issues will become more critical than ever.
- The devices' features and characteristics will **need to be extended** to make the technology reachable to more people globally.

    - Due to this only a limited number of people will be able to access web 3.0.
- The old technology is **incapable** of updating its features to match the new ones.
- **Much work is needed** on technology advancement, privacy laws, and data use to satisfy the user's needs so it is not ready for widespread adoption.
- It's difficult for newbies to **grasp**.
- It is necessary to have **privacy policies**.
- Access to one's personal and political data is made easier and this **hampers the privacy**.

How India can benefit from Web3?

1. Handcraft industry:

- It is renowned for **design-related innovations**, many of which are **not protected by Intellectual Property rights.**
- **Digital tokens** minted by Web 3 platforms would enable our handcraft enterprises to **secure their innovations.**
- **Web 3-based instruction tools** enable the rapid **dissemination of grassroots innovations** from master artisans to fellow members.
    - It would improve the **economic fortunes of craftsmen and artisan communities** in north-east, western and peninsular India.

2. Rural Development:

- India's large-scale deployment of the **Internet of Things (IoT) in rural development projects** offers major possibilities for **deploying Web 3 in rural areas.**
- The **Atal Bhujal Yojana** is an important source of **data on groundwater utilisation practices and aquifer contamination**, although this resource remains largely untapped for want of **data analytics capabilities at the community level.**
    - This limitation can be overcome by **Web3's (decentralised) analytics systems.**
- **Web 3.0** can also yield insights from **large volumes of community data** such as the **Jal Jeevan Mission.**
- **Web 3.0's** advantage of facilitating **'analytics at the edge'** provides scope for **mapping the water use habits of communities.**
- **Early Warning System for floods** will improve with Web 3.0 due to data analytics facilities being obtained at the sub-basin level.

- **Constrain:** the inability of data analytics capabilities to catch up with the pace of data generation in rural areas.
- **Solution:** By providing incentives for decentralised analytics and tokenizing analytics and web design talent, it is possible to draw upon the talent pool for the benefit of rural communities.

India's **National Blockchain Strategy 2021** proposes to explore tokenisation and apply blockchains solutions for development programmes. It will be a natural progression for India to **craft a third-gen web strategy** that optimises public interest. Such a strategy should seek to **combine** the **features of Web3 and Web 3.0.**

The challenge of reviving a sense of fraternity

- Fraternity means assuring the **dignity of the individual** and the **unity and integrity of the Nation.**
- Indian constitution has borrowed it from **French Revolution.**
- The **principle and emotion of Fraternity** can be seen in the preamble of the constitution as well as in **Article 51A(e).**
    - However, It is difficult to achieve fraternity in India due to its diversity.

Indian Constitution and Fraternity

- Idea of the Constitution of India was initially proposed in December 1934 by M.N. Roy.
    - He is a pioneer of the **Communist movement in India** and an **advocate of radical democracy.**
- In **1935**, it became an official demand of the **Indian National Congress (INC).**
    - It was officially adopted in the **Lucknow session in April 1936.**
        - Session was presided by **Jawaharlal Nehru.**
- **Jawaharlal Nehru** also drafted the **Objectives Resolution.**
- **Drafting Committee** was presided over by **B.R. Ambedkar.**

B.R Ambedkar on Fraternity:

- **Drafting Committee** was presided over by **B.R. Ambedkar.**
- **Fraternity** means a sense of common brotherhood among all Indians if Indians being one people.
- It is the principle that gives **unity and solidarity to social life.**
- Without fraternity, **equality and liberty** will be no deeper than coats of paint.
- The idea of fraternity is linked to that of **social solidarity**, which is **impossible to accomplish without public empathy.**
- Along with **liberty, equality, and justice, the fraternity** was added to the principles in the Preamble.
- **French Revolution** gave the message of the **1792 Edict of Fraternity** ('All governments are our enemies, all people our friends').

Acharya Kripalani:

- He pointed out that the content of the Preamble also had a **moral, spiritual and mystical content.**

- If India wants to use **democracy** as only a **legal, constitutional and formal device**, the whole country should understand the **moral, spiritual the mystic implication of the word democracy.**

Fraternity as Fundamental Duty

Article 51A of the Constitution:

- It was added by the **42nd Amendment in 1976.**
- It further amended by **86th Amendment in 2010.**

Article 51A(e):

- It referred to the duty of every citizen 'to promote harmony and the **spirit of common brotherhood** amongst all the people of India'.

Sir Ernest Barker:

- Fraternity is used to denote **both emotion and principle.**
  - **But** it is generally used to denote **emotion rather than principle**.
- The emotion of **loyalty to the state** and the emotion of **nationalism for national society** are, or should be, **controlled emotions.**

Conditions and Challenges for Successful Democracy

Conditions Precedent for the Successful Working of Democracy:

- Democracy is **prone to change form and purpose** and its purpose in our times 'is not so much to put a **curb on an autocratic king** as to bring about **welfare of the people'.**
- It is a method of government by the **discussion** that brings about **revolutionary changes** in the **economic and social life of people** without bloodshed.
- There **must not** be glaring **inequalities in society,** there must also be an **opposition**, equality in law as well as equal protection of law, and administration and observance of constitutional morality.
- There must be **no tyranny** of the **majority over the minority.**
- A **functioning moral** order in society and a public conscience are essential.

Challenges to Democracy:

- **Inequalities continue to persist** and so do those emanate from the caste system.
- **Democratic opposition** has progressively **declined** in substance.
- **Equality in law** does not necessarily mean **equal protection of the law**.
- **Little regard** is paid to **constitutional morality.**
- Each of **Gandhiji's Seven Social Sins** seem to hold good in the functioning of the polity.

Looking ahead:

- India's existential reality is one of **immense diversity.**
- There is also an unfortunate **legacy of violence at birth** that persists and takes different forms.
- This necessitates the functioning in practice of these principles in all their diversity and in **individual and collective terms.**
- Without **imputing infallibility**, a sense of fraternity as an essential virtue is thus **unavoidable**.
- This cannot be merely in formal terms and has to be **imbibed individually and collectively.**

There is a need to excavate the moral values embedded in the Constitution. It needs to be at both individual and collective levels. A failure to do so would expose to the threat of fragmentation of democracy.

Gender equality gap in India

- **Increasing the Gender equality gap** has been a challenge for India in recent years.
- **Covid-19** and the economic slowdown due to the **Russia- Ukraine war** has widened the gap between male and female.
- Yet, India's G20 presidency is an opportunity to lead the gender equal initiative, especially in South Asia.

Gender Equality in India

South Asia:

- South Asia is home to **860 million** women, **three-fourths** of whom live in **India**.
- South Asia's gender gap is at **66%,** the **second largest** out of eight regions monitored by the **World Economic Forum (WEF)**.
    - It will take **71 years to close the gender gap.**
- The average wage **salaries for women** remain at around **70% of their male colleagues.**

India:

- India ranked **135 out of 146 countries** in the **Global Gender Gap Index for 2022** of WEF.
- **Female Labour Force Participation Rate**, according to the **Economic Survey 2022-23**, is pegged at **25.1% in 2020-21.**

Economic inequality in India:

- India is the only country where the **economic gender gap is wider than its political gender gap.**
- **Average wage salaries for women** remain at around **70% of their male colleagues.**
- The expansion of new work opportunities for women in some sectors coexists with continued weak bargaining power in the labour market and an increase in educated aspirational career women entering the workplace, with many still in the **low-paid informal sector.**

Female-Headed Households:

- Proportion of female-headed households is **increasing,** but their economic status is **worrying.**
- According to **Socio Economic and Caste Census** (SECC), most of the **12.8% of the rural women-headed households** have a monthly income of **less than ₹ 5,000.**
- **23 million** households in rural India are headed by women.
  - Yet they remain mostly **landless or deprived of property rights**.
- **In 2016** despite women-headed households in India being around **14.6%,** women faced **high levels of precarity.**

Political inequality in India:

- In the recent Lok Sabha elections of 2019, women's voter turnout **exceeded that of men.**
- Yet, their representation in Parliament still remains a mere **14.44% in the Lok Sabha and 10.5% in both Houses of Parliament.**

Social Inequality in India:

- India's sex ratio is **898 girls per 1,000 boys.**
- India still has among the **highest numbers of maternal and infant mortalities** in the world.
- **Structural and physical violence** against women increased in India.

Challenges:

- The **growing numbers of women farmers** in the **non-cash crop sectors** raise issues around the feminization of agriculture.
- The **lack of entitlements to land** and **asset ownership**.
- **Patriarchal structures and social taboos** regarding marriage and inheritance.
- Increase in **structural and physical violence** against women.

Government's efforts

- India has enacted **progressive legislation** to provide equal **opportunities to women and secure their safety and dignity.**
- These include:

- Protection of Women from Domestic Violence Act, 2005,
- Sexual Harassment of Women at the Workplace (Prevention Prohibition and Redressal) Act 2013,
- Prohibition of Child Marriage Act, 2006,
- Equal Remuneration Act, 1976, and
- 2015 amendments to laws on the rights of Hindu women to property and inheritance.

Opportunities:

- India's presidency of the G20 is an opportunity to amplify the **voice of the Global South** and be the bridge between the **developed and developing economies.**
- The vision of the **global compact in Agenda 2030**, reflected in the SDGs, encapsulates the **"5 Ps"**: **people, planet, prosperity, peace, and partnerships.**
- It demonstrates a call to co-create a more just world order that leaves no one behind and underscores the shared (although differentiated) responsibilities of all nations.
- India is well positioned to lead the initiative, **especially in South Asia**, to provide the policy lexicon for engendering development initiatives, be that in regional trade, development assistance, safety nets and cross-border collaborations in health, education, and welfare.

Goal 5 of the **United Nations sustainable development goals** talks about Gender equality. The focus should be on the targets of Goal 5. India's women have excelled in **myriad fields of endeavour**. They deserve more **expansive vistas of agency and choice**.