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# Current Affairs (CONSOLIDATION)

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**(PART – I)**

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# Polity and Governance

## Highlights

- *Regulating Misleading Advertisements in India*
- *Question on Existence of Article 31C*
- *India as a Net Exporter of Medical Consumables*
- *Draft Explosives Bill 2024*
- *Increased in Public Health Expenditure*
- *Corporal Punishment*
- *Annual Review of State Laws 2023*
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- *High Court Upholds Debtors' Right to Travel*

## Regulating Misleading Advertisements in India

### Why in News?

In a move to safeguard consumers from **misleading advertisements**, the **Supreme Court of India** has issued directives for **advertisers to submit self-declarations** before promoting products in the media.

- In further development, the Union government has withdrawn an AYUSH Ministry letter, which "omitted" **Rule 170 of the Drugs and Cosmetics Rules, 1945, with immediate effect.**

#### Note:

- Rule 170 **prohibits advertisements of Ayurvedic, Siddha, or Unani drugs** without licensing authorities' approval.

### What are the Key Directives from the Supreme Court?

- **Submission of Self-Declarations:**
  - Advertisers must submit **self-declarations** before promoting products in the media.
  - Advertisers are **now obligated to declare that their advertisements do not deceive or make untrue statements** about their products in order to prevent misleading consumers.
- **Online Portal for Advertisers:**
  - Advertisers intending to run TV ads must upload declarations on the '**Broadcast Seva**' portal, which serves as a one-stop facility for stakeholders to

request permissions, registrations, and licenses for broadcast-related activities from the **Ministry of Information and Broadcasting.**

- A similar portal for print advertisers is to be established.

### Responsibility of Endorsers:

- Social media influencers, celebrities, and public figures endorsing products **must act responsibly.**
- Endorsers should possess adequate knowledge about the products they promote to avoid deceptive advertising.

### What Recent Cases of Misleading Advertisements have Emerged?

- The **Advertisement Monitoring Committee at Food Safety and Standards Authority of India (FSSAI)** identified 32 cases of misleading claims by **food business operators (FBOs)** bringing the total count of such violations to 170 in the last six months.
  - **Variety of Offenders:** Violators span diverse product categories, including health supplements, organic products, and staples.
- The **Supreme Court recently rebuked Patanjali Ayurved** for disseminating misleading advertisements, leading to a ban on its marketing activities.
  - The **Indian Medical Association** accused Patanjali of denigrating **allopathic medicine** and **spreading false information** about vaccines during **Covid-19.**
  - The allegations led to legal arguments citing violations of the **Drugs & Other Magical Remedies Act, 1954,** and the **Consumer Protection Act, 2019.**

Note:

### ➤ Ensuring Consumer Protection:

- Establish a transparent process for consumers to report misleading advertisements and ensure they receive updates on complaint status and outcomes.

### **How Do Misleading Advertisements Violate Ethical Principles?**

- **Violation of Truthfulness:** Honesty and truthfulness are essential ethical principles that should guide all business practices, including advertising.
  - These advertisements manipulate consumer perceptions and **exploit vulnerabilities for commercial gain; they** persuade individuals to make purchasing decisions based on false premises.
- **Fairness and Justice:** Misleading advertisements create an uneven playing field, giving an **unfair advantage to companies that engage in deceptive practices** over those that prioritize ethical advertising.
  - This violates the principle of fairness and justice in the marketplace, as it disadvantages honest competitors and undermines consumer trust.
  - **Example:** Companies making false **environmental claims (greenwashing)** to capitalize on the growing demand for sustainable products, while their competitors truthfully disclose their environmental impact.
- **Consumer Harm:** Misleading advertisements can lead to financial losses for consumers who purchase products or **services based on false claims, resulting in dissatisfaction.**
  - It can also harm consumers' physical or mental well-being if the advertised products or services are potentially harmful or ineffective.
- **Erosion of Trust:** Repeated exposure to misleading advertisements **erodes trust in products, brands, and advertising**, undermining the ethical principle of integrity in business and society.
  - When consumers feel deceived, they **lose confidence in the market's integrity, as words and actions become inconsistent.**

### **How Misleading Advertisements are Regulated in India?**

- Definition of Misleading Advertisement:
  - A misleading advertisement is defined under **Section 2 (28) of the Consumer Protection Act, 2019**, as any advertisement that:

- Provides a false description of a product or service;
- Offers false guarantees that mislead consumers;
- constitutes an unfair trade practice through express representation;
- Deliberately omits essential information about the product.

### ➤ Central Consumer Protection Authority:

- The **Central Consumer Protection Authority (CCPA)** operates under the **Department of Consumer Affairs.**
- Established under section 10 of the **Consumer Protection Act, 2019**, it regulates matters related to consumer rights violations and unfair trade practices.
- The act empowers the CCPA to prevent false or misleading advertisements and ensure consumer rights are protected.
- Enforcement of Guidelines:
  - The CCPA enforces the **'Guidelines for Prevention of Misleading Advertisements and Endorsements for Misleading Advertisements, 2022'**, which were issued per the powers conferred by the Consumer Protection Act, 2019.
  - **Objective of the Guidelines:**
    - The guidelines seek to ensure that **consumers are not being fooled by unsubstantiated claims, exaggerated promises, misinformation and false claims.**
    - Such advertisements violate various rights of consumers such as **the right to be informed, the right to choose and the right to be safeguarded against potentially unsafe products and services.**
  - **Provisions of the Guidelines:**
    - The guidelines define **"bait advertising", "surrogate advertisement" and "free claim advertisements"**.
    - They also lay down provisions to **protect children from exaggerated or unsubstantiated claims** in advertisements.
      - ◆ Advertisements targeting children are prohibited from featuring personalities from sports, music, or cinema for products that require a health warning or cannot be purchased by children.

Note:



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- Disclaimers in advertisements should not hide material information or attempt to correct misleading claims.
- The guidelines also **outline the duties of manufacturers, service providers, advertisers, and advertising agencies** to bring more transparency and clarity to advertisements.
  - ◆ This aims to help consumers make informed decisions based on facts.
- **Penalties for Violations:**
  - CCPA can **impose penalties of up to 10 lakh rupees** on manufacturers, advertisers, and endorsers for misleading advertisements.
    - ◆ For subsequent violations, the penalty can be up to 50 lakh rupees.
  - The Authority can also **prohibit the endorser of a misleading advertisement from making any endorsements** for up to 1 year, and for subsequent violations, the prohibition can extend up to 3 years.
- **Food Safety and Standards Authority of India (FSSAI):**
  - Deceptive advertising falls under **Section-53 of the Food Safety and Standards Act, 2006**, making it punishable. FSSAI mandates advertisements to be truthful, unambiguous, and substantiated scientifically.
  - FSSAI uses the **Food Safety and Standards (Advertisements & Claims) Regulations, 2018** which specifically deal with **food (and related products)** while CCPA's regulations cover goods, products and services.
- **Legislations Governing Advertising:**
  - **ASCI (Advertisement Standard Council of India):**
    - It is a **nonstatutory tribunal** established as a self-regulated mechanism to introduce advertising ethics in India.
    - It judges advertisements based on its **Code of Advertising Practice, also known as the ASCI code** which applies to advertisements seen in India, even if they are from abroad and directed at Indian consumers.
  - **Consumer Protection Act, 1986:**
    - Grants consumers the right to be informed about goods and services' quality, quantity, and price.
      - Section 2(r) covers false advertisements under the definition of unfair trade practices.
    - Provides redressal against misleading advertisements.
  - **Cable Television Network Act of 1995 and the Cable Television Amendment Act of 2006:**
    - Prohibits transmission of advertisements that do not conform to the prescribed advertisement code.
    - Ensures advertisements do not offend morality, decency, or religious sensitivities.
  - **Restrictions on Tobacco Advertisement:**
    - Prohibits direct and indirect advertisement of **tobacco products** in all forms of media.
    - Enforced under the Cigarettes and Other Tobacco Products Act, 2003.
  - **Drug and Magic Remedies Act, 1954 & Drugs and Cosmetics Act, 1940:**
    - It regulates drug advertisements. Prohibits the use of test reports for advertising drugs.
      - Penalties for violations include fines and imprisonment.
  - **Regulation of Prenatal Diagnostic Techniques:**
    - Prohibits advertisement related to prenatal sex determination under the **Prenatal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994**.
    - Advertising harmful publications under the Young Persons (Harmful Publications) Act, 1956, is punishable.
  - **Criminality of Advertisements under the Indian Penal Code (IPC):**
    - **IPC** prohibits obscene, defamatory, or inciteful advertisements.
    - Offenses related to inciting violence, terrorism, or crime are illegal and punishable under IPC provisions.

#### Initiatives for Consumer Protection

- **Consumer Welfare Fund**
- **Integrated Grievance Address Mechanism (INGRAM) Portal**
- **Bureau of Indian Standards (BIS)**
- **Jago Grahak Jago Campaign**
- **National Consumer Day** (24<sup>th</sup> December)
- **Central Consumer Protection Council.**
- National and State Consumer Helplines.

Note:

## Question on Existence of Article 31C

### Why in News?

Recently, a nine-judge Bench of the **Supreme Court** has chosen to address the question regarding the **existence of Article 31C**, while hearing a case to decide whether the government can acquire and redistribute private property.

### What is Article 31C?

#### ➤ About:

- Article 31C **protects laws** enacted to **ensure social goals**:
  - The “material resources of the community” are distributed to serve the common good (**Article 39B**)
  - The wealth and the means of production are not “concentrated” to the “common detriment” (**Article 39C**).

#### ➤ Introduction of Article 31C:

- It was added to the Indian Constitution in 1971 through the **25<sup>th</sup> Constitutional Amendment**, primarily in response to the Supreme Court’s decision in the **R.C. Cooper v. Union of India (Bank Nationalisation Case, 1969)**.
  - In this case, the court **invalidated the Banking Companies (Acquisition and Transfer of Undertakings) Act, 1969** due to issues with the compensation offered.

#### ➤ Purpose of Article 31C:

- Article 31C **protects directive principles (Articles 39B and 39C)** from being challenged by the right to equality (Article 14) or rights under Article 19 (freedom of speech, right to assemble peacefully, etc).

### What are the Legal and Constitutional Challenges Associated with Article 31C?

#### ➤ **Kesavananda Bharati Case (1973):**

- The Supreme Court established the **“basic structure doctrine,”** asserting that certain fundamental elements of the Constitution are immune to modification by Parliament.

- The **court invalidated a portion of Article 31C** stating that **laws claiming to be based on a specific government policy cannot be challenged in court** for failing to achieve that policy’s goals.
- This **opened the door for the court to examine laws** that had been **enacted to further Articles 39(b) and 39(c)**, to determine whether the purpose of those laws actually lined up with the principles espoused in these provisions.
- **Constitution (Forty-second) Amendment Act, (CAA) 1976 and Minerva Mills Case (1980) :**
  - **CAA, 1976 extended the protective ambit of Article 31C** to encompass all directive principles of state policy outlined in Articles 36-51 of the Constitution.
    - **Clause (4) of the CAA, 1976**, deprived the courts of their power to call in question any amendment of the Constitution.
    - Also, **Clause (5) of the CAA, 1976** tried to **remove all limitations** on the amending power.
    - It aimed to **prioritise the implementation of directive principles over certain fundamental rights**, particularly in the pursuit of socio-economic reforms..
  - In a subsequent legal ruling of **Minerva Mills Case (1980)**, the Supreme Court **struck down clauses 4 and 5** of the Constitution (Forty-second) Amendment Act, 1976.
  - This **judicial pronouncement** underscored the **limitations on Parliament’s authority to amend the Constitution extensively**.
  - Consequently, questions arose regarding the continued validity and applicability of Article 31C following the **Minerva Mills case**.

### What are the Arguments Regarding Article 31C?

#### ➤ **Argument Against Automatic Revival:**

- The original Article 31C was completely **‘substituted’ by an expanded version** in the **42<sup>nd</sup> Amendment**. Therefore, when the new version was struck down in the Minerva Mills case, the original could not automatically revive.
- This argument is based on the legal principle that once replaced, the **original provision ceases to exist unless explicitly reinstated**.

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➤ **Argument for Doctrine of Revival:**

- The original **Article 31C** should automatically be revived based on the doctrine of revival.
- This view is supported by precedents like the ruling on the **National Judicial Appointments Commission**, where **struck-down amendments led to the revival of previous provisions**, suggesting that the pre-amended Article 31C should resurface if the subsequent amendments are invalidated.

**Conflicts Between Fundamental Rights and DPSP**➤ **Champakam Dorairajan v the State of Madras, 1951:**

- In this case, the **Supreme Court** ruled that in case of any **conflict between the Fundamental Rights and the Directive Principles**, the **former would prevail**.
- It declared that the **Directive Principles** have to conform to and **run as subsidiary** to the Fundamental Rights.
- It also held that the **Fundamental Rights** could be amended by the Parliament by enacting constitutional amendment acts.

➤ **Golaknath v the State of Punjab, 1967:**

- In this case, the **Supreme Court** declared that Fundamental Rights could not be amended by the Parliament even for implementation of Directive Principles.
- It was **contradictory** to its **own judgement** in the **'Shankari Prasad case'**.

➤ **Kesavananda Bharati v the State of Kerala, 1973:**

- In this case, the **Supreme Court overruled its judgement** in the **Golak Nath case**. It **upheld the validity of the 24<sup>th</sup> Amendment Act** and stated that Parliament is empowered to abridge or take away any of the **Fundamental Rights**.
  - At the same time, it laid down a new doctrine of the **'basic structure'** (or 'basic features') of the Constitution.
- It ruled that the constituent power of **Parliament under Article 368** does not enable it to alter the 'basic structure' of the Constitution.

➤ **Minerva Mills vs. Union of India, 1980:**

- In this case, the Supreme Court held that 'the Indian Constitution is founded on the **bedrock of the balance** between the **Fundamental Rights** and the **Directive Principles**'.

- The Parliament can amend the Fundamental Rights for implementing the Directive Principles, so long as the **amendment does not damage or destroy the basic structure of the Constitution**.

**Article 31, 31A, 31B and 31C**➤ **About:**

- Originally, the **right to property** was one of the seven fundamental rights and provided that no person shall be deprived of his property except by authority of law.
- However, being one the most controversial rights, the **44<sup>th</sup> Amendment Act of 1978** abolished the right to property as a Fundamental Right and made it a legal right (constitutional right) **under Article 300A in Part XII of the Constitution**.
- Article 31 led to a number of **Constitutional amendments**; **1<sup>st</sup>, 4<sup>th</sup>, 7<sup>th</sup>, 25<sup>th</sup>, 39<sup>th</sup>, 40<sup>th</sup> and 42<sup>nd</sup> Amendments**.
  - The **First Amendment Act, 1951** inserted Articles **31A and 31B** to the Constitution.
  - **Article 31C was inserted in the Constitution by 25<sup>th</sup> Amendment Act, 1971**.

➤ **Article 31A:**

- It saves **five categories of laws from being challenged** and invalidated on the ground of contravention of the fundamental rights conferred by **Article 14** and **Article 19**.
- It also provides the **guaranteed right to compensation** in case of acquisition or requisition of the private property by the state.
- **It includes:**
  - Acquisition of estates and related rights by the State;
  - Taking over the management of properties by the State;
  - Amalgamation of corporations;
  - Extinguishment or modification of rights of directors or shareholders of corporations
  - Extinguishment or modification of mining leases.

➤ **Article 31B:**

- It **protects the acts and regulations included in the Ninth Schedule** from being challenged and invalidated on the ground of contravention of any of the fundamental rights.

Note:

- The scope of **Article 31B** is wider than Article 31A as it immunises any law included in the Ninth Schedule from the Fundamental Rights (**unlike article 31A that protects only five categories**).
- However, the Supreme Court in its judgement in the ***I.R. Coelho case, 2007*** ruled that even laws under the Ninth Schedule would be open to scrutiny if they violated Fundamental Rights or the **basic structure of the Constitution**.
- The Supreme Court first propounded the doctrine of 'basic structure' of the constitution in the ***Kesavananda Bharati on April 24, 1973***.

## India as a Net Exporter of Medical Consumables

### Why in News?

India has achieved a **significant milestone** in the medical goods business, becoming a **net exporter of medical consumables and disposables** for the **first time** in the **fiscal year 2022-23**.

- This marks a **reversal of an old trend** where imports of such products outweighed exports.

### What is the Status of India's Pharmaceutical Industry?

#### ➤ About:

- India has historically been **dependent on imports** for medical consumables and disposables. India has now reversed this trend, indicating a shift towards self-sufficiency in this sector.
- India is the **largest manufacturer of generic medicines** globally. Its pharmaceutical industry plays a crucial role in global healthcare, providing **affordable generic medicines**.
- It is currently valued at **USD 50 billion** as a major pharmaceutical exporter, with over 200+ countries served by Indian pharma exports.
- It is expected to reach USD 65 Billion by 2024 and to USD 130 Billion by 2030.
- Export and Import Statistics:
  - **Exports:** India exported medical consumables and disposables worth USD 1.6 billion, showing a 16% surge over the previous fiscal year (2021-22).

- **Imports:** Imports amounted to approximately USD 1.1 billion, indicating a 33% decline.

#### ➤ Major Challenges with India's Pharma Sector:

- **Lagging Research and Development (R&D):** India's R&D spending in pharma is lower compared to developed nations. This hinders the creation of new drugs.
- **Limited Innovation Ecosystem:** Collaboration between academia, research institutions, and pharmaceutical companies is weak, **slowing down development of high quality drugs and medical devices**.
- **Price Controls and Profit Margins:** Government price controls on some drugs can limit profits, making it less attractive for companies to invest heavily in R&D for new drugs.
- **Complex Regulatory Framework:** Navigating the approval process for new drugs can be lengthy and complex which **leads to red tapism**.
- **Skilled Workforce Shortage:** There's a lack of highly qualified scientists and researchers in the pharma sector, which leads to **overburdened staff affecting efficiency**.

#### Government Initiatives in the Pharma Sector

- **Production Linked Incentive (PLI) Scheme for Pharmaceuticals**
- **Promotion of Bulk Drug Parks Scheme**
- **Strengthening Pharmaceuticals Industry Scheme**
- **National Policy on Research and Development and Innovation in Pharma-MedTech Sector in India**
- **Scheme for Promotion of Research and Innovation in Pharma MedTech Sector (PRIP)**
- **Pharmaceuticals Technology Upgradation Assistance (PTUAS) Scheme**
- **Revised Good Manufacturing Practices (GMP)**

- **Intellectual Property (IP) Concerns:** Uncertainties around IP protection, due to provisions like **compulsory licensing (Indian Patents Act 1970)**, can discourage large pharma investment in India.
- **Import Dependency:** Despite progress, India remains largely dependent on imports for medical devices, with around 70% sourced from other nations.
  - India's heavy dependence on **Active Pharmaceutical Ingredients (APIs) imports**, particularly from countries like China.

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- **Substandard Drugs:** One significant issue in the Indian pharmaceutical sector is the occurrence of deaths linked to the consumption of substandard or counterfeit drugs.
  - Indian-origin medicines leads to **multiple deaths of children in Africa** and Central Asia.

### What Further Steps Can be

#### Taken to Reform India's Pharma Sector?

- **Legislative Changes and Centralised Database:**
  - **Drugs and Cosmetics Act (1940)** needs to be amended and the establishment of a **centralised drugs database** can enhance surveillance and ensure effective regulation across all manufacturers.
  - Also, implementing common quality standards across all states is necessary to ensure consistent product quality.
- **Encouraging Certification:**
  - Encouraging more pharmaceutical manufacturing units to obtain **World Health Organization (WHO)** Good Manufacturing Practice certification can elevate industry-wide quality standards.
- **Transparency, Credibility, and Accountability:**
  - The regulator and the industry must collaborate to enhance India's drug **regulatory regime**, making it transparent, credible, and aligned with global standards.
- **Focus on Sustainable Manufacturing Practices:**
  - Emphasising sustainable manufacturing practices, including **green chemistry**, **waste reduction**, and **energy efficiency**, can enhance the sector's environmental sustainability while reducing costs.
- **Moving Beyond Generics:** India excels in producing affordable generic medicines but faces **challenges in developing novel drugs**.
  - Government support through initiatives like PLI and facilitating clinical trial funding can accelerate research and development efforts.
- **Boosting R&D and Innovation:** India's lower expenditure on research and development compared to global leaders can be improved.
  - Focus should be to foster public-private partnerships and provide tax incentives for innovation.

## Draft Explosives Bill 2024

### Why in News?

- The Government of India aims to replace the **Explosives Act 1884** with the new Explosives Bill 2024.
- The **Department for Promotion of Industry and Internal Trade (DPIIT)** has proposed the draft bill.
  - The key objectives are to raise fines for regulatory violations and enhance the efficiency of licensing procedures.

### What are the Key Provisions of the Proposed Explosives Bill 2024?

- **Designation of Licensing Authority:** Under the proposed bill, the Union government will designate the authority responsible for **granting, suspending, or revoking licences**.
  - Currently, the **Petroleum and Explosives Safety Organisation (PESO)** operates under the DPIIT and serves as the regulatory body.
- **Specified Quantity in Licences:** Licences will specify the quantity of explosives that a licensee can manufacture, possess, sell, transport, import, or export for a specified period.

#### Petroleum and Explosives Safety Organization (PESO)

- The **PESO**, formerly known as the **Department of Explosives**, since its inception in 1898, has been serving the nation as a nodal agency for regulating the safety of hazardous substances such as explosives, compressed gas and petroleum.
- PESO's major work is to administer the responsibilities delegated under the **Explosives Act 1884** and **Petroleum Act 1934** and the Rules made thereunder related to the manufacture, import, export, transport, possession, sale and use of Explosives, Petroleum products and Compressed gases.
- It operates under the **DPIIT, Ministry of Commerce and Industry**.
- The organisation has provided training to law enforcement, security, and intelligence personnel in handling explosives safely, filling a critical gap in the country's training resources.
- **Penalties for Violations:** The proposed bill outlines stricter penalties for violations. Offenders may face

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**imprisonment for up to three years, a fine of Rs 1,00,000, or both** for manufacturing, importing or exporting explosives in violation of regulations.

- Possession, use, sale, or transportation of explosives in violation may lead to imprisonment for up to two years, a fine of Rs 50,000, or both, whereas the **current fine stands at Rs 3,000.**
- **Streamlined Licensing Procedures:** Efforts are underway to enhance the efficiency of licensing procedures, making it easier for businesses to obtain necessary permits while maintaining stringent safety standards.

### ***What is the Explosives Act of 1884?***

- **Historical Context:** Enacted during British colonial rule, the Explosives Act of 1884 aimed to regulate various aspects of explosives.
- **Safety Regulations:** The Act applies to various types of explosives, including **gunpowder, dynamite, nitroglycerin, and other similar substances.**
  - The Act mandated safety standards and procedures to mitigate risks associated with explosives, encompassing handling, transportation, and storage guidelines to prevent accidents.
  - The Act empowers the Central Government to make rules regulating the **manufacture, possession, use, sale, transport, import, and export of explosives.**
    - These rules govern the issuance of licences, fees, conditions, and exemptions.
- **Prohibition of Dangerous Explosives:**
  - The Central Government can prohibit the manufacture, possession, or importation of especially dangerous explosives in the interest of public safety.
- **Exemption:**
  - The Act does not affect the provisions of the **Arms Act, 1959**, and provisions are made for licences issued under the Explosives Act to have the effect of licences under the Arms Act.
    - The Arms Act of 1959 regulates the possession, acquisition, and carrying of ammunition and firearms. It also aims to curb illegal weapons and violence. **The act replaced the Indian Arms Act of 1878.**
- **Evolution and Amendments:** Over time, the Explosives Act underwent several amendments to adapt to technological advancements and emerging challenges, primarily focusing on enhancing safety standards and regulatory mechanisms.

### **Note:**

- The Kodavas, a martial race in Kodagu (Coorg) district, are **one of the few tribes in India allowed to possess a gun without a licence.**
  - **The Kodavas, exempted from the Indian Arms Act since 1834,** are known for their valiant support to the **British against Tipu Sultan**, and they are **required to obtain an exemption certificate** from the government.

### **Popular Explosives:**

- **Dynamite:**
  - Dynamite is a type of explosive mainly made **by mixing nitroglycerin** with an absorbent material such as clay.
    - This mixture stabilises the **highly volatile nitroglycerin**, making it safer to handle and transport.
- **Ammonium Nitrate:**
  - Ammonium nitrate is an inorganic compound consisting of ammonium ions ( $\text{NH}_4$ ) and nitrate ions ( $\text{NO}_3$ ).
    - It's commonly used as an agricultural fertiliser, but it can also be used as an **explosive in certain conditions, particularly when combined with a fuel source.**
- **TNT (trinitrotoluene):**
  - **TNT** is an organic compound derived from toluene, an aromatic **hydrocarbon.**
    - TNT is a **yellow, odourless solid** that is relatively stable and insensitive to shock and friction, making it a popular choice as an explosive used in military shells, in industrial uses, and in underwater blasting.
- **TNE (Trinitroethylene):**
  - TNE is an **organic nitrate compound.** It has been used as an explosive but is less common compared to other explosives like **TNT.**
- **RDX (Royal Demolition explosive):**
  - **RDX** is an organic compound, in appearance it is a **white powder** and is very explosive widely used in **military and civilian applications** due to its high explosive power and stability.
    - It is also known as **cyclonite or hexogen.**

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## Increased in Public Health Expenditure

### Why in News?

Recent **National Health Accounts (NHA)** data show that **government health expenditure (GHE)** as a proportion of **GDP** increased by an unprecedented **63% between 2014-15 and 2021-22**.

#### National Health Account (NHA)

- The National Health Account (NHA) estimates is **prepared by National Health Systems Resource Centre (NHSRC)**, designated as National Health Accounts Technical Secretariat (NHATS) in 2014 by the Union Health Ministry.
- The NHA estimates are prepared by using an **accounting framework based on the internationally accepted standard of System of Health Accounts, 2011**, developed by the **World Health Organization (WHO)**.
- These estimates are not only comparable internationally, but also enable the policymakers to monitor the progress in different health financing indicators of the country.

#### National Health Systems Resource Centre

- It was established in 2006-07 under the National Rural Health Mission (NRHM) of Government of India to serve as **an apex body for technical assistance**.
- Its mandate is to assist in policy and strategy development in the provision and mobilization of technical assistance to the states and in capacity building for the Ministry of Health and Family Welfare (MoHFW).

### What are the Findings of National Health Accounts (NHA) Data?

- **Increasing Government Investment in Healthcare:**
  - This is reflected in a significant **increase in government health expenditure (GHE)** as a percentage of GDP between 2014-15 and 2021-22 (**from 1.13% to 1.84%**).
  - **Per capita government spending** on health has also **nearly tripled** in the same period.
  - The **National Health Policy (NHP)** aims to provide everyone with access to affordable, quality

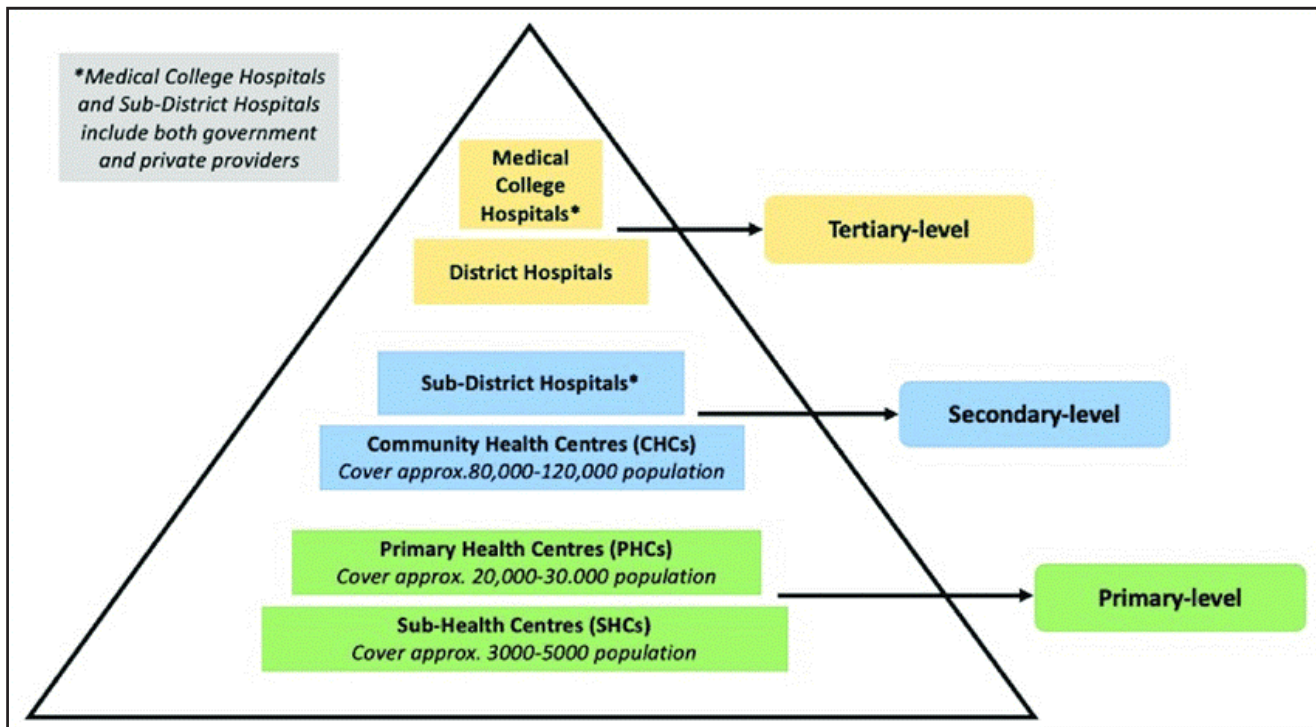
healthcare. It proposes raising **public health expenditure** to **2.5% of the GDP** by 2025.

- **Focus on Government-Funded Insurance Schemes:**
  - Investment in government health insurance schemes like **Ayushman Bharat PMJAY** has risen sharply (4.4 fold increase since 2013-14).
  - The share of social security spending on health has also increased, demonstrating a shift towards a more comprehensive healthcare system.
- **Decreasing Out-of-Pocket Expenditure (OOPE):**
  - A **significant decline in OOPE** (money spent directly by individuals on healthcare) has been observed, dropping from **62.6% to 39.4%** between **2014-15 and 2021-22**.
  - **Factors Contributing to Lower OOPE:**
    - Schemes like **Ayushman Bharat PMJAY** help people access treatment for serious illnesses without financial burden.
    - Increased **utilisation of government facilities, free ambulance services**, and other initiatives contribute to reduced OOPE.
    - Availability of **free medicines and diagnostics at Ayushman Arogya Kendras (AAMs)** further lowers healthcare costs.
- **Focus on Essential Drugs and Price Regulation:**
  - **Jan Aushadhi Kendras** provide **affordable generic medicines** and surgical items, saving citizens an estimated Rs 28,000 crore since 2014.
  - **Price regulation of essential medicines** like stents and cancer drugs has led to further savings (estimated Rs 27,000 crore annually).
- **Strengthening Social Determinants of Health:**
  - Increased government spending not only targets healthcare services but **also includes investments in water supply and sanitation** (through **Jal Jeevan Mission** and **Swachh Bharat Mission**).
- **Investing in Healthcare Infrastructure:**
  - Schemes like **Pradhan Mantri Swasthya Suraksha Yojana** and **Ayushman Bharat Infrastructure Mission** are strengthening medical infrastructure, including AIIMS and ICU facilities.
  - Increased health grants to local bodies are bolstering the **primary healthcare** system.

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**Note:**

- Out-of-Pocket Expenditure (OOPE) is the **money paid directly** by households, at the point of **receiving health care**.
- It excludes the individuals covered under **any public or private insurance** or **social protection scheme**.



### What are the Challenges Associated with Ensuring the Effective Use of Increased Healthcare Funds in India?

- **Equity in Access to Improved Facilities:**
  - Rural populations often face **long travel distances** and **limited access to specialists**, leading to delayed diagnoses and poorer health outcomes.
    - A **2021 NITI Aayog** report highlights the significant gap in the **doctor-patient ratio (1:1100)** with a skewed distribution favouring **urban areas (1:400)**.
    - The National Health Profile 2022 reveals a **rise in non-communicable diseases (NCDs)** like diabetes and heart disease, which are expensive to treat.
- **Misuse and Inefficiencies of Funds:**
  - Bureaucratic inefficiencies, mismanagement, and potential corruption are the main factors for diverting funds from reaching their intended beneficiaries.
    - A **2018 Comptroller and Auditor-General of India (CAG)** report identified instances of

inflated bills and unnecessary procedures in government hospitals.

- **Human Resource Constraints:**
  - **Shortages of doctors, nurses, and other healthcare professionals often lead to overworked staff, compromised quality of care, and longer waiting times.**
    - The **World Health Organization (WHO)** recommends a **doctor-nurse ratio of 4:1**, while India currently has a **ratio closer to 1:1**.
    - Also, currently, a doctor in the government hospital attends to ~11000 patients, which is more than the **WHO recommendation of 1:1000**.

## Corporal Punishment

### Why in News?

Recently, the **Tamil Nadu** School Education Department released guidelines for the **elimination of corporal punishment in schools (GCEP)**.

- The guidelines are focused on **safeguarding the physical and mental well-being of students** and

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extend beyond eliminating corporal punishment to address any form of harassment of students.

### What are the Key Facts About the Guidelines?

- The guidelines **aim to create safe and nurturing environments** for students by addressing physical punishment, mental harassment, and discrimination.
- The GECP includes **safeguarding the mental well-being of students** and conducting awareness camps to familiarise stakeholders with **the guidelines of the National Commission for Protection of Child Rights (NCPCR)**.
- The GECP emphasises the **establishment of monitoring committees** at each school comprising school heads, parents, teachers, and senior students **to oversee the implementation of guidelines** and address any issues.
- The Department also listed **affirmative actions against corporal punishment**, including multidisciplinary intervention, life-skills education, and mechanisms for children's voices.

### What is Corporal Punishment?

- **About:**
  - Corporal is defined by the **UN Committee on the Rights of the Child**, as **"any punishment in which physical force is used** and intended to cause some degree of pain or discomfort, however light."
  - According to the Committee, this mostly involves **hitting (smacking, slapping, spanking)** children with a hand or implements like sticks, belts, etc.
  - According to **the World Health Organization (WHO)**, corporal or physical punishment is **highly prevalent globally, both in homes and schools**.
    - Around **60% of children aged 2–14 years** regularly suffer physical punishment by their parents or other caregivers.
  - There is **no statutory definition of 'corporal punishment'** targeting children in India.
- **Types of corporal punishment:**
  - **Physical punishment**, as defined by the **National Commission for Protection of Child Rights (NCPCR)**, encompasses **any action that inflicts pain, injury, or discomfort upon a child**.
    - This includes coercing children into uncomfortable positions such as **standing on a bench, against a wall in a chair-like stance**, or with a school bag on their head.

- It also involves practices like **holding ears through legs, kneeling, forced ingestion of substances**, and confining children to enclosed spaces within the school premises.
- **Mental harassment** pertains to non-physical mistreatment that **adversely affects a child's academic and psychological well-being**.
  - This form of punishment encompasses behaviours such as sarcasm, name-calling, scolding using **derogatory language, intimidation, and the use of humiliating remarks**.
  - It also includes actions like ridiculing, belittling, or shaming the child, creating an environment of emotional distress and discomfort.
- **Justification of Corporal Punishment:**
  - **In the United States**, school corporal punishment is **currently legal in 22 states**.
  - A few sections of the **Indian Penal Code (IPC), 1860** provide the grounds for justification of Corporal Punishment.
    - **Section 88** provides safeguards for **"Acts not intended to cause death**, done by consent in good faith for a person's benefit,".
    - **Section 89** protects **"Acts done in good faith for the benefit** of a child or insane person, by or with the consent of a guardian.
  - **Juvenile Justice (Care and Protection of Children) Act, 2015:** Under **Section 2(9)**, the term **"best interest of the child"** denotes the foundation for any decision concerning the child, ensuring the fulfilment of their fundamental rights and needs, identity, social well-being, and physical, emotional, and intellectual development.
- **Effects of Corporal Punishment:**
  - **Mental Health:**
    - **Increased Anxiety and Depression:** Corporal punishment can cause children to feel unsafe, scared, and unloved. This can lead to increased anxiety and depression further **leading to poor academic performance**.
    - **Lower Self-Esteem:** Children who are physically or mentally punished may develop **lower self-esteem and a negative sense of self-worth**.
    - **Aggression and Violence:** Exposure to violence can increase the likelihood that children will

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become **aggressive or violent themselves**. Also, the child may **develop a revenge attitude against the teacher** and peers.

- **Difficulty with Relationships:** Children who experience corporal punishment may have difficulty forming healthy relationships with others.
- **Physical Health:**
  - **Physical Injuries:** Corporal punishment can lead to physical injuries, ranging from minor bruises to more serious injuries.
  - **Substance Abuse:** Children who experience corporal punishment are more likely to abuse drugs and alcohol as adults.

### **What are the Constitutional and Legal Provisions Regarding Corporal Punishment?**

#### ➤ **Statutory Provisions:**

- **Right to Education Act (RTE), 2009:**
  - Section 17 of the Act **imposes an absolute bar on corporal punishment**. It prohibits 'physical punishment' and 'mental harassment' and makes it a **punishable offence**.
  - It **prescribes disciplinary action** to be taken against the guilty person in accordance with the service rules applicable to such person.
- **Juvenile Justice (Care and Protection of Children) Act, 2015:**
  - According to **Section 23** of the act, any person who is **in control of a juvenile** and who abandons, assaults, exposes or wilfully neglects the juvenile which in turn causes mental or physical pain to him/her **shall be punished with imprisonment up to six months**, or fine, or with both.

#### ➤ **Legal Provisions:**

- **Indian Penal Code, 1860**
  - **Section 305** pertaining to abetment of suicide committed by a child
  - **Section 323** pertaining to voluntarily causing hurt
  - **Section 325** which is about voluntarily causing grievous hurt.

#### ➤ **Judicial Cases:**

- In ***Ambika S. Nagal Vs State of Himachal Pradesh, 2020***, the State High Court held that "whenever

a ward is sent to school, the **parents must have said to give an implied consent on their ward being subjected to punishment and discipline."**

- In a case against the State of Kerala, the Kerala High Court in 2014 titled ***Rajan Vs Sub-Inspector of Police***, upheld the **infliction of Corporal punishment** holding that it was **beneficial to the child** even in cases where the consequences were extreme, as the teacher has a judging authority whether or not to inflict the punishment.

#### ➤ **Constitutional Provisions relating to Protection of Child Rights:**

- **Article 21 A:** Provision for compulsory education in the age group of 6-14.
- **Article 24:** It prohibits child labour in hazardous work until the age of 14.
- **Article 39 (e):** It is the duty of the state to ensure that children of tender age are not abused due to economic disparity.
- **Article 45:** It is the duty of the state to provide for the care of children in the age group of 0-6.
- **Article 51A(k):** The fundamental duty of parents is to ensure that their child receives education for the age group of 6 to 14.

#### ➤ **Statutory Bodies:**

- **National Commission for Protection of Child Rights (NCPCR):** The NCPCR guidelines for **eliminating corporal punishment** against children require every school to develop a mechanism and frame clear-cut protocols to address the grievances of students.
  - **Every school** has to constitute a '**Corporal Punishment Monitoring Cell**' consisting of two teachers, two parents, one doctor, and one lawyer (nominated by District Legal Service Authority (DLSA)).

#### ➤ **International Laws:**

- **Article 19** of the **UN Convention on the Rights of Child 1989 (UNCRC)** declares that any form of discipline involving violence is unacceptable.
- It lays down that **children have the right to be protected** from being hurt and mistreated, physically or mentally.

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### What is the National Commission for Protection of Child Rights?

- NCPCR is a statutory body set up in March 2007 under the Commissions for Protection of Child Rights (CPCR) Act, 2005.
- It is under the administrative control of the Ministry of Women & Child Development.
- The Commission's mandate is to ensure that all laws, policies, programs, and administrative mechanisms are in consonance with the child rights perspective as enshrined in the Constitution of India and also the UN Convention on the Rights of the Child.
- It inquires into complaints relating to a child's right to free and compulsory education under the Right to Education Act, 2009.
- It monitors the implementation of the **Protection of Children from Sexual Offences (POCSO) Act, 2012**.

## Annual Review of State Laws 2023

### Why in News?

PRS Legislative Research has recently released its **"Annual Review of State Laws 2023."** The report conducted an in-depth analysis of the functioning of State legislatures across India, shedding light on various key aspects of their performance.

#### Note:

- PRS Legislative Research, commonly referred to as PRS, is an Indian non-profit organisation established in September 2005 as an independent research institute to **make the Indian legislative process better informed**, more transparent and participatory. PRS is based in New Delhi.

### What are the Key Highlights of the Report?

- Budget Passage Without Discussion:
  - In 2023, of the Rs 18.5 lakh crore **budget** presented by 10 States, close to **40% was passed without discussion**.
    - In Madhya Pradesh, 85% of the Rs 3.14 lakh crore Budget was passed without discussion, topping the list.

- Once the Finance Minister announces the Budget, it goes for **general discussion**. Following this, there is a **scrutiny of demands by committees**.
  - After this, there is discussion and voting on Ministry expenditure.
- The Budget in Parliament goes through six stages: **Presentation, General discussion, Scrutiny, Voting, Passing Appropriation Bill, Passing Finance Bill**.
  - Kerala, Jharkhand, and West Bengal followed with 78%, 75%, and 74% respectively. However, in 10 States where data was available, 36% of the expenditure demands were voted on and passed without being discussed.
  - The trend raises concerns regarding the **transparency and scrutiny of state finances**.
- **Public Accounts Committee (PAC):**
  - In 2023, the PAC held 24 sittings and tabled 16 reports on average in the States considered.
    - In five (Bihar, Delhi, Goa, Maharashtra and Odisha) of the 13 States **the PAC did not table any reports**.
    - In Maharashtra, the PAC neither convened nor released any report throughout the year.
    - Tamil Nadu led with 95 reports tabled, emphasising the wide disparity among states in upholding accountability.
    - Bihar and Uttar Pradesh witnessed significant PAC sittings without a single report being tabled.
- The **PAC**, typically chaired by the **Leader of the Opposition or a senior member from the Opposition**, scrutinises the accounts of State governments and State reports of the **Comptroller and Auditor General**.
- **Swift Legislative Action:**
  - **44% of bills were passed either on the same day of introduction or the following day**.
    - The figure is consistent with the trend observed in 2022 (56%) and 2021 (44%).
  - Gujarat, Jharkhand, Mizoram, Puducherry, and Punjab passed all bills on the same day they were introduced.
    - In 13 out of 28 State legislatures, bills were passed within five days of introduction.
  - **Kerala and Meghalaya took longer than five days** to pass more than 90% of their bills, highlighting a slower but potentially more deliberative process.

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### ➤ Ordinances:

- **Uttar Pradesh topped with 20 ordinances**, followed by Andhra Pradesh (11) and Maharashtra (9).
  - Ordinances covered a wide range of subjects including the establishment of new universities, public examinations, and ownership regulations.
  - Kerala's significant decrease in ordinances from 2022 to 2023 raises questions about the necessity and effectiveness of such measures.

- **Governors** utilise their power to **promulgate ordinances** when State Legislative Assemblies are not in session.

### ➤ Overview of Law Making:

- On average, states passed **18 Bills each in 2023**, not counting the Appropriation Bills for the budget.
  - Maharashtra topped with 49 Bills while Delhi and Puducherry passed just 2 each.
- While the **Constitution** requires the Governor to give assent to Bills at the earliest, 59% of the Bills received assent within a month of being passed. Delays were seen in states like Assam, Nagaland and West Bengal.
  - **Only 23** out of the over 500 Bills passed were referred to legislative committees for deeper examination before being passed.

### What are the Other Key Legislations Passed by Subjects?

#### ➤ Health:

- Rajasthan passed a **Right to Health Bill, 2023** guaranteeing free healthcare services and emergency treatment.

#### ➤ Law and Justice:

- Haryana and Rajasthan introduced laws to combat **organised crime** on the lines of the **Maharashtra Control of Organised Crime Act, 1999 (MCOCA)**.
- The **Gujarat Prohibition on Holding Protest in a Public Place Bill, 2023** prohibits protesting and agitating in a public place that may lead to obstruction of the public movement, blockage of roads, or other law and order issues.

### ➤ Land:

- Andhra Pradesh also amended the **Assigned Lands (Prohibition of Transfers) Act, 1977** which prohibited the transfer of land that had been assigned by the government to the landless poor people for cultivation.
- Himachal Pradesh amended its **Himachal Pradesh Ceiling on Land Holdings Act, 1972**, to remove **gender discrimination** in the calculation of permissible holdings.

### ➤ Labour and Employment:

- Rajasthan enacted a law for social security and the **welfare of gig/platform workers like delivery personnel**.
- **Rajasthan provided for minimum guaranteed employment** under a new law.

### ➤ Local Governance:

- Chhattisgarh enacted a law **Chhattisgarh Leasehold Rights to the Homeless Persons of Urban Areas Act, 2023** to provide lease rights to **homeless persons in urban areas**, aiming to ensure their relocation and rehabilitation while maintaining public health and safety standards.

### *How can Legislation be Improved for Better Governance and Accountability?*

#### ➤ Strengthening PAC:

- Standardise PAC operations with guidelines and protocols including sitting frequency, reporting requirements, and report timelines.
- Implement mechanisms to monitor and evaluate PAC performance regularly. Encourage greater accountability among PAC members by ensuring substantive discussions and report tabling in all settings.

#### ➤ Expedited Decision-Making:

- Establish a legislative framework outlining a time limit for the Governor's assent.
  - This aligns with recommendations by the **Sarkaria Commission on Centre-State Relations (1988)** which emphasised timely decisions on bills.
- Mandate the Governor to provide clear and specific reasons for any delay in granting assent aligned with the ethos of transparency.

Note:

➤ **Legislative Review:**

- Advocate for more thorough discussions and debates on budgets before passage in the legislature.
- The **Sarkaria Commission on Centre-State Relations** has emphasised the importance of **strengthening the role of State Finance Commissions and ensuring that their recommendations** are given due consideration in the legislative discussions on budgets.

➤ **Legislative Functioning:**

- The **National Commission to Review the Working of the Constitution** recommends:
  - Parliamentarians should be subject to public scrutiny via a **parliamentary ombudsman**.
  - State Legislatures with fewer than 70 members should convene for at least 50 days annually; those with more should meet for at least 90 days.
    - The **Rajya Sabha and Lok Sabha should hold sessions for a minimum of 100 and 120 days**, respectively.

## Diplomatic Passport

### Why in News?

Recently, the topic of **diplomatic passports** has been in the news, particularly in relation to the power regarding the issuance and revocation of diplomatic passports.

- A **passport is an official government-issued document** that serves as a form of identification and travel document **for individuals who wish to travel internationally**.

### What is a Diplomatic Passport?

➤ **About:**

- Diplomatic passports are issued to individuals **representing a country** on official diplomatic missions or government business.
- They are used by diplomats, government officials, and sometimes their **immediate family members**.
- These passports are a **form of identification** and carry certain **legal privileges** and immunities under **international law**, such as immunity from arrest, detention, and certain legal proceedings in the host country.

- **Eligibility:** In India, the **Ministry of External Affairs'** Consular, Passport & Visa Division issues diplomatic passports, also known as '**Type D' passports**, to individuals falling into **several categories**:

- Government-appointed individuals and officers working under branches A and B of the **Indian Foreign Service (IFS)** traveling abroad for official business
- Select individuals on official travel, including union ministers and **Members of Parliament (MPs)**.

➤ **Revoking Power:**

- The **authority to revoke** a diplomatic passport lies with the **passport authority**.
  - However, the government can revoke a diplomatic passport **only after a court order** to that effect.
- Under the **Passport Act of 1967**, a **diplomatic passport may be revoked** if the holder is in wrongful possession, obtained it through **suppression of material information**, if the passport **authority deems it necessary for India's interests**, or if the holder has been convicted or is facing criminal proceedings in India.

#### Difference Between Passport and Visa:

Feature	Passport	Visa
<b>Issuing Authority</b>	Ministry of External Affairs of India	Embassy or Consulate of the foreign country
<b>Purpose</b>	Proof of Indian citizenship and identity for international travel	Permission to enter a specific foreign country
<b>Validity</b>	10 years	Varies depending on type, country, and purpose
<b>Requirement</b>	Mandatory for all Indian citizens traveling abroad (with exceptions)	Varies depending on the country (visa-free agreements exist)

Note:



### International Law Covering Diplomatic Passports

- **Vienna Convention on Diplomatic Relations:**
  - This convention outlines the **rules for diplomatic law, including the privileges and immunities** of diplomatic passport holders.
- **Operational Visa Exemption Agreements:**
  - It allows diplomatic passport holders to visit these countries without a visa for **stays up to 90 days, provided their travel is not for private purposes.**
  - India has operational visa exemption agreements with 34 countries, including **Germany**, for holders of diplomatic passports.

### Types of Passport

Passport Type	Validity	Colour	Issued To
Ordinary (Type P)	10 years for adults, 5 years for minors	Blue	All Indian citizens
Official	Same as an Ordinary passport	White	Government officials
Diplomatic	Five years or less	Maroon	Diplomats, senior government officials, their dependents
Emigration Check Required (ECR)	Same as Ordinary passport	Orange	Indian citizens who haven't completed 10 <sup>th</sup> -grade education
Emergency Certificate	Short validity	-	Indian citizens abroad in exigencies (Single journey to India when the passport is lost/expired)

## SC Rejects Centre's Plea for Administrative Spectrum Allocation

### Why in News?

In a significant decision, the **Supreme Court of India** has refused to entertain the Centre's plea to allow the **administrative allocation of spectrum**, reaffirming the principle of **open and transparent auction** for allocating this scarce natural resource.

- The **electromagnetic spectrum** encompasses a range of radio frequencies, which are utilised by wireless devices for communication, including making calls and accessing social media.

### Why Did the Supreme Court Reject the Centre's Application?

- The Registrar found the **application for clarification to be misconceived**, the Registrar invoked Order XV Rule 5 of the Supreme Court Rules, 2013, **which allows**

**refusal to receive a petition if it lacks reasonable cause, is frivolous, or contains scandalous matter.**

- SC asserted that spectrum allocation to private players **must be through open and transparent auction**, as established by the landmark 2G spectrum case, often referred to as the **"2G spectrum scam,"** judgement 12 years ago.
- Spectrum allocation is a crucial process, and allowing "administrative allocation" would have placed the **government solely in charge of selecting operators** to distribute airwaves, a move deemed contrary to principles of fairness and transparency.

### What is the Legal Framework Regarding the Allocation of Spectrum?

- **Telecommunications Act, 2023:**
  - It empowers the **government to assign spectrum for telecommunication through administrative processes** other than auction for entities listed in its First Schedule of the act.
    - These entities include those engaged in national security, defence, and law enforcement, as well as Global Mobile Personal Communication by

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Satellites such as SpaceX, and Bharti Airtel-backed OneWeb.

- The government can also assign part of a spectrum that has already been assigned to one or more additional entities, **known as secondary assignees**, and even terminate assignments where a spectrum or a part of it has remained underutilised for insufficient reasons.

### What is the 2G Spectrum Scam?

#### ➤ 2G Spectrum Scam:

- The **2G spectrum allocation** scam dates back to 2008, the government then allegedly sold 122 licences on a **first-come-first-serve basis (FCFS)** to specific private telecom operators.
- In 2009, the **Central Vigilance Commission** directed the **Central Bureau of Investigation (CBI)** to investigate claims that there were illegalities in the allocation of licences, following which the CBI filed a **first information report** against unknown officers of the **Department of Telecommunications (DoT)**, private persons and companies.
- In 2011, the **CBI** alleged that there was a loss of Rs 30,984 crore to the exchequer as a result of discrepancies in the allocation process.

#### ➤ Supreme Court's Verdict:

- In February 2012, the Supreme Court cancelled the 122 telecom licences that were allocated on a FCFS basis, stating that **this method was prone to misuse**.
  - The Court emphasised that the **"non-discriminatory method"** of auction should be adopted for the allocation of natural resources like spectrum to ensure fairness and transparency.

#### ➤ Centre's Current Plea:

- More than a decade after the Supreme Court's landmark 2G spectrum scam judgement, the Union government has moved an **application for a "certain class" of spectrum to be allocated through administrative processes** instead of competitive auctions.
- The Centre has pointed out that the assignment of spectrum is required not only for commercial telecom services but also to **discharge sovereign and public interest functions such as security, safety, and disaster preparedness**.
  - The government has argued that administrative allocation is required when **demand is lower**

**than supply or for space communication**, where it would be more optimal and efficient for spectrum to be shared by multiple players.

#### What is Spectrum?

- Spectrum is the radio frequencies that wireless signals use to travel, allowing users to make calls and use social media.
- Spectrum is part of the **electromagnetic spectrum**, which also includes other frequencies that people interact with daily.
  - Spectrum can be divided into three bands: **low (used for mobile communication, including 2G, 3G, and 4G services)**, **mid (utilised for 4G LTE services and some 5G deployments)**, and **high-band (primarily used for 5G and beyond)**, each with different characteristics and essential for different types of communication.

### What was the 2012 Presidential Reference Regarding Natural Resource Allocation?

- The Union government cites observations from a **Constitution Bench** regarding a Presidential reference made concerning the 2012 verdict.
- The Bench clarifies that the **auction method prescribed in the verdict is not a "constitutional mandate"** for the alienation of natural resources excluding spectrum.
- It stated that the word "perhaps" in the verdict suggested that auction was not intended as a blanket principle for all natural resources, and other methods could be considered.
- However, it cautioned that spectrum **must be allocated only through auction as per the law declared in the 2G case**.

#### Presidential Reference

- It is a procedure in the **Constitution of India** that allows the **President to request the Supreme Court of India** to provide advice on matters of law or fact that the President deems to be of public importance.
- **Article 143 of the Indian Constitution** empowers the President to refer any matter of law or fact to the Supreme Court for its opinion.
  - This can be done in relation to issues that have arisen or are likely to arise, and must be of public importance.
  - The Supreme Court may refuse to answer any queries raised in the reference, and the issue should not have already been decided by the Court.

Note:

## What are the Spectrum Allocation Methods Across the Globe?

- **New Zealand:** Initiated the **use of auctions for spectrum** allocation in 1989, a method that has since been adopted by many other countries, including those in emerging markets.
- **United States:** In the 1980s, the United States experimented with allocating cellular licences through lotteries, which attracted speculative applicants and resulted in notional losses for the government.
  - The **lottery method**, initially seen as faster and cheaper than the administrative process, has drawbacks.
    - It is susceptible to speculation and cannot reliably assess the technical competence of licensees.
  - In 1993, the US transitioned to **auctions for granting new mobile communication licences**.
    - This transition had a global impact, leading to over USD 100 billion in radio spectrum sales worldwide.
- **Canada and European Union:** These regions often use an administrative process, also known as a “**beauty contest**,” where criteria are set by the government and proposals are evaluated by an expert committee.
  - This method provides flexibility and government control, aligning decisions with government plans and objectives. **However, it is time-consuming, but ensures adherence to government priorities.**

## Challenges Faced by Street Vendors

### Why in News?

Recently, the **Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014** celebrated its tenth anniversary, signifying a culmination of four decades of legal evolution and advocacy by street vendor movements in India.

### What is the Street Vendors Act and Associated Aspects?

- **Street Vendors Act:**
  - **Scope and Purpose:** The Act was designed to **protect and regulate street vending** across Indian cities, involving local authorities in establishing designated vending zones.

- Vendors are crucial to urban life, contributing to **food distribution and cultural identity**, and the law aims to secure their livelihoods and integrate their activities into formal urban planning.
- **Governance Structure:** The Act establishes **Town Vending Committees (TVCs)**, which include **street vendor representatives**, with **women vendors constituting 33% of this group**.
  - These committees are responsible for the **inclusion of vendors** in designated zones and handling grievances through mechanisms like the **Grievance Redressal Committee** (chaired by a civil judge or judicial magistrate).
- **Other Provisions:**
  - The Act clearly defines the roles and responsibilities of vendors and government at different levels.
  - The provision requires States/ULBs to conduct a **survey to identify SVs at least once every five years**.

### Implementation Challenges

- **Administrative Challenges:**
  - Despite the protections outlined in the Act, street vendors frequently face **harassment and eviction**.
  - This is partly due to **persistent bureaucratic views** of vending as an illegal activity.
  - Additionally, TVCs often remain under the **control of city authorities** rather than representing the vendors themselves, with women's representation often being only tokenistic.
- **Governance Integration Issues:**
  - The Act struggles to integrate with broader urban governance frameworks, such as those established by the **74<sup>th</sup> Constitutional Amendment**.
  - **Urban Local Bodies (ULBs)** often lack the power and resources to effectively implement the Act, especially in the context of overarching policies like the **Smart Cities Mission**, which tend to prioritise infrastructure over inclusive urban planning.
- **Societal Perception Problems:**
  - The prevailing vision of a ‘**world-class city**’ frequently **excludes street vendors**, who are seen as nuisances rather than as contributors to the urban economy.

Note:

- This **societal stigma** affects urban planning and policy, leading to designs and regulations that marginalise vendors.

#### ➤ Ways to strengthen the Law:

- **Need for Supportive Implementation:**
  - While the **Act is progressive**, effective implementation is crucial and may require **initial top-down guidance** from higher government levels, such as the **Ministry of Housing and Urban Affairs**.
  - Over time, a shift towards **more decentralised governance** is essential to tailor strategies to the diverse local contexts of vendors across the nation.
- **Integration with Urban Schemes:**
  - Policies and urban planning **guidelines** must be **revised** to better incorporate street vending.
  - This involves **enhancing the capacities of ULBs** to include vendors in city planning and moving from bureaucratic control to more inclusive, deliberative processes at the TVC level.
- **Addressing New Challenges:**
  - Emerging issues such as **climate change impacts**, increased competition from **e-commerce**, and the proliferation of vendors call for creative use of the Act's provisions.
  - This includes leveraging components of national missions like the **National Urban Livelihood Mission** to innovate and adapt to these changing realities.

#### Evolution of Street Vendor Policy in India

- In 1995, India signed the **Bellagio International Declaration of Street Vendors**
- In 2001, GOI announced declaration Of drafting **National Street Vending Policy**
- In 2009, the policy was revised and accompanied by a model law which could be adopted by State Government.
- In 2012, the Union Government approved the **Street Vendors (Protection of Livelihood and Regulation of Street Vending) Bill**
- In 2014, parliament passed **Street Vendors Act**

### What are the Challenges Faced by Street Vendors in India?

#### ➤ Legal Limbo and Harassment:

- **Uncertain Legal Status:** Despite the Street Vendors Act, enforcement remains uneven. Many vendors **operate without licences**, making them vulnerable to eviction and harassment by **authorities and local intermediaries**.
- **Bribes and Extortion:** Reports by **UN-Habitat** highlight the issue of vendors being **forced to pay bribes** to police and local authorities, impacting their already meagre earnings.

#### ➤ Precarious Livelihood and Infrastructure Woes:

- **Competition and Fluctuating Income:** Saturation in certain areas and competition from established businesses lead to **unpredictable income** and economic insecurity.
- **Unrealistic License Caps:** License caps is unrealistic in most cities like in Mumbai which has a ceiling of around 15,000 licences as against an estimated 2.5 lakh vendors.
- **Lack of Basic Amenities:** Limited access to clean water, **sanitation facilities**, and waste disposal creates health hazards for vendors and customers alike.
- **Vulnerability to Eviction:** Urban development projects and road widening initiatives often **displace vendors**, causing livelihood disruption.
- **Occupational Hazards:** Street vendors work in environments that are often **hazardous** to their health.

#### ➤ Navigating the Formal System:

- **Difficult Licensing Process:** The licensing process under the Street Vendors Act can be **complex and bureaucratic**, discouraging vendors from formalisation.
- **Limited Access to Credit:** Informal income makes it difficult for vendors to secure loans for upgrades or business expansion.
  - The **PM SVANidhi Scheme**, while well-intentioned, has not reached a significant portion of its target demographic.
  - Issues such as **lack of awareness**, cumbersome documentation, and bureaucratic hurdles prevent many vendors from availing the benefits of the scheme.

Note:



- **Gender-Based Discrimination:** Women vendors often face **gender-based discrimination**, which affects their business opportunities and earnings.
  - They are also **more susceptible** to harassment and violence, which can deter them from continuing their trade.
- **Impact of Covid-19:** The pandemic led to **severe economic hardship** for street vendors.
  - With lockdowns and social distancing norms in place, many lost their sole source of income and were pushed further into poverty.

### ***What are the Steps Needed to Deal With the Problem of Street Vendors?***

- The **World Bank** and **UN-Habitat** recommend a shift from viewing street vendors as a problem to recognising them as a vital part of the urban economy.
  - **Formalization and Regulation:** The Street Vendors Act is a positive step towards formalisation. Cities like Hanoi (Vietnam) and Ahmedabad (India) have established **vendor registration systems**, providing identity cards and training on hygiene and safety.
  - **Designated Zones:** Cities like Rio de Janeiro (Brazil) and Kigali (Rwanda) have created **designated vending zones**, ensuring order and improved pedestrian flow.
    - This can be implemented in India by identifying suitable areas in consultation with vendors and resident associations.
  - **Infrastructure and Support:** Providing access to clean water, sanitation facilities, and waste disposal is crucial. Cities like Lima (Peru) offer **training on waste management and micro-loans for equipment upgrades**.
    - Indian cities can replicate these models by collaborating with NGOs and self-help groups.
  - **Vendor Associations:** Empowering vendors through associations like those in Kumasi (Ghana) **facilitates dialogue with authorities** and fosters collective bargaining.
    - India can **encourage vendor associations** and integrate them into policy discussions.
  - **Fostering a Collaborative Approach:** Effective street vendor management requires a **multi-stakeholder approach**:

- **Local Authorities:** Cities must play a leading role in creating a **conducive environment**. This includes issuing vending permits, establishing designated zones, and providing infrastructure support.
- **Street Vendors:** Vendors must comply with regulations, **maintain hygiene standards**, and pay designated fees. They should actively participate in vendor associations and engage in constructive dialogue with authorities.
- **Resident Associations:** Residents' concerns about **congestion and waste management** need to be addressed. Open communication and co-creation of solutions with vendor associations can bridge this gap.

### **International Efforts and Indian Initiatives for Street Vendors**

Category	Details
<b>Global Initiatives</b>	ILO Recommendation 204 (Economic Inclusion of workers), UN SDGs 8 (decent work for all) Street Vendors Initiative for Global Advocacy (SVIGA) Women in Informal Employment: Globalizing and Organizing (WIEGO)
<b>Indian Schemes</b>	<b>PM SVANidhi</b> , Street Vendors Act 2014, State-specific schemes

## **High Court Upholds Debtors' Right to Travel**

### ***Why in News?***

- The Bombay High Court ruled that **public sector banks (PSBs)** cannot request **Look Out Circulars (LOCs)** against **loan defaulters**.
- The court set aside the central government's **Office Memoranda (OM)** empowering PSBs to do so. The court stated that these tactics violate **fundamental rights** guaranteed under the Constitution.

### **Note:**

- LOC is a circular letter used by authorities in India to check whether a travelling person is wanted by the police.

Note:

## Why did the High Court Rule Against Banks Restricting Debtors' Travel?

### ➤ Legal Challenge:

- LOCs were issued by the **Bureau of Immigration** of the **Ministry of Home Affairs (MHA)** based on Office Memoranda (OM) from 27<sup>th</sup> October 2010.
- In September 2018, amendments to the OM were introduced, authorising the issuance of a LOC to prevent individuals from travelling abroad **if their departure was harmful to the country's "economic interest"**.
  - It empowered **PSB officials (managing director and chief executive officers)** to request immigration authorities to issue LOCs against default borrowers.
  - The default borrowers included **not only the borrowers but also the guarantors for repayment of loans**, and the principal officers or directors of corporate entities in debt.

### ➤ Petitioners' Argument:

- Petitioners contended that the OM's infringed upon fundamental rights, **including the right to life with dignity under Article 21**.
- They argued that the government created an improper classification between public and private banks, regulated by the **Reserve Bank of India (RBI)**.
- Petitioners argued that the **"economic interest of India"** cannot be the same as the **"financial interests" of a PSB**.

### ➤ Centre's Submission:

- The MHA argued that the circulars contained necessary "checks and balances" for **deprivation of life or personal liberty**, as required by the established legal procedure.

### ➤ Court Stance:

- The court referring to the case **Viraj Chetan Shah v Union Of India & Anr, 2024**, noted that the **government failed to prove debt recovery due to the person being denied permission to travel abroad**.
  - It criticised the use of LOCs as a strong-arm tactic to bypass legal proceedings, which PSBs see as inconveniences and irritants.
- It emphasised that the **fundamental right to travel abroad cannot be curtailed by executive action without a government statute**.

- The court also expressed concern that PSBs were given unilateral power in debt recovery, effectively making them judge and executioner. It found it incomprehensible that **bank officials were elevated to the same status as high-ranking police officers**.

- The court found if a borrower **solely deals with non-PSBs, no LOC can be issued**, but even one PSB involvement poses a risk.

- The court dismissed the **differentiation between PSB and private bank** borrowers as arbitrary. Considered invalid **under Article 14**, the court deemed the inclusion of only PSBs in the LOC provision arbitrary.

### ➤ Implications of the Verdict:

- The ruling does not affect existing restraint orders issued by competent authorities.
- Banks can still seek orders from courts or tribunals to restrain individuals from travelling abroad but cannot ask the centre to issue **Look Out Circulars**.
- Banks can also invoke powers under the **Fugitive Economic Offenders Act, of 2018** to recover the loan.
- The judgement will not prevent the central government from framing an appropriate law consistent with Article 21 of the Constitution.

#### Fugitive Economic Offenders Act, 2018

- It provides measures to deter fugitive economic offenders from evading the process of law in India by staying outside the jurisdiction of Indian courts, to preserve the sanctity of the rule of law in India and for matters connected therewith or incidental thereto.
- It empowers authorities for **non-conviction-based attachment and confiscation of proceeds of crime and properties** and assets of a 'fugitive economic offender', against whom a warrant for arrest about a **Scheduled Offence has been issued by any court in India** and who has left the country to avoid criminal prosecution or judicial processes.
  - An individual is declared a **Fugitive Economic Offender (FEO)** if an arrest warrant has been issued for committing an offence specified under the Act, and the total value of the offence is at **least Rs 100 crore**.
- Offences listed in the act include **counterfeiting government stamps** or currency, cheque dishonour, **money laundering**, and transactions defrauding creditors.

Note:

**What are the Legal Rights of the Defaulters?**

- The Reserve Bank of India (RBI) directed banks and finance companies to undertake **compromise settlements or technical write-offs** on accounts categorised as wilful defaulters or fraud.
  - **Wilful offenders or companies** involved in fraud will no longer face prejudice from lenders due to criminal proceedings against them.
- Borrowers who have undergone compromise

settlements can apply for fresh loans after a **minimum cooling period of at least 12 months**.

- Regulated banks and finance companies have the **flexibility to stipulate higher cooling periods** in line with their board-approved policies.
- The legal rights of defaulters in India include the **right to receive a notice, fair debt collection practices, grievance redressal, seek legal assistance, and fair credit reporting**.



Note:

# Economic Scenario

## Highlights

- *Shaping the Future of India's Toy Industry*
- *Shrimp Farming in India*
- *Navigating India's Transition to Sustainability*
- *30 Years of TRIPS*
- *RBI Eases FEMA Regulations*
- *Strengthening of Rupee*
- *Socio-Ecological Impact of LPG Price Escalation*
- *Chocolate Industry Meltdown*
- *Regulatory Action Against Kotak Mahindra Bank by RBI*
- *India's Aviation Sector*
- *Drip Pricing*
- *Central Bank Digital Currency*
- *Rat Hole Mining*
- *Surge in Tobacco Prices*
- *Rising Share of Personal Income Tax and Indirect Tax*
- *Paradox of Savings*
- *Redistribution of Private Property*
- *Indian Poultry Sector*
- *Inheritance Tax*
- *Bima Vistaar*
- *India's De-globalised Food Inflation*
- *International Relations*
- *Vietnam Push for Non-Market Economy Status*
- *India Sugarcane Subsidy under WTO Scrutiny*
- *Nepal's Currency Featured Kalapani Region*
- *Japan's Shifting Diplomatic Posture*
- *Allegations of Child Labour in Trade Negotiations with Australia*
- *Social Issues*
- *PM-EAC Report on Share of Religious Minorities*
- *WHO Report on Global Immunisation*
- *Women in Global Capability Centers*

## Shaping the Future of India's Toy Industry

### Why in News?

Recently, the **Global Trade Research Initiative report** has proposed a comprehensive strategy to develop India's toy industry and enhance exports.

- The objective is to **elevate India into a global hub** for toy manufacturing and export by implementing **strategic interventions** focused on improving quality, fostering innovation, and expanding market reach.

### What is the Status and Potential of India's Toy Industry?

- **Status:**
  - As per **Global Trade Research Initiative report** India holds a marginal position in the global toy trade, with a mere **0.3% share in exports and 0.1% share in imports**.

- **India ranks 27<sup>th</sup> in global toy exports**, with a share of only 0.3%, and 61<sup>st</sup> in toy imports, with imports totalling USD 60 million.

- India exports a **significant amount of electronic toys** compared to other categories, while also making a significant contribution to the toy trade through the export of plastic dolls, metal, and other non-electronic toys, highlighting its **diverse manufacturing capabilities**.

#### Global Toy Industry:

- As per **Global Trade Research Initiative report** In 2022, the global toy market witnessed imports valued at approximately USD 60.3 billion with **China dominating** this market with exports worth USD 48.3 billion, representing **80% of global exports**.
- The USA leads as the largest importer of toys, while other major importers include the European Union, Japan, Canada, Australia, Mexico, and South Korea signifying a **diverse market**.

Note:

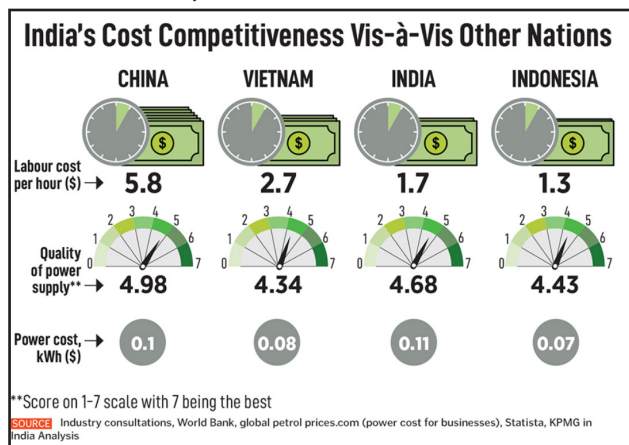


### ➤ Potential:

- The Indian toy industry is among the **fastest-growing globally**, projected to reach **USD 3 billion by 2028**, growing at a CAGR of 12% between 2022-28.
- The Indian toy industry is expanding its global presence, with increased high-value exports to **Middle East and African countries**.

### What are the Challenges Faced by India's Toys Industry?

- **Lack of Technology:** It hinders the Indian toy industry by causing most domestic manufacturers to use outdated technology and machinery, impacting the quality and design of the toys.
- **High GST rates:** Mechanical toys attract 12% GST while tax on electronic toys is 18%. A mere addition of a bulb or a sound mechanism changes the classification of the toy.
- **Lack of Infrastructure:** The toy industry in India faces challenges due to poor infrastructure, lack of end-to-end manufacturing facilities, inadequate testing labs, toy parks, clusters, and logistics support.
- **Unorganized and Fragmented:** The Indian Toy Industry is still significantly fragmented, with 90% of the market being unorganized, and harnessing the maximum benefit becomes very difficult.
- **Other Challenges:** Factors such as **cost-effectiveness**, **product diversity**, quality standards, and trade agreements play pivotal roles in shaping the global toy trade landscape.
  - Shifts in consumer preferences, technological advancements, and regulatory changes also impact market dynamics.



### GoI Measures to Promote the Local Toy Industry

- **Import Duty Increase:** India significantly **raised import duties** on toys, increasing the basic customs duty from 20% to 70% in July 2021.
  - This made imported toys much more expensive, giving locally produced toys a **competitive advantage**.
- **Quality Control Order (QCO):** Since January 2021, the **QCO** has required all toys sold in India to meet specific Indian safety standards, covering aspects like sharp edges, small parts hazards, flammability, and harmful chemical migration.
  - Toys must also have the **BIS certification mark** and undergo random checks and testing in **NABL-accredited laboratories**.
  - The QCO checked substandard imports from China but did not result in higher exports from India.
- **National Action Plan for Toys:** An initiative by the Government of India, it involves **collaboration among 15 ministries** and includes measures such as **creating toy production clusters**, introducing schemes to encourage manufacturing and exports, enhancing research and development, ensuring quality standards, integrating toys with education, and organizing toy fairs and exhibitions.

### Note:

- **Toy quality** is determined by meeting performance standards, which can be **voluntary or mandatory**.
- The **Quality Control Order 2020** is a **mandatory technical regulation in India**.
- Internationally, standards are set by the **International Standards Organization (ISO)**, while in India, the Bureau of Indian Standards (BIS) sets specific standards for toys, covering aspects like mechanical safety, flammability, and element migration.

## Shrimp Farming in India

### Why in News?

Recently, India refuted the allegations made by a US based **Human Rights** Group of abusive conditions at shrimp farms in India. India stated that entire India's shrimp exports are certified by the **Marine Products Export Development Authority (MPEDA)** and there is no scope for such concerns.

Note:

### What is the State of Shrimp Farming in India?

- **About:** A shrimp is a crustacean (a form of shellfish) characterised by a **semi transparent body** flattened from side to side and a flexible abdomen terminating in a fanlike tail.
  - Their close relatives include **crabs, crayfish, and lobsters**. They occur in all oceans, in shallow and deep water, and in freshwater lakes and streams.
- **Shrimp Farming:** Shrimp Farming is about raising shrimp in controlled environments such as ponds, tanks, or raceways for human consumption.
  - They prefer **warm water**, with temperatures between 25-30°C (77-86°F).
  - Preferred soil textures are **clay-loam or sandy-clay loam**, slightly alkaline soil with pH between 6.5 and 8.5 is optimal.
  - A minimum of **5% calcium carbonate** in the soil is beneficial for shrimp farming.
- **Status of Shrimp Farming in India:**
  - **India as Shrimp Exporter:** India is one of the **world's largest shrimp exporters**.
    - In 2022-23, India's **seafood exports** stood at **USD 8.09 billion** or ₹64,000 crore and **shrimps** accounted for a bulk of these exports at **USD 5.6 billion**.
    - India's share of seafood exports in the U.S. market was **40% in 2022-23**, far ahead of rivals like **Thailand, China, Vietnam and Ecuador**.
  - **Shrimp Producing States:** **Andhra Pradesh** is the largest shrimp producer state in India which accounts for **70%** of India's shrimp output.
    - **West Bengal and Gujarat** are other major players in shrimp farming, with Sundarbans in West Bengal and Kutch in Gujarat being a key producer.
  - **Regulation:**
    - All shrimp units are registered with **MPEDA (Marine Products Export Development Authority)** and **FSSAI (Food Safety and Standards Authority of India)**.

- They follow a **HACCP (Hazard Analysis and Critical Control Point)** based food safety management system as per the US Code of Federal Regulations.
- Usage of pharmacologically active substances in aquaculture has been banned since 2002.
- Also, National regulations and monitoring measures like the **National Residue Control Plan, ELISA screening labs**, in-house labs, and pre-export checks are in place.

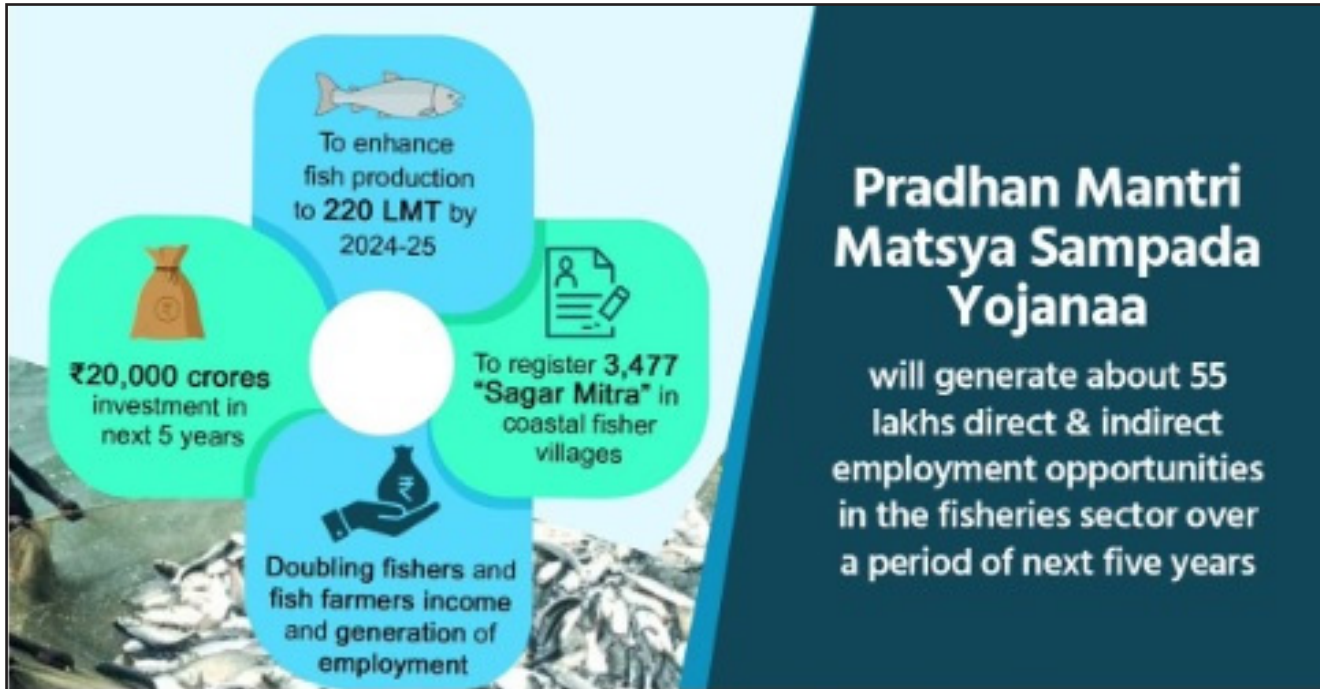
### What is the Marine Products Export Development Authority?

- **About:** It is a **nodal agency** for the holistic development of the **seafood industry in India** and the realisation of its export potential.
  - It was established in **1972** under Marine Products Export Development Authority Act (MPEDA), 1972.
  - It functions under the **Union Ministry of Commerce and Industry**.
- **Objectives:** It envisages the development of **seafood production, processing, marketing, and exports** in India.
  - The Government of India recommends new standards for fishing vessels, storage premises, processing plants, and conveyances based on the recommendations of MPEDA.
- **Functioning:** The MPEDA enrolls exporters, lays down quality standards, liaisons with importers to boost exports and conducts **capacity-building programmes** like training, awareness campaigns for relevant stakeholders to increase production and productivity.
- **Headquarters:** in **Kochi, Kerala**.

### What are the Government Initiatives Related to Seafood Exports?

- **Pradhan Mantri Matsya Sampada Yojana (PMMSY):** It was launched in 2020 for providing support in **quality shrimp production, species diversification, promotion of export-oriented species**, branding, standards and certification, training and capacity building, creation of post harvest infrastructure through this flagship scheme.

Note:



#### ➤ **Fisheries and Aquaculture Infrastructure Development Fund:**

Launched in 2018, FIDF provides loans to address infrastructure and modernization needs in both marine and inland fisheries.

#### ➤ **Kisan Credit Card (KCC) Fisheries scheme:** It provides adequate and timely credit support to fisheries farmers for their working capital requirements.

- New cardholders can obtain credit up to **Rs. 2 lakhs** with interest subvention.
- Existing KCC holders can access an increased credit limit of Rs. 3 lakhs.
- The lending rate for KCC loans is **7%**, including 2% interest subvention per annum by the Government of India.

#### **UN: Trillions Required to Rescue SDGs**

Recently, a new report released by the **United Nations (UN)** stated that more investment is needed if the 17 **Sustainable Development Goals (SDGs)**, agreed upon by all **United Nations** members back in 2015, are to be achieved by 2030.

- The reason for this situation is due to **staggering debt burdens** and **sky-high borrowing costs faced by developing countries** that prevent them from responding to the confluence of crises they face.

#### **What are the Key Highlights of UN Financing for Sustainable Development Report 2024?**

##### ➤ **Key Issues:**

- **Lack of Basic Services:** Rising geopolitical tensions, climate disasters and a global cost-of-living crisis have hit billions of people globally, which has halted the progress on healthcare, education, and other development targets.
- **Increase in Debt Services:** Debt services in the **Least developed countries (LDC)** will increase from USD 26 billion annually in 2022 to **USD 40 billion annually** between 2023 and 2025.
  - Stronger and more frequent disasters, caused by the ongoing climate crisis, account for more than **half of the debt upsurge** in vulnerable countries.
- **Higher Burden of Interest Payment:** The poorest countries now spend 12% of their revenues on interest payments, 4 times more than they spent a decade ago.
  - Roughly **40%** of the global population live in countries where governments spend more on interest payments than on education or health.
- **Slowing Development Fundings:** In **Least developed countries**, development fundings are slowing down.

Note:



drashti



- Due to several reasons such as **low domestic revenue growth** due to **tax evasion and avoidance**, falling rate of **corporate tax** (which was 28.2% in 2000 to 21.1% in 2023), due to **globalisation** and tax competition etc.
- Also, **Official Development Assistance (ODA)** from **OECD** countries and **climate finance commitments** are not being met.
- According to the **Financing for Sustainable Development Report: Financing for Development at a Crossroads Report 2024**, around **USD 4.2 trillion** investments is needed to close the development financing gap.

- This number was **USD 2.5 trillion** before the **Covid-19** pandemic began.

➤ **Suggestions:**

- International financial system, which was set up at the **1944 Bretton Woods Conference**, is no longer fit for purpose.
- A “**massive surge of financing**” and a “**reform of the international financial architecture**” can help to achieve SDGs goals by 2030.
- Setting up a **new coherent system** that is better equipped to respond to **crises**.
- To achieve the SDGs **global cooperation, targeted financing, and, crucially, the political will** is the need of the hour.



**What is the Progress of India in Achieving SDGs?**

- **Progress:** India ranks **112th out of 166 countries** (from **121st in 2022**) in terms of progress towards the Sustainable Development Goals (SDGs) in United Nations SDG Index and Dashboards Report 2023.
- **Progress in Key Goals:**
  - **Goal 1- No Poverty:** India has successfully lifted millions of people out of poverty, **reducing the**

**poverty rate from 45% in 1993 to around 21% in 2011.** (Goal 1: No Poverty)

- Around **415 million** people exited poverty within a span of just 15 years between 2005 to 2021 in India, according to the latest **Global Multidimensional Poverty Index (MPI) 2023**
- **Goal 2- Zero Hunger:** The prevalence of **undernourishment** in India has decreased from 18.2% in 2004-2006 to **14.5% in 2016-2018**.

Note:

- However, India is still home to a **quarter of all undernourished people worldwide**, making the country a key focus for tackling hunger on a global scale.
- **Goal 3- Good Health and Well-being:** India has made significant improvements in **maternal and child health**, with a reduction in maternal mortality ratio from **384 in 2000 to 103 in 2020 (UN MMEIG 2020 report)**.
  - Under-five mortality rate has also declined from 89 per 1,000 live births in 1990 to **34 in 2019**.
- **Goal-4 Quality Education:** According to the Education Ministry, the literacy rate in rural India stands at 67.77%, while in urban India, it is 84.11%
  - The **ASER 2023** data shows that in the surveyed rural districts, more than **85%** of youth (age 14-18) are currently enrolled in some kind of educational institution.
- **Goal 5- Gender Equality:** The **female labour force participation rate** in India increased from 23.3% in 2017-18 to 37.0% in 2022-23 (**PLFS-5**)

### ***What Measures can be Adopted to Boost SDG Financing?***

- **Dedicated Investment Funds:** Establishing specialized investment funds dedicated to financing projects and initiatives that directly contribute to specific SDGs.
  - These funds could be structured as **public-private partnerships**, attracting investments from governments, institutional investors, and impact-driven private investors.
- **Policy and Institutional Reforms:** Ensure national policies and regulations are conducive to SDG implementation.
  - Enhancing **domestic resource mobilization** through measures such as progressive taxation, reducing tax evasion and tackling illicit financial flows can increase the availability of funds for SDG implementation.
- **International Cooperation:** International cooperation and coordination among governments, international organizations, civil society, and the private sector are crucial for mobilizing resources, sharing best practices, and addressing common challenges in SDG financing.
  - Providing **debt relief** for developing countries to free up resources for SDG investments.
  - Developed countries should meet their **Official Development Assistance (ODA)** commitments

to support SDG implementation in low-income countries.

- Bringing **Global Tax Reforms** to address **tax havens** and ensuring multinational corporations pay their fair share of taxes.
- **Technology and Innovation:** Data analytics and predictive modeling techniques can be used to analyze large datasets and identify trends, patterns, and investment opportunities related to SDGs.
  - By these tools, **financial institutions, investors, and policymakers** can make informed decisions, optimize resource allocation, and maximize the impact of SDG financing initiatives.

## **Navigating India's Transition to Sustainability**

### ***Why in News?***

Recently, PwC India, a professional services network has published a report called '**Navigating India's Transition to Sustainability**'.

- The Report has focused on **sustainability initiatives** of leading companies in India.

### ***What are the Key Findings of the Report?***

- **About:**
  - The report analyses how companies are adapting to the **Business Responsibility and Sustainability Reporting (BRSR)** disclosures mandated by the **Securities and Exchange Board of India (SEBI)**.
  - The analysis covers the **BRSR** reports of the **top 100 companies** for the financial year ended 31<sup>st</sup> March 2023.
  - The business sector is seen as a critical enabler in achieving **India's net zero vision by 2070**.
    - **Net Zero** is referred to as **carbon neutrality**, i.e. achieving an overall balance between greenhouse gas emissions produced and greenhouse gas emissions taken out of the atmosphere.
- **Key Findings of the Report:**
  - **51%** of India's top 100 listed companies by **market capitalisation** disclosed their data for FY23 despite it being a voluntary disclosure in **BRSR**.
  - **34%** of the companies have reduced their **Scope 1** emissions and **29%** have reduced their **Scope 2** emissions.

Note:

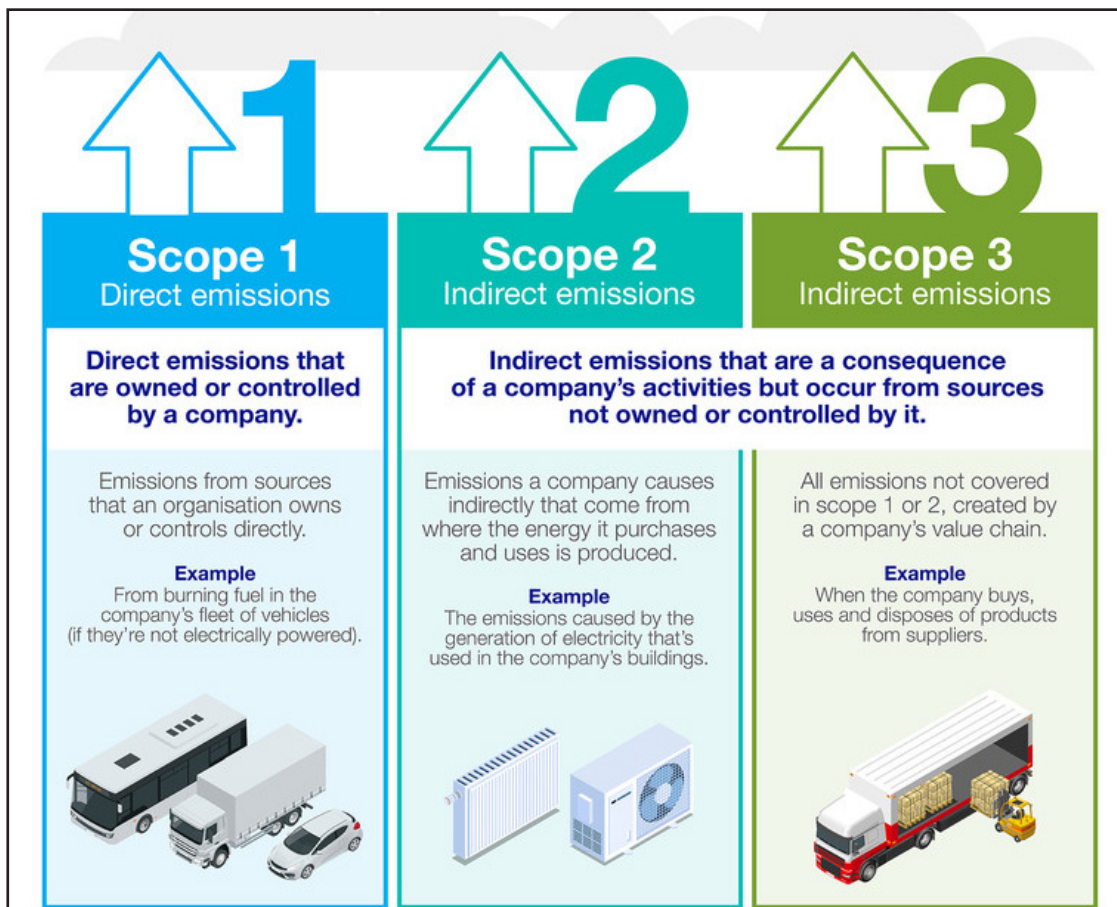


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- **Scope 1** covers emissions from sources that an organisation owns or controls directly.
- **Scope 2** is emissions that a company causes indirectly and come from where the energy it purchases and uses is produced.
- **44%** of the top 100 listed companies conducted the **life-cycle assessment** of their products or services.
- **49%** of companies have increased their energy

consumption from **renewable sources** and **31%** of companies have disclosed their **net-zero targets**.

- Key initiatives leading to emission reduction include transitioning to energy-efficient technologies such as LEDs, adopting efficient air-conditioning, ventilation, and heating systems, shifting to renewable sources for energy needs, purchasing carbon offsets, and entering into off-site power purchase agreements.



**Note:**

- **Business Responsibility and Sustainability Reporting (BRSR)** aims to facilitate more meaningful engagement between businesses and their stakeholders by focusing on **Environmental, Social, and Governance (ESG)** considerations.
- **ESG** goals encompass a framework of guidelines that compel companies to adhere to improved **governance, ethical conduct, environmentally sustainable practices**, and social responsibility in their operations.
  - The **environmental criteria** assess a company's role as a custodian of the environment.
  - **Social** criteria evaluate the company's handling of relationships with employees, suppliers, customers, and the communities in which it operates.
  - **Governance** focuses on the **leadership**, executive compensation, auditing, internal controls, and shareholder rights within a company.

Note:





### How Significant is the Report for India?

- The report sheds light on India's journey towards sustainability, emphasising **ESG** considerations.
  - The report encourages companies to be accountable for their sustainability efforts.
- The report aligns with the **BRSR** framework introduced by the **SEBI**. The report serves as a guide for compliance and transparent disclosure.
- The report showcases India's commitment to sustainability, enhancing investor confidence.
  - Globally, sustainable practices are becoming a competitive advantage, and this report positions India favourably.
- Policymakers can draw insights from the report to shape regulations and policies that promote sustainable practices.
- The shift towards sustainability in India isn't merely about meeting regulations but it's also about fostering growth in a responsible manner.
- The report emphasises the need to balance economic development with environmental and social well-being.

### What are the Initiatives taken to Ensure ESG Compliance in India?

- In 2011, the **Ministry of Corporate Affairs (MCA)** released the **National Voluntary Guidelines (NVGs)** on Social, Environmental and Economic Responsibilities of Business, marking an early step in defining **ESG** disclosure standards for companies.
- The **SEBI** introduced the **Business Responsibility Reports (BRR)** in 2012, requiring the top 100 listed entities by market capitalisation to include BRR in their annual reports. This was later extended to the top 500 listed entities in 2015.
  - In 2021, SEBI replaced the BRR reporting requirement with the more comprehensive **Business Responsibility and Sustainability Report (BRSR)**.
- The BRSR seeks disclosures from listed entities on their performance against the nine principles of the '**National Guidelines on Responsible Business Conduct**' (NGBRCs).
- Companies have the opportunity to use different reporting frameworks in order to show their commitment to ESG practices like **Global Reporting**

Note:

**Initiative (GRI), Carbon Disclosure Project (CDP), and Sustainability Accounting Standards Board (SASB).**

### SEBI

- **SEBI** is a **Statutory Body** established in 1992 in accordance with the provisions of the **Securities and Exchange Board of India Act, 1992**.
- The basic functions of **SEBI** is to protect the interests of investors in securities and to promote and regulate the securities market.
- The headquarters of **SEBI** is situated in **Mumbai**. The regional offices of **SEBI** are located in Ahmedabad, Kolkata, Chennai and Delhi.

## 30 Years of TRIPS

### Why in News?

Recently, **World Trade Organisation (WTO)** members commemorated the **30<sup>th</sup> anniversary** of the Agreement on **Trade-Related Aspects of Intellectual Property Rights (TRIPS)**.

- In **Marrakesh**, an important agreement was made that helped create the **WTO** in 1995. This agreement, called **TRIPS**, has had a long-lasting effect.

### How does the TRIPS Agreement Evolved?

- **The Venetian Patent Statute (1474)**: It was the first codified patent system in Europe that granted inventors a temporary monopoly on “new and ingenious devices”.
- **The Industrial Revolution and the Need for International Standards (19<sup>th</sup> Century)**: Rapid technological advancements created a need for the harmonisation of patent laws.
  - The **Paris Convention (1883)** was the first step taken to protect intellectual work in other countries.
  - The **General Agreement on Tariffs and Trade (GATT)** addressed intellectual property in a limited way.
  - **The Uruguay Round**, spanning from 1987 to 1994, led to the Marrakesh Agreement establishing the **WTO**, including the **TRIPS Agreement**.
- The **WTO Agreement on TRIPS** is the most comprehensive multilateral agreement on intellectual property (IP).

# INTELLECTUAL PROPERTY RIGHTS (IPRs)

*IP refers to intangible assets owned/legally protected by an individual/company from outside use or implementation without consent.*

### NEED FOR IPR

- Encourages Innovation
- Economic growth
- Safeguard rights of creators
- Enhances ease of doing business

### INDIA AND IPRS - INITIATIVES

- National IPR Policy 2016:**
  - Motto: “Creative India; Innovative India”
  - Compliant with TRIPS Agreement
  - Brings all IPRs to single platform
  - Nodal Dept - Department of Industrial Policy & Promotion (Ministry of Commerce)
- National (IP) Awareness Mission (NIPAM)
- Kalam Program for Intellectual Property Literacy and Awareness Campaign (KAPILA)

**World Intellectual Property Day: 26th April**

### RELATED CONVENTIONS/TREATIES (INDIA SIGNATORY TO ALL)

- WIPO Administered (first recognised IPR under):**
  - Paris Convention for the Protection of Industrial Property 1883 (**Patents, Industrial Designs**)
  - Berne Convention for the Protection of Literary and Artistic Works 1886 (**Copyrights**)
- WTO - TRIPS Agreement:**
  - Ensures adequate standard of protection
  - Argues for incentives for technology transfer to developing countries
- Budapest Treaty 1977:**
  - International recognition of the deposit of micro-organisms for the purposes of patent procedure
- Marrakesh VIP Treaty 2016:**
  - Facilitate access to published works by visually impaired persons and persons with print disabilities
- IPR also outlined in **Article 27** (Universal Declaration of Human Rights)

Intellectual Property	Protection	Law in India	Duration
Copyright	Expression of Ideas	Copyright Act 1957	Variable
Patent	Inventions- New Processes, Machines, etc.	Indian Patent Act 1970	20 years Generally
Trademarks	Sign to distinguish business goods or services	Trade Marks Act 1999	Can last Indefinitely
Trade Secrets	Confidential Business Information	Protected without Registration	Unlimited time
Geographical Indication (GI)	Sign used on specific geographical origin and possess qualities due to site of origin	Geographical Indications of Goods (R & P) Act, 1999	10 years (Renewable)
Industrial Design	Ornamental or aesthetic aspect of an article	Design Act, 2000	10 years

Note:



### What has been the TRIPS Agreement's Role in International Collaboration?

- **Harmonisation of IP Laws:** TRIPS set minimum standards for IP protection across member countries.
  - This created a **more predictable legal environment** for international trade and collaboration in research and development (R&D).
- **Increased Transparency:** TRIPS **obligated members to disclose their Intellectual Property (IP) laws** and regulations, fostering greater transparency in the global IP system.
- **Knowledge Sharing:** TRIPS provisions on **technology transfer** encourage collaboration between developed and developing countries.
  - Developed countries are obligated to provide mechanisms for **transferring technology** to developing countries under certain conditions.
- **Promotion of Social and Economic Welfare:** WTO highlighted TRIPS' role in **balancing rights with obligations** to promote social and economic welfare, aligning with the **SDGs'** objectives.
  - During the late 1990s crisis, TRIPS' flexibilities were crucial for access to **antiretroviral treatments**, illustrating its significance in public health emergencies.

### What are the Challenges Related to TRIPS?

- **Balance Between Rights and Access:** TRIPS' focus on strong IP rights can limit access to essential medicines, educational materials, and agricultural technologies in developing countries.
- **Biopiracy and Traditional Knowledge:** Concerns exist regarding the **patenting of genetic resources** and traditional knowledge from developing countries without fair compensation.
  - TRIPS' provisions on disclosure of the origin of genetic resources and traditional knowledge are seen as inadequate.
- **Enforcement Issues:** Enforcing IP rights, particularly in areas like **copyright infringement and counterfeiting**, remains a challenge for many developing countries.
  - Lack of resources and robust legal systems can hinder effective IP protection.
- **Data Privacy:** International discussions are needed to address data ownership, privacy, the issue of **e-commerce**, and the patentability of data-driven

inventions in the context of **Artificial Intelligence (AI)** and **big data**.

- **Global Health Equity:** Amidst ongoing debate on flexibilities within the TRIPS agreement, like compulsory licensing, access to affordable medicines still remains a challenge, especially in the global south.

## RBI Eases FEMA Regulations

### Why in News?

Recently, the **Reserve Bank of India** has eased **Foreign Exchange Management Act (FEMA)** regulations to facilitate foreign investment in **derivatives**.

- A derivative is a **type of financial security** that is set between two or more parties. Derivatives can take many forms, from stock and bond derivatives to economic indicator derivatives.

### What are the Recent FEMA Regulations?

- **About:**
  - The recent amendments aim to **facilitate margin management** for trading in **permitted derivatives**, both within and outside India.
  - Foreign investors will find it easier to **invest in derivative instruments** following amendments to the **FEMA regulations** by the **RBI**.
- **Present Mechanism:**
  - **RBI lists interest rate derivatives** (**interest rate swap**, **forward rate agreement**, interest rate future and **foreign currency derivatives**, foreign currency forward, **currency swap** and currency option) as permitted derivative contracts.
  - Similarly in equity, **four types of derivatives** include forward contracts, futures contracts, **options contracts** and **swap contracts**.
- **Recent Changes:**
  - **Permission for Authorised Dealer (AD) to Allow Interest-Bearing Accounts:** Authorised Dealer (AD) in India can allow persons resident outside India to **open, hold, and maintain interest-bearing accounts** in Indian Rupees and/or foreign currency for collecting margin in India for permitted derivative contracts.
    - In the present mechanism also RBI has kept the permitted derivative contracts similar to the previous provisions.

Note:



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### ○ Benefits for Non-Residents:

- Non-residents can **open and maintain interest-bearing accounts** with ADs in India for margin-related purposes, earning interest on these funds instead of keeping them idle.
- Having a dedicated account for margin requirements **makes it easier for non-residents** to manage their margin obligations and funds related to permitted derivative contracts in India.

### What is Foreign Exchange Management Act, 1999?

- The legal framework for the administration of foreign exchange transactions in India is provided by the **Foreign Exchange Management Act, 1999**.
- Under the FEMA, all transactions involving foreign exchange have been classified either as **capital or current account transactions**.
  - Current Account Transactions:
    - All **transactions** undertaken by a resident that **do not alter his/her assets or liabilities**, outside India are current account transactions.
    - **Example:** Payment in connection with foreign trade, expenses in connection with foreign travel, education etc.
  - Capital Account Transactions:
    - It includes those transactions which are **undertaken by a resident of India** such that **his/her assets or liabilities outside India are altered**.

- **Example:** Investment in foreign securities, acquisition of immovable property outside India etc.

### ➤ Resident Indians:

- A **'person resident in India'** is defined in **Section 2(v) of FEMA, 1999** as
  - A person residing in India for **more than 182 days** during the course of the preceding financial year.
  - Any **person or body corporate** registered or incorporated in India.

## Strengthening of Rupee

### Why in News?

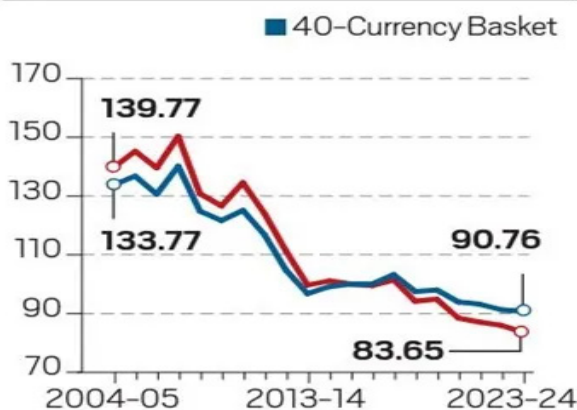
The **Indian Rupee** depreciated by around **27.6%** against the **US dollar** in the last 10 years.

- The currency has gained real value when considering its **exchange rate** against major global currencies.

### How is the Decadal Journey of the Indian Rupee?

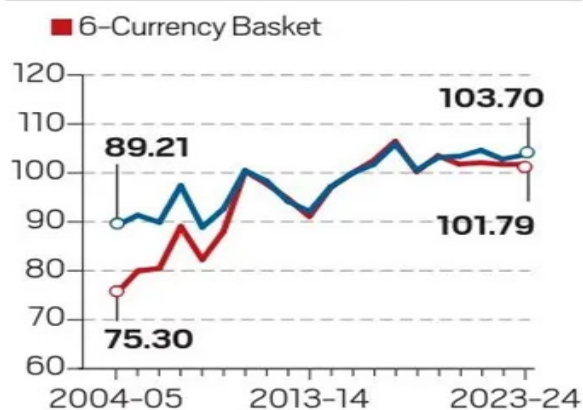
- The rupee fell from Rs 44.37 to Rs 60.34 (**26.5%**) from **2004 to 2014** against the **US dollar**.
- The rupee has further **depreciated** from Rs 60.34 to Rs 83.38 (**27.6%**) against the US dollar in the last between **2014 to 2024**.
  - **Appreciation** and **depreciation** of currency refer to changes in the value of a currency relative to other currencies in the **foreign exchange** market.

### TRADE-WEIGHTED NEER (BASE: 2015-16 = 100)



Note: Figures are for April-March financial year.

### TRADE-WEIGHTED REER (BASE: 2015-16 = 100)



Source: Reserve Bank of India

Note:

- Between 2004 and 2024, **rupee declined** by **32.2%** (from 133.77 to 90.76) as per **40-currency basket NEER** and **40.2%**, (from 139.77 to 83.65) as per **6-currency basket NEER** and during the same period.
  - The rupee's average exchange rate against the **US dollar** dropped by **45.7%**, from Rs 44.9 to Rs 82.8.
  - Therefore, between 2004 and 2024, the rupee has undergone a **smaller depreciation** against the currencies of India's major trading partners compared to its depreciation solely against the US dollar.
- Also rupee's **trade-weighted REER** for both **40-currency and 6-currency basket** has increased in the last 20 years indicating that **Rupee strengthened between 2004-05 and 2023-24.**
  - Rupee has strengthened in **real terms** over time, while ruling at 100 or above most of the time in the last 10 years.

### What is an Exchange Rate?

- **About:**
  - An **exchange rate** is the rate at which **one currency can be exchanged for another currency**. It represents the value of one currency in terms of another currency.
  - **Exchange rates** are typically expressed as the amount of one currency needed to purchase one unit of another currency.
- **Types:**
  - **Fixed Exchange Rate:** Governments or **central banks set the value of their currency** in relation to other currencies and maintain that value by buying or selling their own currency in foreign exchange markets.
  - **Floating Exchange Rate:** Value of a **currency is determined by the forex market based on supply and demand**. Most major currencies operate under this system.
  - **Managed Float:** A **mix of fixed and floating exchange rates** where governments intervene occasionally to stabilise their currency's value.
- **Factors Affecting Exchange Rates:**
  - **Interest Rates:** Higher interest rates in a country tend to attract foreign investment, increasing demand for that country's currency and strengthening its exchange rate.

- **Inflation:** If inflation is higher in a country compared to its trading partners, its currency weakens as its purchasing power decreases.
- **Economic Growth:** A strong and growing economy fosters confidence in a country's currency, leading to a stronger exchange rate.
- **Political Stability:** Political instability can deter foreign investment and weaken a country's currency.
- **Supply and Demand:** The fundamental principle of supply and demand plays a major role. If more people want to buy a particular currency (higher demand), its exchange rate strengthens.

### What is Effective Exchange Rate (EER)?

- **About:**
  - The **Effective Exchange Rate (EER)** of a currency is a weighted average of its exchange rates **against other currencies**, adjusted for inflation and trade competitiveness.
  - The currency weights are derived from the **share of the individual countries to India's total foreign trade**.
- **Effect on Strength of a Currency:**
  - **Strength or Weakness of a Currency** depends on the **Exchange rate** of that currency with the currency of all trading Partners.
  - **For India,** The strength or weakness of the Rupee is, hence, a function of its exchange rate with not just the US dollar, but also with other global currencies.
    - In this case, it would be against a basket of currencies of the country's most important trading partners, termed as the rupee's "**Effective Exchange Rate**" or EER.
- **Types of Effective Exchange Rate(EER):**
  - **Nominal Effective Exchange Rate (NEER):** NEER is a simple **average of bilateral exchange rates** between the domestic currency and the **currencies of major trading partners**, weighted by the respective trade shares.
    - **NEER measures the overall strength** or weakness of a currency relative to a basket of other currencies **without adjusting for inflation**.
    - The **NEER indices** are with reference to a **base value of 100 and base year as 2015-16**.

Note:

- The **Reserve Bank of India** has constructed NEER indices of the rupee against a 2 different baskets of Currencies:
  - **6 Currency Basket:** It is a trade-weighted average rate at which the **rupee is exchangeable with a basic currency basket**, comprising the US dollar, the euro, the Chinese yuan, the British pound, the Japanese yen and the Hong Kong dollar.
  - **40 currencies Basket:** It covers a bigger basket of 40 currencies of countries that **account for about 88% of India's annual trade flows**.

➤ **Real Effective Exchange Rate (REER):**

- REER **adjusts NEER for differences in inflation rates** between the domestic economy and its trading partners. It **reflects changes in the relative price levels of goods and services**.
- REER provides a **more accurate measure of a currency's trade competitiveness** by accounting for changes in price levels.
- REER is calculated by dividing NEER by a **price deflator** (such as **Consumer Price Index**) for the domestic economy and multiplying by 100.

**What are the Implications of Currency Depreciation on the Indian Economy?**

➤ **Positive Impacts:**

- **Boosts Exports:** Indian exports become cheaper for foreign buyers, potentially increasing demand and boosting export earnings.
- **Inward Remittances:** A weaker rupee will enable workers abroad to send more rupees back home when they convert their foreign currency earnings.
  - This can increase disposable income in India.

➤ **Negative Impacts:**

- **Higher Import Costs:** Imported goods, including essential items like oil and machinery, become more expensive.
  - This can lead to **inflationary pressures**, where the general price level of goods and services rises, impacting the common man's purchasing power.
- **Costlier Foreign Debt:** If India has borrowed money in foreign currencies, a **weaker rupee means** it has to pay back more rupees to settle the debt.

- This can **strain the government's finances**.

- **Discourages Foreign Investment:** A depreciating rupee can be seen as a sign of economic instability, potentially discouraging foreign investors from investing in India.

**Devaluation and Depreciation of Currency**

Feature	Devaluation	Depreciation
Cause	Government Action	Market Forces (Demand and Supply)
Exchange Rate System	Fixed	Floating
Intentionality	Deliberate Action to Weaken Currency for economic gain	Natural Decline in Value
Control	Government Control Exchange Rate	Market Determines Exchange Rate

## Socio-Ecological Impact of LPG Price Escalation

### Why in News?

Recently, a study revealed heavy reliance on fuelwood in Jalpaiguri, West Bengal despite government efforts to **promote Liquefied Petroleum Gas (LPG)**.

- It highlights the **high prices of LPG** and environmental impact of reliance on fuelwood, raising sustainability concerns and emphasising the need for accessible alternatives.

### What are the Key Highlights of the Study?

- **Dependence on Forests for Fuelwood:** Local communities in Jalpaiguri heavily **rely on forests for fuelwood** due to **limited access to alternative cooking fuels**.
- **Economic Constraints:** The cost of commercial LPG cylinders, priced at over Rs 1500 is considered exorbitant for many households, particularly those **below the poverty line**.
- **Government Initiatives:** Government schemes, such as the **Pradhan Mantri Ujjwala Yojana (PMUY)**, facilitated the transition from fuelwood to LPG initially, but the **subsequent increase in LPG prices posed a challenge**.

Note:



- Despite efforts to increase LPG penetration in rural areas, many households only refill their cylinders infrequently due to the high cost.
- **Environmental and Social Implications:** Dependence on fuelwood contributes to **forest degradation** and increases the risk of **human-wildlife conflicts**, particularly encounters with **elephants**.
  - The persistence of fuelwood usage jeopardises **forest health, wildlife habitats, and local livelihoods**.
- **Sustainable Alternatives:** Collaborative efforts with the **West Bengal Forest Department and Joint Forest Management Committees** aim to promote sustainable forest management practices.
  - Initiatives include **planting saplings of high fuelwood value in villages**, promoting **efficient cooking stoves**, optimising **shade tree density** in tea plantations, and fostering multi-stakeholder engagement for resource governance.
- **Locally Acceptable Solutions:** To secure forests, wildlife, and livelihoods, it is imperative to develop locally acceptable and sustainable alternatives to fuelwood.
  - Community involvement and engagement with relevant stakeholders are crucial for the success and adoption of **alternative cooking fuels and forest conservation efforts**.

### ***Has the Government Pushed the Use of LPG?***

- The Indian government has made efforts to increase LPG adoption in rural households:
  - Launched the **Rajiv Gandhi Gramin LPG Vitruk scheme** in 2009 to expand LPG distribution in remote areas.
  - Initiated **direct benefit transfers** for LPG under the **'PAHAL' scheme** in 2015.
  - Implemented **direct home-refill deliveries and the 'Give it Up' program** in 2016.
  - Introduced the **Pradhan Mantri Ujjwala Yojana (PMUY)** in 2016 to install LPG connections in 80 million below-poverty-line households.
  - The scheme also provides a **subsidy of Rs 200 for every 14.2-kg cylinder, which increased to Rs 300 in October 2023**.
- However, despite these efforts, **LPG prices in India were reportedly the highest among 54 countries in 2022, at around ₹300/liter**.

### **Note:**

- The prices of **LPG, petrol, and diesel** in India are among the highest in the world. While arguments **include external factors and higher prices globally**, the real impact is greater in India due to **differences in purchasing power and affordability**.
  - Using **purchasing power parity (PPP) dollars**, the price of petrol in India is the 3<sup>rd</sup> highest globally, behind only Sudan and Laos.
  - **LPG prices in India are the world's highest**. Diesel prices in India are the 8<sup>th</sup> highest.
- Data from the **2014-2015 ACCESS survey**, conducted by the **Council on Energy, Environment and Water**, found **LPG's cost to be the foremost barrier to its adoption and continued use in rural poor households**.
  - Thus, 750 million Indians primarily use solid cooking fuels (wood, dung, agricultural residues, **coal**, and charcoal) every day.
  - Solid cooking fuels are associated with innumerable health hazards and socio-economic and environmental impacts.

### ***What Drives India's High LPG Prices?***

- **Dependency on Imports:**
  - India relies heavily on imports for LPG, with more than **60% of its needs being met through imports**.
  - This import dependence contributes significantly to the pricing dynamics of LPG in the country.
  - India's LPG prices are influenced by the average **Saudi Contract Prices (CP)** for propane and butane.
    - LPG is a mix of gasses, mainly consisting of **butane and propane**, with the percentage of butane limited.
      - The CP is the international price for LPG trading, as set by Saudi Aramco.
      - The average Saudi CP increased from USD 454 per tonne in FY20 to USD 710 in FY23, contributing to the hike in LPG prices.
      - Analysts attribute this rise to improved **demand from Asian markets, especially for petrochemicals**, where propane serves as a crucial feedstock.
- **Import Dynamics:**
  - India's import of **8.7 million tonnes of LPG in April-September 2022** out of a **total consumption**

Note:



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of 13.8 million tonnes underscores its reliance on imported LPG.

- The pricing formula for LPG in India is dependent on global market trends, particularly in the **Middle East, which is India's largest LPG supplier.**
- **Impact on Consumers:**
  - The recent hike of Rs 50 per cylinder in March 2023 translates to a 4.75% increase in the price of a 14.2 kg domestic LPG cylinder in Delhi.
  - Taxes and dealer commissions **contribute to only 11% of the cylinder's retail price, with almost 90% attributed to the cost of LPG itself**, unlike petrol and diesel prices where taxes dominate.

### ***What are Potential Solutions for Reducing Dependency on Fuelwood?***

- **Promoting Renewable Energy Sources:** Encouraging the adoption of renewable energy sources such as **solar, wind, and hydropower** can help reduce reliance on fuelwood.
  - Many countries have implemented policies and incentives to promote the use of renewable energy, such as **feed-in tariffs, tax credits, and subsidies.**
- **Improved Cookstoves:** Traditional stoves waste a lot of heat. Distributing **Improved Cookstoves (ICS)** that burn fuelwood more efficiently can significantly reduce consumption.
  - For example, projects in Nepal have shown that ICS use can cut fuelwood needs by half.
  - The **Global Alliance for Clean Cookstoves**, a public-private partnership, has worked to distribute over 80 million clean and efficient cookstoves in developing countries since its inception in 2010.
- **Alternative Fuels:** Promoting the use of alternative fuels such as **biogas, pellets, or briquettes** made from agricultural waste can reduce the demand for fuelwood and provide a more sustainable energy source.
- **Sustainable Forest Management Practices:** Ensuring sustainable forest management practices can help maintain a **balance between fuelwood extraction and forest regeneration**, reducing the environmental impact of fuelwood consumption.

## **Chocolate Industry Meltdown**

### ***Why in News?***

The **chocolate industry** is facing a **crisis as the price of cocoa beans surges**, reaching a record USD 12,000 per tonne in April 2024.

- This surge, nearly four times the price in 2023, has sparked concerns and drawn attention to the underlying causes behind the upheaval.

### ***What are the Reasons Behind the Rising Prices of Cocoa?***

- **El Nino and Climate Change:**
  - The immediate reason for the ongoing crisis is the **bad harvest season in West African countries Ghana and Ivory Coast**, where 60% of the world's cocoa beans come from.
  - The development of **El Niño**, a weather pattern that refers to an abnormal warming of surface waters in the **equatorial Pacific Ocean**, led to **heavier-than-usual rainfalls in West Africa**, creating an ideal ground for the spread of **black pod disease**, which causes cocoa pods to rot on the branches of cocoa trees.
  - **Climate change** is also a driving factor, with **Heat waves, droughts**, and heavy rainfalls further threatening cocoa production, posing long-term challenges for farmers and chocolate manufacturers alike.
- **Low Income for Cocoa Farmers:**
  - The underlying issue is that the big chocolate companies **do not pay enough to the cocoa farmers in West Africa**, who earn on average as little as less than USD 1.25 a day, which is well below the **United Nations' absolute poverty line of USD 2.15 per day.**
  - Farmers are **not able to invest in land to increase yield or build resilience against climate change** due to the lack of funds, leading to the use of slave and child labour, and the selling off of land to illegal gold miners.
    - As a result, the farmers continue to live in poverty, unable to invest in their land or adopt sustainable practices, **leading to decline in production and price surge.**

Note:

- Despite the **huge profits made by the chocolate companies, they have not done much to help raise farmers' income**, contributing to the long-term exploitation of farmers and potentially leading to **higher chocolate prices for consumers in the long run**.
- **Potential Consequences of the Ongoing Crisis:**
  - The **International Cocoa Organisation (ICCO)** predicts a global shortfall of about 374,000 tonnes for the 2023-2024 season, exacerbating the scarcity of cocoa beans and driving up chocolate prices.
  - ICCO is an **intergovernmental organisation**

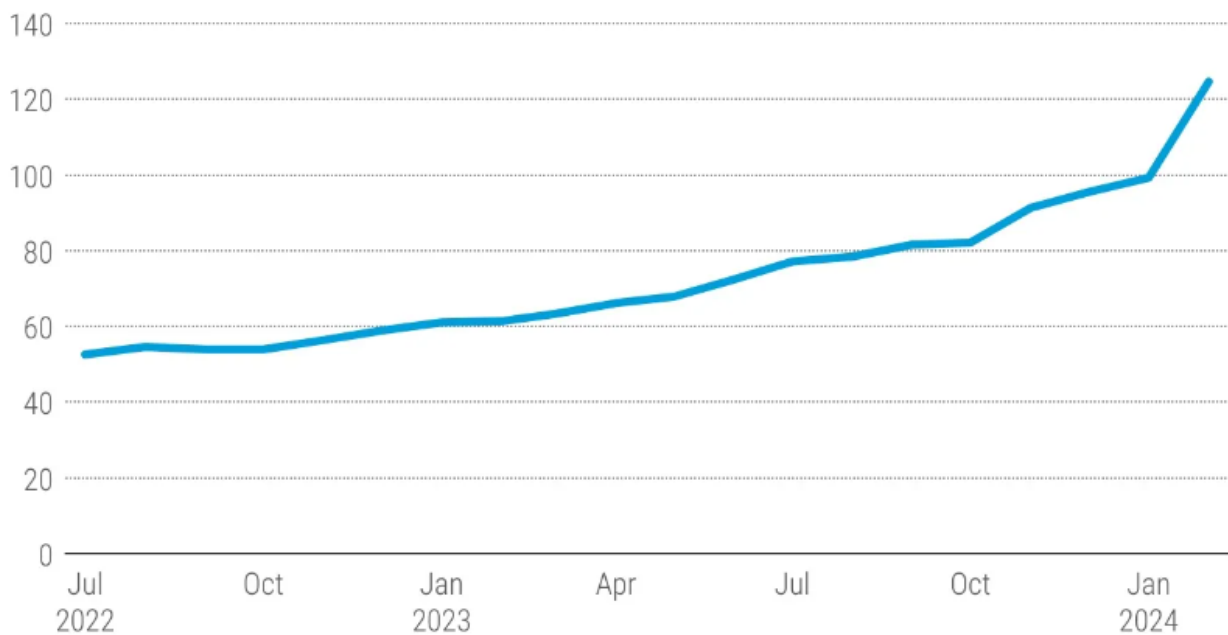
established in 1973 under the **United Nations**.

- Based in **Abidjan, Ivory Coast**, ICCO was created to implement the **first International Cocoa Agreement negotiated in Geneva** at a **United Nations International Cocoa Conference**.
- The scarcity of cocoa beans is likely to persist, leading to further exploitation of farmers and a rise in chocolate prices.
- Experts believe that the prominent chocolate companies have the room to redistribute wealth down the supply chain, but unless they do so, the situation is unlikely to improve.



## Bittersweet climb: The rising cost of cocoa

Cocoa prices, deflated by the US Consumer Price Index, July 2022 – February 2024, Index 2010 = 100



### Cocoa Cultivation Requirements

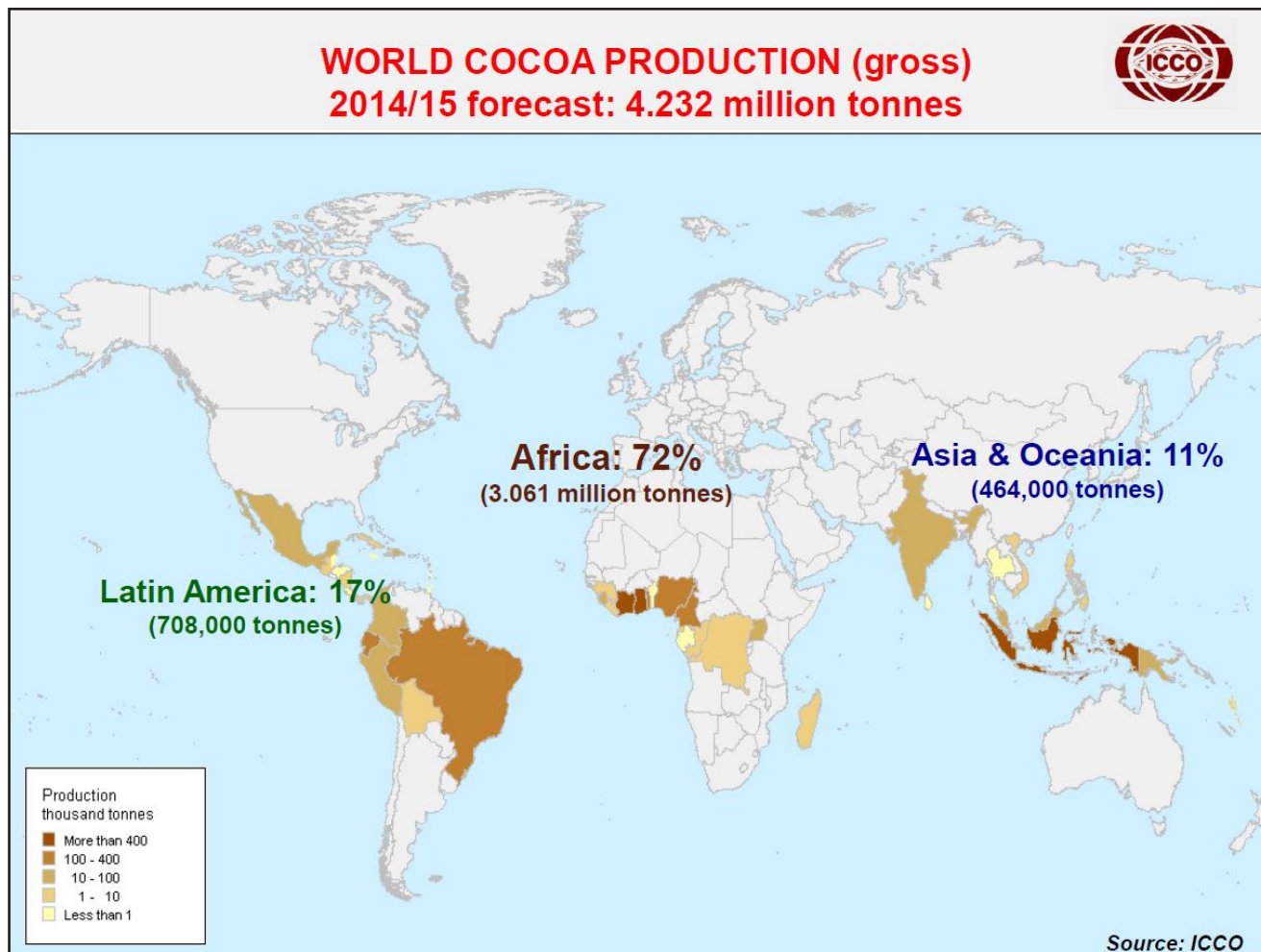
- **Altitude and Rainfall:** Cocoa can be grown up to **300 m above mean sea level**. It requires a **minimum of 90-100 mm rainfall per month** with an annual rainfall of 1500-2000 mm.
- **Temperature and Soil Conditions:** Cocoa prefers **warm and consistent temperatures**, the temperature range of 15°- 39°C with an optimum of 25°C is considered ideal.
  - Cocoa requires deep and well-drained soils. Poorly drained soil affects the growth of plants. The majority of the area under Cocoa cultivation is on **clay loam and sandy loam soil**. It grows well in the **pH range of 6.5 to 7.0**.

Note:



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- **Agroforestry:** Cocoa trees thrive under shade and are often grown under the canopy of taller trees. This agroforestry practice not only helps in maintaining the required microclimate but also supports biodiversity.
- **Cocoa Production in India:**
  - Cocoa is best cultivated in coconut and **areca nut** gardens in India, where **30-50% of sunlight can be intercepted by cocoa under the areca nut canopy.**
  - In India, it is mainly cultivated in **Andhra Pradesh, Karnataka, Kerala and Tamil Nadu** mainly as intercrop with Arecanut and Coconut.
  - **National Horticulture Mission** provides a subsidy of Rs 20,000 per hectare to cocoa farmers in Andhra Pradesh for the first three years.
  - **Central Plantation Crops Research Institute** Conducts systematic cocoa improvement programs with germplasm introductions.



## Regulatory Action Against Kotak Mahindra Bank by RBI

### Why in News?

The **Reserve Bank of India (RBI)** has barred **Kotak Mahindra Bank (KMB)** from onboarding new customers on its online and mobile banking channels and issuing fresh credit cards.

Note:

- However, the bank is allowed to provide these services to its existing customers.

### **What Led to the Restrictions by the Reserve Bank of India?**

- RBI observed “**serious deficiencies and non-compliances**” in KMB’s:
  - IT inventory and user access management.
  - Data leak and leak prevention strategy.
  - Business continuity and disaster recovery rigor and drill.
- These deficiencies were identified during RBI’s examination of the bank’s systems for 2022 and 2023.
- The regulator found that **KMB failed to address these concerns comprehensively** and promptly, despite recommendations and corrective action plans.
- The bank was also deemed non-compliant with **RBI’s subsequent recommendations or ‘Corrective Action Plans’ (CAPs)**.
  - CAPs are part of an intervention scheme of the RBI to ensure robustness of regulated entities.
- **Impact of RBI’s Restriction:**
  - The regulatory action may set back KMB’s credit growth and profitability, as credit cards are a higher-yielding target growth segment for the bank.
    - It could take a year for KMB to fully address RBI’s key concerns, as implementing changes and the external audit will take time.
  - The ban would hinder the growth trajectory of KMB’s retail products, adversely impacting margins and profitability.

### **What is the Role of the RBI in Banking Regulation?**

- **Banking Regulation Act of 1949:**
  - The RBI is the governing body for regulating and supervising the banks. **Banking Regulation Act of 1949** is an act that provides a framework for regulating the banks of India.
    - This Act gives RBI the power to **control the behavior of banks**. This Act was passed as the **Banking Companies Act of 1949**.
  - This Act monitors the **day-to-day operations of the bank**. Under this Act, the RBI can **license banks, put regulation over shareholding and voting rights of shareholders**, look over the appointment of the boards and management, and lay down the

instructions for audits. **RBI also plays a role in mergers and liquidation.**

- **No banking company can operate in India without a license from the RBI**, which can inspect the company’s books before granting the license and can also cancel the license if the company ceases its banking operations in India.
- **Prompt Corrective Action (PCA) Framework:**
  - The PCA Framework by the RBI is a supervisory strategy directed at banks that **exhibit weak financial metrics**.
  - The RBI’s PCA Framework involves monitoring key performance indicators of banks, such as the **Capital to Risk-weighted Assets Ratio (CRAR), Net Non-Performing Assets (NNPA) ratio, and the Leverage Ratio** ( level of debt incurred by a business entity against several other accounts in its balance sheet, income statement).
    - If a bank breaches certain risk thresholds set for these indicators, the **RBI may invoke PCA, which can lead to restrictions on dividend distribution, branch expansion, and management compensation, among other things**.
  - The objective of the **PCA Framework is to encourage banks to take corrective steps** preemptively to mitigate the risks posed by low capital levels, poor asset quality, or unprofitable operations.
  - It also aims to impose market discipline by making the financial conditions of banks transparent.

#### **Comparative Analysis with Past Actions by the RBI**

- In December 2020, HDFC Bank was barred from launching new digital products and sourcing new credit card customers due to **recurring outages in its internet and mobile banking platforms**.
- In October 2023, the **Bank of Baroda** was directed to suspend fresh onboarding of customers onto its ‘Bob World’ mobile application over “certain material supervisory concerns.”

## **India's Aviation Sector**

### **Why in News?**

After ruling the Indian skies, IndiGo is now attempting to make a mark globally with non-stop, **long-haul, and low-cost flights** from Indian airports.

Note:



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- However, the long-haul, low-cost airline model has been a challenge for many airlines, with numerous failures and few relatively stable and profitable operations.

### **What is the Long-haul, Low-cost Air Travel Model?**

#### ➤ **About:**

- The long-haul, low-cost air travel model is an attempt by **low-cost carriers (LCCs)** to expand their operations **beyond short-haul domestic and regional routes** and offer non-stop, long-duration flights at lower fares.
  - This model aims to replicate the success of LCCs in the short-haul segment by applying similar cost-cutting strategies and business practices to long-haul operations.

#### ➤ **Challenges:**

- **Higher fuel costs for operating larger, wide-body aircraft** on long-haul routes.
  - Increased operating costs for wider aircraft, such as more crew, maintenance, and airport fees.
- Difficulty in **maintaining the rapid turnaround times** and high aircraft utilisation levels that are critical to the LCC business model.
- Balancing the need for passenger comfort and amenities on long flights with the low-cost carrier's focus on minimising costs.
- Establishing a **viable network** and flight schedule that can sustain demand and profitability on long-haul, low-density routes.
- Competition from established full-service carriers with stronger brand recognition and loyalty on long-haul international routes.

#### ➤ **Successful Examples:**

- A few long-haul LCCs like Scoot, Jetstar, and French Bee have managed to establish relatively stable and profitable operations.
- Key strategies include offering a **hybrid product with some premium/business class amenities**, targeting underserved routes, and leveraging strong domestic/regional networks.

### **What is the Progress of India's Aviation Sector?**

#### ➤ **India's Aviation Boom:**

- India has emerged as the **third-largest domestic aviation market in the world**, after the USA and China.

- The industry has undergone a remarkable transformation, shedding its previous limitations and evolving into a vibrant and competitive sector.

- Proactive policies and strategic initiatives by the government have catalysed the growth of the aviation sector, fostering a conducive environment for expansion and innovation.

#### ➤ **Infrastructure Development:**

- India's airport network has witnessed a remarkable transformation, doubling its operational airports from **74 in 2014 to 148 in April 2023**, facilitating increased air travel accessibility.

#### ● **Regional Connectivity Scheme-UDAN:**

- The **Regional Connectivity Scheme-Ude Desh ka Aam Nagrik (RCS-UDAN)** was launched in 2016 to provide connectivity to unserved and underserved airports in the country.
- The scheme aims to **revive existing airstrips and airports**, bringing essential air travel access to isolated communities and boosting regional economic development.
- With **517 RCS routes operational, connecting 76 airports, UDAN has facilitated air travel for over 1.30 crore people**, promoting accessibility and economic growth

#### ➤ **Passenger Growth:**

- The aviation industry is experiencing a remarkable resurgence **post-Covid**, with a surge in passenger demand.
  - From January to September 2023, domestic airlines carried 112.86 million passengers, a **29.10% increase compared to the same period in 2022**.
  - International airlines carried 45.99 million passengers between January and September 2023, a **39.61% increase compared to the same period in 2022**.

#### ➤ **Carbon Neutrality:**

- The **Ministry of Civil Aviation (MoCA)** has taken initiatives to work towards carbon neutrality and achieving **net zero carbon emissions** at airports in the country.
  - Airport operators have been advised to **map carbon emissions** and work towards **carbon neutrality** and net zero emissions in a phased manner.

Note:



- **Greenfield airports** are being encouraged to prioritise carbon neutrality and net zero emissions in their development plans.
  - Airports like Delhi, Mumbai, Hyderabad, and Bengaluru have achieved **Level 4+ ACI Accreditation and become carbon neutral**.
  - 66 Indian Airports are operating on 100% Green Energy.

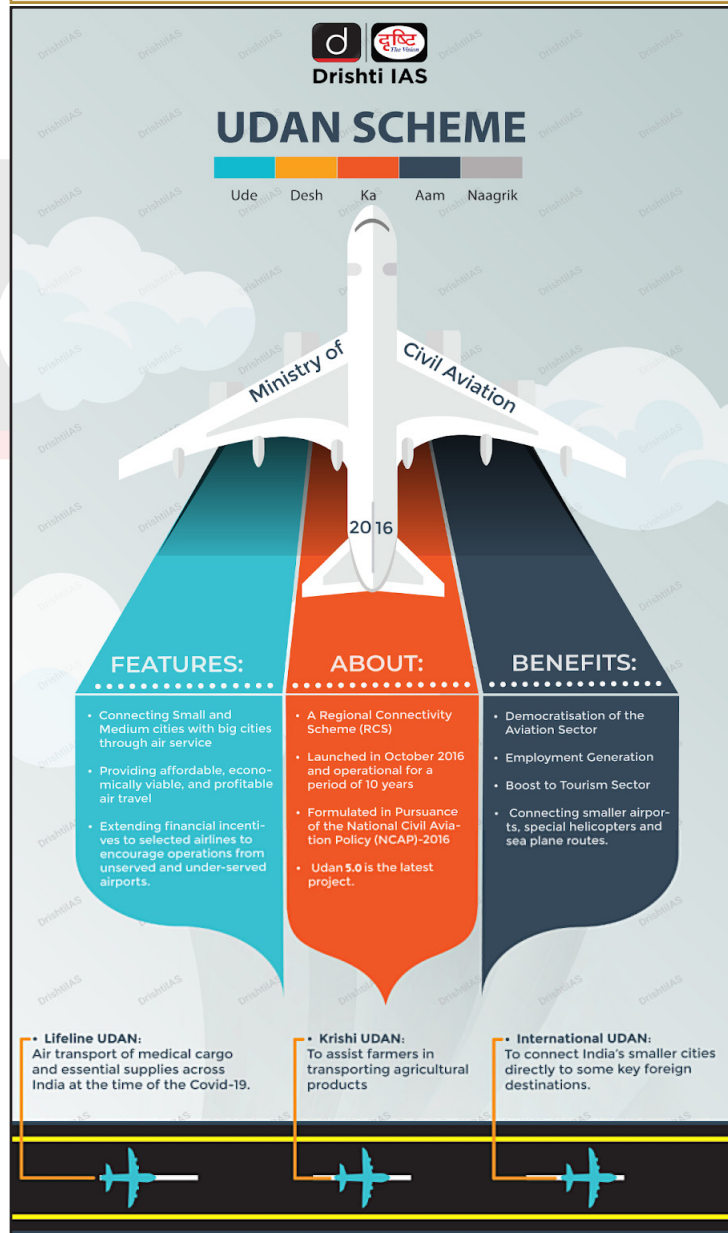
### What are the Challenges Facing India's Aviation Industry?

- **High Fuel Costs:**
  - Aircraft Turbine Fuel (ATF) expenses can represent **50-70% of an airline's operational costs** and import taxes add to the financial burden.
- **Dollar Dependency:**
  - Fluctuations in the **dollar rate impact profits as major expenses** like aircraft acquisition and maintenance are dollar-denominated.
- **Cutthroat Pricing:**
  - Airlines often engage in aggressive price competition to attract passengers, leading to thin profit margins amidst high operational costs.
- **Limited Competition:**
  - Currently, IndiGo and a resurgent Air India hold the majority share, possibly nearing 70% combined. This concentration of power can lead to:
    - **Limited Competition:** With fewer major players, there's a risk of reduced competition on routes, potentially leading to higher fares for consumers.
    - **Pricing Power:** The dominant airlines may have more leverage to influence ticket prices, especially if they coordinate strategies.
- **Grounded Fleet:**
  - A large portion (over a quarter) of Indian aeroplanes are grounded due to safety concerns and financial issues, hindering capacity.
- **Environmental Concerns:**
  - Pressure to reduce carbon emissions and

adopt sustainable practices can add complexity to growth strategies.

### India's Initiatives Related to Aviation Industry

- **UDAN Scheme (Ude Desh ka Aam Nagrik).**
- **National Civil Aviation Policy, 2016**
- **Goods and Services Tax (GST)** rate reduced to 5% from 18% for domestic Maintenance, Repair and Overhaul (MRO) services.
- **Open Sky Agreement**
- **Digi Yatra for Seamless Travel:** This digital platform facilitates a contactless experience for air travellers, with features like facial recognition and paperless check-in.



Note:

## Drip Pricing

### *Why in News?*

Recently, the concept of “drip pricing” has garnered significant attention from both governmental bodies and consumers due to its impact on the transparency of pricing practices in various industries.

### *What is Drip Pricing?*

#### ➤ About:

- **Drip pricing** is a pricing strategy where only a **portion of an item's total cost** is displayed initially, with **additional charges** revealed as the customer progresses through the purchase process.
  - This strategy is used to attract customers with a seemingly lower price at the outset.

#### ➤ Mechanisms:

- The **initial price shown to consumers is often lower** than the total cost, excluding essential fees like local taxes, booking charges, or necessary add-ons.
- As the purchase process continues, additional fees are **incrementally disclosed or “dripped”** to the consumer, which can lead to a higher total cost than initially presented.

#### ➤ Implications of Drip Pricing:

- **Deceptive Pricing:** Advertisers initially display a lower price, luring customers in before hitting them with unexpected fees. This makes informed decision-making difficult.
- **Comparison Shopping Challenges:** Drip pricing makes it **hard to compare prices** accurately across different vendors, as the true cost might only be revealed at checkout.
- **Short-Term Gains vs. Long-Term Reputation:** While drip pricing might attract initial interest, it can **damage brand trust** and loyalty in the long run.
- **Potential Regulation:** Regulatory bodies might enact stricter rules to curb drip pricing practices, restricting ease of doing business.
- **Positive Aspect:** It allows businesses to **offer a base price** with optional add-ons, giving consumers the flexibility to pay for only what they need.
  - This can be particularly beneficial in industries where **customisation and personalisation** are valued.

#### ➤ Challenges:

- The challenge lies in **distinguishing between competitive pricing strategies** and those that are genuinely deceptive or harmful.
- The regulatory approach has **not been unified or consistently applied**, leading to enforcement challenges.
  - **Countries like Australia** have **explicit regulations** against drip pricing, while others rely on broader consumer protection laws to address misleading practices

#### ➤ Potential Solutions:

- **Industry Standards:** Industry-wide adoption of transparent pricing practices could create a fairer marketplace.
- **Consumer Awareness:** Educating consumers about drip pricing tactics can help them make informed purchasing decisions.
- **Call for Transparency:** There is a growing call for regulations that require all fees to be included in the initial advertised price or at least clearly disclosed early in the purchase process to protect consumers and ensure fair competition.
- In India, the **Department of Consumer Affairs** cautioned against “drip pricing,” urging consumers to be wary of hidden charges and seek help if they notice unexpected increases in a product's maximum retail price (MRP).

## Central Bank Digital Currency

### *Why in News?*

Recently, the **Governor** of the **Reserve Bank of India** emphasised the innovative features being developed for India's **Central Bank Digital Currency (CBDC)**, also known as the **e-rupee**.

- He emphasised the potential of features like **permanent transaction deletion** to boost **user anonymity**.

### *What is Central Bank Digital Currency (CBDC)?*

#### ➤ About:

- A CBDC is a **legal tender** issued by a central bank in **digital form**.

Note:



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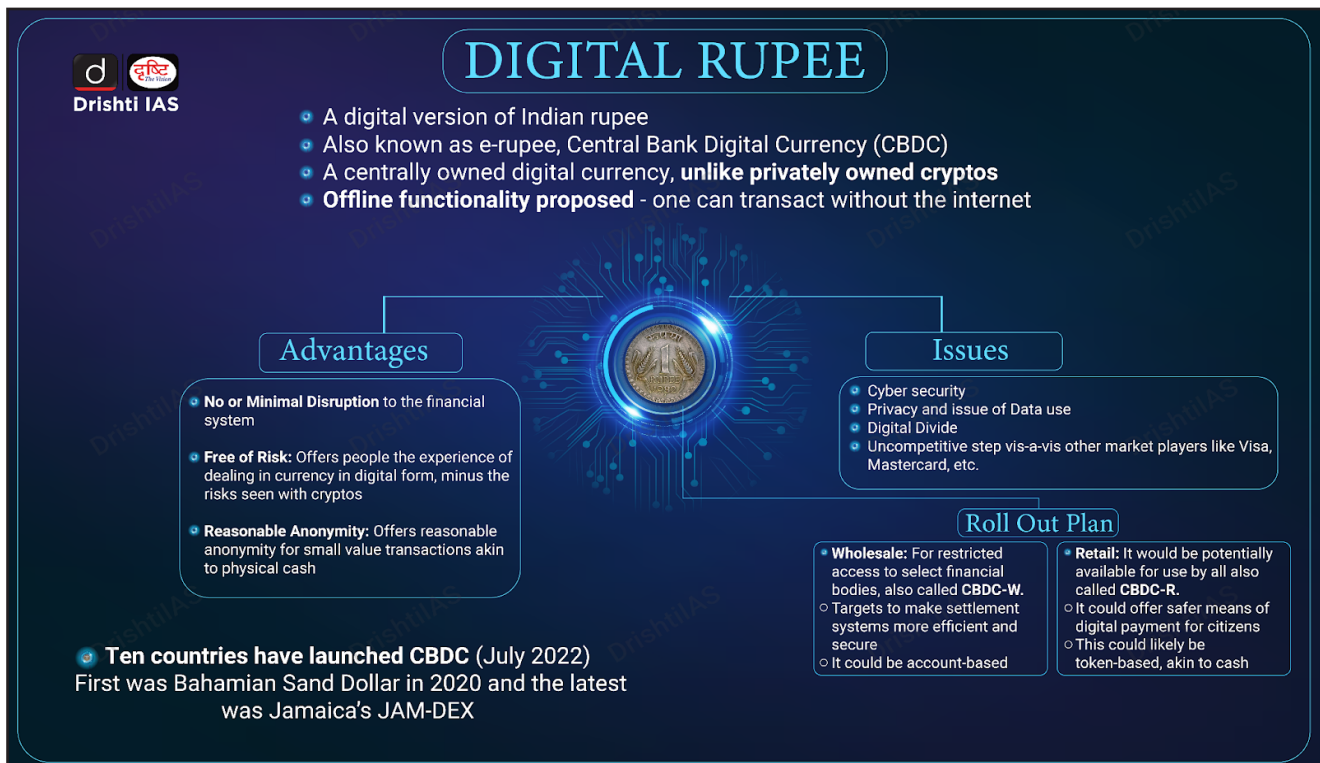
- Unlike private cryptocurrencies, CBDCs are **backed by the central bank**, ensuring stability and trust.
- It is the same as a **fiat currency** and is **exchangeable one-to-one** with the fiat currency.
  - A fiat currency is a **national currency** that is **not pegged** to the price of a commodity such as gold or silver.
- The digital fiat currency or CBDC can be **transacted using wallets** backed by blockchain.
- Though the concept of CBDCs was **directly inspired by Bitcoin**, it is different from **decentralised virtual currencies** and crypto assets, which are not issued by the state and lack the 'legal tender' status.

#### ➤ Objectives:

- The main objective is to **mitigate the risks and trim costs** in handling physical currency, costs of phasing out soiled notes, transportation, insurance and logistics.
- It will also wean people away from cryptocurrencies as a means for money transfer.

#### ➤ Global Trends:

- **Bahamas** was the **first economy** to launch its nationwide CBDC namely Sand Dollar in 2020.
- **Nigeria** is another country to have rolled out **eNaira in 2020**.
- **China** became the **world's first major economy** to pilot a digital currency **e-CNY in April 2020**.



#### What are the Major Advantages of CBDC?

- **Enhanced Security:** CBDCs leverage **digital security measures**, potentially reducing the **risk of counterfeiting** and theft compared to physical cash.
- **Improved Efficiency:** Digital transactions can be **settled instantly** and efficiently, facilitating **faster and more cost-effective** payments.
- **Financial Inclusion:** CBDCs can potentially **reach unbanked and underbanked** populations by offering a secure and accessible digital payment option.

- The increased use of CBDC could be explored for many other financial activities to push the **informal economy** into the formal zone to ensure better tax and regulatory compliance.

- **Enhanced Anonymity:** The possibility of **permanent transaction deletion** is being **explored** to provide users with a level of anonymity comparable to cash transactions.
- **Offline Functionality:** The e-rupee is envisioned to be **transferable offline**, potentially overcoming limitations of internet connectivity in rural areas.

Note:

- **Programmability:** Programmable features could be introduced to **enable targeted disbursement** of government benefits or encourage specific financial behaviours, promoting financial inclusion.
- **Cross-Border Transactions:** CBDCs possess unique attributes that can revolutionise cross-border transactions.
  - The instant settlement features of CBDCs are a significant advantage, making **cross-border payments cheaper**, faster, and more secure.
- **Traditional and Innovative:** CBDC can gradually bring a **cultural shift towards virtual currency** by reducing currency handling costs.
- **Improved Monetary Policy:** Central banks might have **greater control over the money supply** and interest rates with CBDCs. This could allow for more targeted and effective monetary policy interventions.

### **What are the Challenges Associated with the CBDC?**

- **Cybersecurity Concerns:** Robust security measures are crucial to protect the e-rupee system from cyberattacks.
- **Privacy Issues:** Balancing user privacy with the **need for anti-money laundering** and countering financing of terrorism measures is a critical aspect.
  - Concerns have arisen about the CBDC's privacy, with its electronic nature potentially **leaving a traceable trail**, unlike cash.
- **UPI Preference and Interoperability:** Despite efforts to promote the CBDC, there is a continued preference for UPI among retail users.
  - However, the RBI expressed hope for a change in this trend and highlighted the RBI's efforts to enable the **interoperability of CBDC with UPI**.
- **Non-Remunerative CBDC:** The RBI made CBDC non-remunerative and **non-interest-bearing** to mitigate potential risks of bank disintermediation.
  - However, **non-banks are included** in the CBDC pilot to leverage their reach for distribution and value-added services.
- **Competition with Private Banks:** CBDCs could potentially **compete with private banks** for deposits, impacting their ability to lend and invest.
  - Finding a way for CBDCs to coexist with the existing financial system is necessary.
- **Monetary Policy:** The impact of CBDCs on monetary policy tools like interest rates remains unclear.

- Central banks will **need to adapt their policies** to accommodate CBDCs effectively.

## **Rat Hole Mining**

### **Why in News?**

Recently, authorities were given four weeks by the **National Green Tribunal (NGT)** to respond in a case related to the death of six workers in a **rat-hole** coal mine fire in Nagaland's Wokha district.

### **What is Rat-Hole Mining?**

- **About:**
  - Rat-hole mining, aptly named for its resemblance to rodent burrows, is an **illegal** and **highly hazardous method** of extracting coal prevalent in certain pockets of India, particularly the state of Meghalaya.
  - Unlike large-scale mechanised mines, this practice involves **digging narrow, horizontal tunnels** barely large enough for a single person to squeeze through.
  - These tunnels, often referred to as "rat holes," can extend tens of meters underground.
  - Miners descend precariously using ropes, bamboo ladders, or makeshift supports and work in cramped, poorly ventilated conditions with basic tools like pickaxes and shovels.
  - The extracted coal is then hauled back up through these narrow passages, making the entire process incredibly **dangerous and backbreaking**.
- **Types:**
  - **Side-Cutting Procedure:** Narrow tunnels are dug into hill slopes in the side-cutting procedure, where workers enter to locate the typically less than 2m thin coal seam in Meghalaya's hills.
  - **Box-cutting:** In box-cutting, a rectangular opening is created, followed by digging a vertical pit, and then rat-hole-sized tunnels are dug horizontally for coal extraction.
- **Geographical Spread:**
  - While predominantly **practised in Meghalaya**, reports of rat-hole mining have surfaced in **other northeastern states** of India as well.
  - This method thrives in regions with **thin coal seams**, unsuitable for large-scale mining techniques.

Note:



### ➤ Causes of Rat Hole Mining:

- **Poverty:** Local **tribal populations** with limited livelihood options, often resort to rat-hole mining as a means of survival.
  - The quick cash generated from selling the extracted coal, despite the risks involved, becomes a **tempting proposition** for those struggling to make ends meet.
- **Land Ownership:**
  - Ambiguous land titles pose challenges for establishing regulated mines, creating opportunities for illegal operators to exploit loopholes and persist in their activities.
- **Coal Demand:** The constant demand for coal, both legal and illegal, fuels the practice of rat-hole mining.
  - Middlemen and illegal traders create a **market for this illegally extracted coal**, perpetuating the cycle and putting the lives of miners at risk.

### ➤ Issues:

- **Danger to Life and Limb:** The narrow tunnels are **prone to collapses**, often trapping miners underground.
  - Poor ventilation leads to suffocation, and the lack of proper safety measures makes them vulnerable to accidents, injuries and life threatening diseases.
- **Environmental Damage:** **Deforestation** to clear land for access points, **soil erosion** from haphazard digging, and **water contamination** due to improper waste disposal are some of the lasting environmental consequences of this practice.
  - Rat hole mines also **cause acidic runoff, known as Acid Mine Drainage (AMD)**, leading to degraded water quality and reduced biodiversity in affected water bodies.



### The Silkyara (Uttarakhand) Tunnel Collapse

- The **2023 Uttarakhand tunnel collapse**, where 41 workers were trapped, presented a unique situation where a **banned technique, rat-hole mining**, became the key to their successful rescue.
- The miners successfully dug a narrow passage, enabling the rescue of all 41 workers. This case exemplifies the **technique's potential for rapid rescue** in extreme situations.
  - However, it's a **high-risk technique**. This case should not overshadow the importance of prioritising safe and regulated mining practices.

### What are the Ways to Regulate Rat Hole Mining?

#### ➤ Regulation of Rat-Hole Mining in Nagaland:

- Nagaland has 492.68 million tonnes of coal reserves scattered in **small, erratic pockets**, leading to the permission of rat-hole mining under its 2006 **Nagaland Coal mining policy** due to the impracticality of large-scale operations.
- Rat-hole mining licences, known as **small pocket deposit licences**, are exclusively granted to individual landowners for limited durations and specific conditions.
- Rat-hole mining requires **approval from departments** like Forest and Environment to ensure environmental compliance, yet illegal operations persist despite government clearance and plans.

#### ➤ Article 371A and Controlling Rat-Hole Mining in Nagaland:

- **Article 371A** complicates government regulation in Nagaland, **hindering oversight** of small-scale mining, especially by individual landowners.

#### ➤ Remedies:

- **Livelihood Alternatives:** Providing sustainable income sources is crucial. This can involve **skilling development programs**, promoting alternative industries like **tourism or handicrafts**, and creating **micro-financing opportunities**.
  - By offering a **more secure and less dangerous path** to financial security, communities can be **incentivised** to leave behind rat-hole mining.
- **Sustainable Mining Practices:** Exploring **alternative, less hazardous mining** techniques suitable for extracting coal from thin seams is essential.

Note:



- Research into and adoption of technologies like **bord and pillar mining** or **small-scale mechanised mining** could pave the way for a safer and more efficient approach.
- **Stricter Enforcement:** Strengthening **law enforcement** and imposing **harsher penalties** on those involved in illegal mining can act as a **strong deterrent**.
- **Legal Landscape:**
  - **International Context:** There's **no specific international law** directly addressing rat-hole mining.
    - However, international regulations **promote sustainable mining methods** and prioritise worker safety, indirectly influencing member states to adopt similar practices.
  - **Indian Context:** Recognising the dangers of this practice, the **National Green Tribunal (NGT)** **banned rat-hole mining in India in 2014**.
  - **Government Initiative:**
    - The NGT ban on rat-hole mining, though **not fully effective**, demonstrates a commitment to ending this practice.
    - Schemes promoting alternative livelihoods, like the **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**, aim to provide alternative income sources for those dependent on rat hole mining.

## Surge in Tobacco Prices

### Why in News?

**Tobacco** farmers in Andhra Pradesh are set to benefit after crop yields in Brazil, Zimbabwe and Indonesia declined **due to droughts and untimely rainfall**.

- Auction prices in Andhra Pradesh have surged to near-record levels and are expected to rise further.

### How are Tobacco Farmers in Andhra Pradesh Benefiting?

- **Surge in Auction Prices:** Prices have risen to near-record levels, marking a 30% increase from initial expectations.
- **Impact of Global Crop Yields:** Trade analysts attributed the price increase to **crop damage in Brazil and Zimbabwe**.

- **Drought conditions in Indonesia**, another tobacco-producing country, also resulted in crop failures.
- **China**, another significant producer, **has imposed limitations on tobacco exports** to protect its domestic cigarette industry in response to reports of global stock shortages, further fueling price increases in tobacco-producing nations.
- **Potential Impact on Indian Growers:** Tobacco exporters and the **Indian Tobacco Board** are expecting that the disparity between demand and production is expected to **sustain price escalations for another year**, which is likely to benefit Indian growers.

#### Note:

- **Indian Tobacco Board:** It was constituted as a statutory body on 1<sup>st</sup> January 1976 under Section (4) of the **Tobacco Board Act, 1975**.
- The Board is headed by a Chairman with its **headquarters at Guntur, Andhra Pradesh**. It is responsible for the development of the tobacco industry.

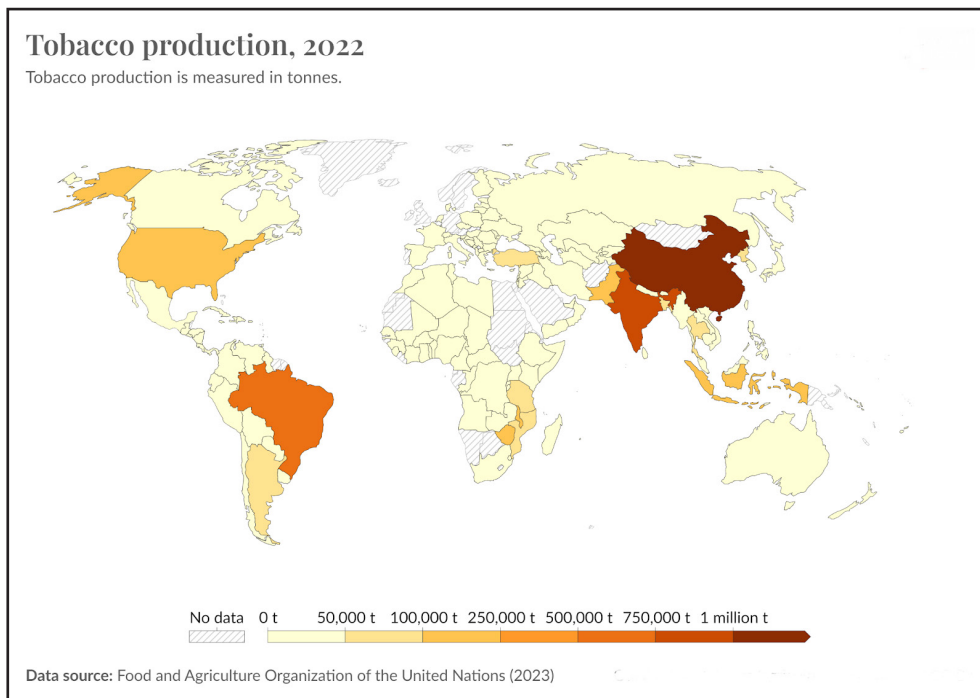
### What are the Key Facts

#### About Tobacco Production in India?

- **Agro-Climatic Facts:**
  - Tobacco is of tropical origin but thrives under **tropical, subtropical, and temperate climates**.
    - Ideal conditions include a frost-free period of **100 to 120 days with an average temperature of 80°F** and well-distributed rainfall of **88 to 125 mm per month**.
    - Relative humidity ranges from **70-80% in the morning to 50-60% during midday**.
  - Various tobacco types have specific soil and climatic preferences for optimal growth.
    - **FCV** thrives on various soils, including **sandy loams, red loams, and black cotton soils**.
- **Economic Significance:**
  - Tobacco ranks among the most economically significant crops globally.
    - India's tobacco cultivation covers approximately **0.27% of the net cultivated area**, producing around 750 million kg of tobacco leaf annually.
    - Annually, tobacco contributes **excise revenue** of (Rs 14,000 crores), accounting for 4% of the country's total agri-exports.

Note:

- China, India, and Brazil were rated among the leading producers worldwide.
  - As regulations tighten in **middle- and high-income countries**, tobacco companies are increasingly targeting African countries to scale up tobacco leaf production.
- India is the third largest tobacco-producing nation and second largest consumer of tobacco worldwide.
- **Diversity in Production:**
  - India produces various types of tobacco, including **Flue-cured Virginia (FCV), Bidi, Hookah, Cigar-wrapper, Cheroot, Burley, Oriental, and others.**
    - Different types of tobacco are cultivated under diverse agro ecological conditions across 15 states in India.
    - **Gujarat, Andhra Pradesh and Karnataka** occupy the top 3 positions in both the area and production of tobacco in the country.
- **Employment and Livelihood:**
  - Tobacco cultivation provides livelihood security to around **36 million people in India**, including farmers, farm labourers, and workers in processing, manufacturing, and exports.
  - **Bidi rolling alone employs around 4.4 million people**, and 2.2 million tribals are engaged in **tendu leaf collection.**
- **Export Market and Competition:**
  - India exported tobacco and tobacco products worth Rs 9,740 crore during 2022-23 with a major contribution coming from **cigarette-type tobacco like FCV and Burley.**
    - Major importers of Indian FCV tobacco include the **UK, Germany, Belgium, South Korea, and South Africa.**
  - **Brazil, Zimbabwe, Turkey, China, and Indonesia** are key competitors in the export market.
  - Despite a **13% share of the world's tobacco production**, India accounts for only 5% value of global tobacco leaf exports.
    - It exports only 30% of the tobacco produced in the country whereas other leading tobacco-growing countries viz. Brazil, USA, and Zimbabwe export between 60-90% of their production.
- **Competitive Advantage of Indian Tobacco:**
  - **Indian tobacco exhibits lower levels of heavy metals, Tobacco Specific Nitrosamines (TSNAs), and pesticide residues** compared to other tobacco-producing countries.
  - India's **varied agro-climatic conditions allow for the production** of different styles of tobacco, meeting diverse customer preferences globally.
  - India enjoys a competitive edge in terms of **low production costs and export prices**, making Indian tobacco considered 'value for money.'



Note:

### Health Burden of Tobacco

#### ➤ Global:

- Tobacco kills more than **8 million people each year**, including an estimated 1.3 million non-smokers who are exposed to second-hand smoke.
- Around **80% of the world's 1.3 billion tobacco users live in low- and middle-income countries.**

#### ➤ India:

- By 2040, India is projected to witness 2.1 million **cancer** cases, with oral cavity cancer being the most prevalent form.
  - 80-90% of individuals diagnosed with oral cancer are tobacco consumers.
- Both **smoking as well as smokeless forms** of tobacco have adverse health impacts and contribute to premature deaths.
  - Smokeless tobacco products examples include gutkha, khaini, and zarda, which are used as chewing tobacco.
- The risk of diseases attributable to tobacco use in India includes **stroke (78%), tuberculosis (65.6%), ischemic heart disease (85.2%), oral cancer (38%), and lung cancer (16%).**
  - Mortality due to tobacco in India is **estimated at upwards of 13.5 lakhs, and it is estimated that by the year 2020, tobacco use will account for 13% of all deaths in India every year if effective steps are not taken to control tobacco consumption.**
- Tobacco consumption is deeply ingrained in the **lifestyle of certain regions, particularly in northern India.**

### What are the Initiatives Related to Tobacco?

#### ➤ Global:

- To address the tobacco epidemic, the **World Health Organization (WHO)** adopted the **WHO Framework Convention on Tobacco Control (WHO FCTC)** in 2003.
  - Currently, 182 countries are **parties to this treaty, including India.**
- The **WHO MPOWER** measures are in line with the **WHO FCTC** and have been shown to save lives and reduce costs from averted healthcare expenditure.
- The **Global Tobacco Surveillance System (GTSS)** aims to strengthen countries' ability to implement

tobacco control measures and monitor WHO's **FCTC and MPOWER** technical package.

- It involves collecting data through four surveys.

#### ➤ India:

- **National Tobacco Control Programme (NTCP)**
- **Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003:**
  - The law regulates tobacco products by restricting **advertisement, promotion, and sponsorship**; prohibiting smoking in public places; sale to and by minors; and sale within 100 yards of educational institutions.
  - It also requires specified health warnings on all tobacco product packs.
    - The production, sale, storage, and distribution of food products containing tobacco or nicotine are prohibited under the **Food Safety and Standards Act.**
- **Promulgation of the Prohibition of Electronic Cigarettes Ordinance, 2019**

## Rising Share of Personal Income Tax and Indirect Tax

### Why in News?

Amidst ongoing political debates and controversies surrounding socio-economic policies, recent tax data released by the Ministry of Finance sheds light on significant trends in India's tax landscape.

- As per the report, the collection of personal income tax and indirect taxes have increased, while collections from corporate taxes have reduced.

### What are the Findings of the Report?

#### ➤ Growth in Direct Tax Collection:

- India's net **direct tax collections** grew **17.7%** in 2023-24 to hit **Rs.19.58 lakh crores.**
  - This can be attributed to a surge in **personal income taxes** whose share of the tax rose to **53.3%** from 50.06% in the previous year.
- The data also show that revenues from **personal income tax and securities transaction tax (STT)** grew at almost double the pace compared to revenues from corporate taxes last year.

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- **Securities Transaction Tax (STT)** is a tax levied on the purchase and sale of securities such as stocks, derivatives, and equity-oriented mutual funds. It was introduced in India in **2004** as a part of the Finance Act, 2004.

- The purpose of STT is to collect revenue for the government and to discourage speculative trading by adding a small tax on each transaction.

- **Direct Tax:** A direct tax is a tax that an individual or organisation pays directly to the entity that imposed it. It is a “**progressive tax**” because those who earn less are taxed less and vice-versa.

- **Types of Direct Taxes:**

- **Income Tax:** It is based on an individual's or organisation's earnings.
- **Property Tax:** Property tax is assessed on real estate properties (land, buildings, etc.).

➤ **Dip in Corporate Tax:**

- **Share of Corporate Taxes** contribution to overall tax collection dipped to **46.5%** from 49.6% in 2022-23.
- **Corporate taxes** refer to taxes imposed on the profits of corporations by governmental entities. These taxes are typically based on the net income of a corporation after accounting for various deductions and credits.

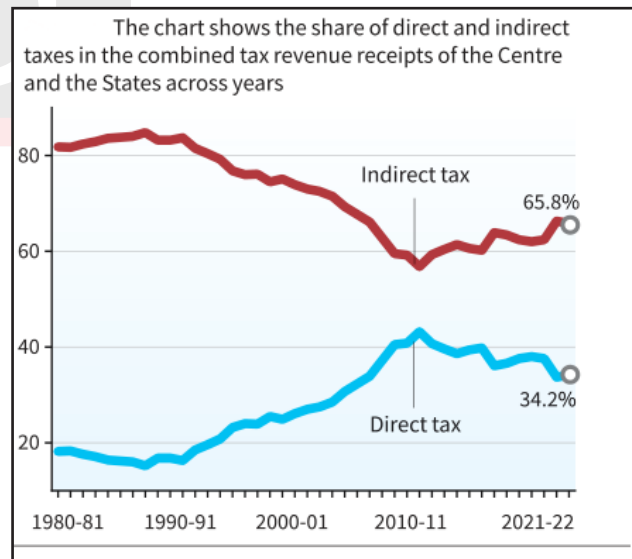


- The **share of corporate tax has been on a decreasing trend**, while that of personal income tax has been increasing.
- The sharp fall in corporate tax after FY19 can be attributed to the deep corporate **tax cuts** introduced by the ruling government in September 2019.

- As of February 2024, the gap between the two tax shares further increased, with income tax forming 28% of the gross tax- a new peak and corporate tax at 26%.

➤ **Decrease in Share of Direct Taxes, and Increase in Share of Indirect Taxes:**

- **Indirect taxes**, which include union excise duties and the **Goods and Services Tax** are considered “**regressive**” as all consumers, regardless of their income levels, pay the same amount.
- The **share of indirect taxes**, which had been falling steadily since the 1980s, has **increased** from 2010-11 onwards.
- The increasing share of indirect taxes implies a **heavier burden on lower-income** individuals.
- On the other hand, the **share of Direct taxes**, which had been increasing till 2010-11, has consistently recorded a **downturn** in recent years.
- Thus, the increased tax burden on poorer citizens and those in the middle-class category is a result of the growing proportion of personal income tax and indirect taxes within the overall.

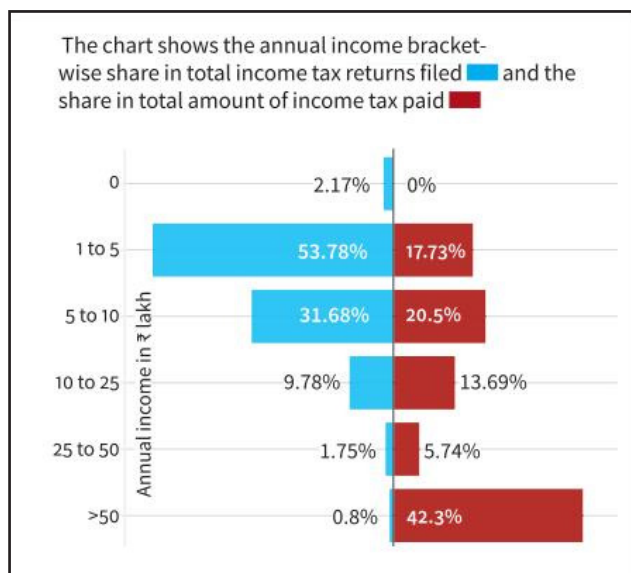


➤ **Relation Between Annual Income Vs Income Tax Returns Filed:**

- The majority (**53.78%**) of individuals **filing personal income tax** have an annual income ranging from **Rs 1 lakh to Rs. 5 lakh** and they contribute **17.73%** in total value income tax paid.
- There are only a small number (**0.84%**) of wealthier individuals earning more than Rs. 50 lakh and they have the highest share in the total value of income tax paid (**42.3%**).

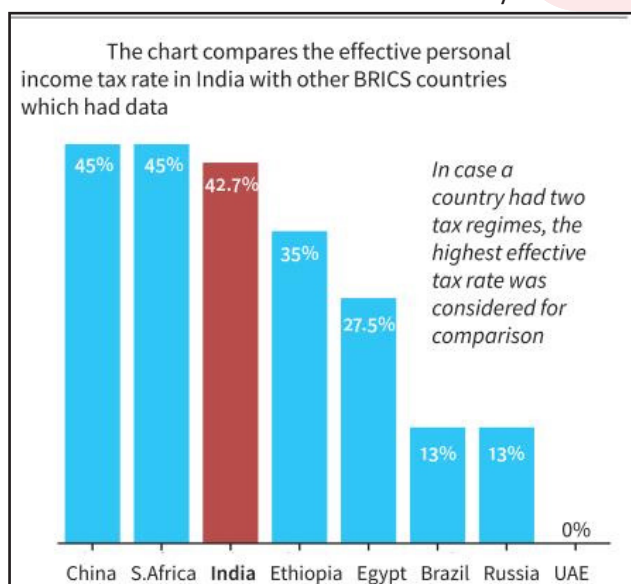
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#### ➤ Effective Personal Income Tax Rate:

- A comparison of India with **BRICS** economies shows that India has among the highest **effective personal income tax rates**.
  - The **effective personal income tax rate** is the percentage of an individual's income that they actually pay in taxes after accounting for deductions, credits, exemptions, and other factors that affect their tax liability.



#### Why is Rising Share of Personal Income Tax and Indirect Taxes a Matter of Concern?

- **Income Inequality:** If personal income tax is a significant portion of government revenue, it may

disproportionately burden **lower and middle-income** individuals, exacerbating **income inequality**.

- This can occur if the tax system is not progressive enough or if there are loopholes that allow the wealthy to avoid paying their fair share.
- **Consumer Burden:** Indirect taxes are typically regressive as they take a higher percentage of income from **low-income individuals** compared to high-income individuals.
  - This can place a heavier burden on those with lower incomes, potentially leading to decreased consumer spending and economic activity.
- **Economic Efficiency:** High personal income tax rates can discourage work, savings, and investment, leading to a less efficient allocation of resources in the economy.
  - Also, excessive **reliance on indirect taxes may distort consumer behaviour** and lead to market inefficiencies.
- **Tax Evasion and Avoidance:** As personal income tax rates rise, individuals may be more incentivised to engage in tax evasion or avoidance strategies to reduce their tax liabilities.
  - This can undermine the integrity of the tax system and reduce overall government revenue.
- **Macroeconomic Stability:** Heavy reliance on personal income tax and indirect tax revenue can make government finances vulnerable to economic downturns.
  - During periods of recession or high unemployment, personal income tax revenues may decline, leading to budget deficits or cuts in essential services.

#### What are the Steps Taken by the Government to Boost the Direct-Tax Collection?

- **Promoting Voluntary Income-tax Compliance:**
  - **Vivad se Vishwas Scheme:** Under **Vivad se Vishwas**, declarations for settling pending tax disputes are filed.
  - This will benefit the Government by generating timely revenue and to the taxpayers by bringing down mounting litigation costs.
- **Focus on Digital Transactions:** The government is promoting digital payments to discourage cash-based transactions that are harder to track for tax purposes.
- **For Personal Income Tax:** The Finance Act, 2020 has provided an option to individuals and co-operatives

Note:

to pay income tax at concessional rates if they do not avail of specified exemptions and incentives.

- **Increased Scrutiny and Compliance Measures:** Tax authorities have intensified scrutiny and compliance measures, including tax audits, surveys, and data analytics, to identify tax evaders and non-compliant taxpayers.
- **Awareness and Education Campaigns:** The government conducts awareness and education campaigns to promote tax compliance and deter tax evasion.
  - These campaigns aim to inform taxpayers about their rights and responsibilities, the consequences of non-compliance, and the benefits of participating in the formal economy.
- **Expansion of scope of TDS/TCS:** To widen the tax base, several new transactions were brought into the ambit of **Tax Deduction at Source (TDS)** and **Tax Collection at Source (TCS)**.
  - These transactions include huge cash withdrawals, foreign remittances, purchase of luxury cars, **e-commerce** participants, sale of goods, acquisition of immovable property, etc.
    - **Tax Deduction at Source (TDS):** A person (deductor) who is liable to make payment of a specified nature to any other person (deductee) shall deduct tax at source and remit the same into the account of the Central Government.
    - **Tax Collection at Source (TCS):** It is an additional amount collected as tax by a seller of specified goods from the buyer at the time of sale over and above the sale amount and is remitted to the government account.
- **Transparent Taxation - Honoring The Honest Platform:** It is aimed at bringing transparency in income tax systems and empowering taxpayers.

## Corporate Governance for Startups

### Why in News?

Recently, **Confederation of Indian Industry (CII)** has launched a **corporate governance** charter for startups, including a self-evaluative scorecard.

- This occurs during a period when companies like Byju's, BharatPe, and Zilingo have expressed worries about governance norms in the last 12-18 months.

### What are the Key Provisions of the Charter?

- Charter will provide **suggestions on Corporate Governance** tailored for **Startups** and offer guidelines suitable for **different stages of a startup** which is aiming to **enhance governance practices**.
  - **Corporate Governance** in India is a set of rules, practices and processes by which a company is guided and controlled.
- **Self Evaluative Governance Scorecard:**
  - The charter includes an **online self-evaluative governance scorecard** that startups can use to **evaluate their current governance status** and its improvement over time.
    - It will allow startups to measure their governance progress, with score changes indicating improvements in governance practices as assessed against the scorecard from time to time.
- **4 key Stages of Guidance to Startups:**
  - **At the Inception stage:** The focus of Startup will be on:
    - Board formation,
    - Compliance monitoring,
    - Accounting, Finance, External audit, Policies for related-party transactions, and
    - Conflict resolution mechanisms.
  - **In the Progression stage:** A startup may additionally focus on:
    - Monitoring key business metrics,
    - Maintaining internal controls,
    - Defining a hierarchy of decision-making, and
    - Setting up an audit committee.
  - **For the Growth stage:** The focus will be on:
    - Building stakeholder awareness towards the vision, mission, code of conduct, culture, and ethics of an organisation,
    - Ensure diversity and inclusion on the board and
    - Fulfilling statutory requirements, according to the **Companies Act 2013** and other applicable laws and regulations.
  - **At the Going Public stage:** The Focus of the startup will be on:
    - Expanding its governance in terms of monitoring the functioning of various committees,
    - Focus on fraud prevention and detection,

Note:



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- Minimise information asymmetry,
- Evaluating board performance.
- **Valuation:** The valuations of businesses should be kept as realistic as possible.
  - Startups may strive for **long-term value creation** rather than short-term valuations.
- **Long-Term Goals:** The needs of the **business entity should be separated from the personal needs of its founder(s)**, but at the same time, the goals and needs of the founders, promoters, and initial investors should be aligned with the long-term goals of the business.
- **Separate Legal Entity:** The **startup** should be maintained as a separate legal entity with the organisation's assets distinct from the founders' assets.

#### What is a Startup?

- **About:**
  - According to **(Department for Promotion of Industry and Internal Trade) DPIIT**, to be considered eligible for recognition, a Startup must meet these criteria:
    - Have been in operation for **no more than 10 years** since its incorporation.
    - Be registered as a **Private Limited Company**, a **Registered Partnership Firm**, or a **Limited Liability Partnership**.
    - Have an annual turnover not exceeding **Rs. 100 crore** for any financial year since its incorporation.
    - Not have been formed by **splitting up or reconstructing** an already existing business.
- **Scenario of Startup in India:**
  - India has the **3<sup>rd</sup> largest startup ecosystem** in the world and is expected to witness **Year-on-Year growth** of consistent annual growth of **12-15%**
  - India ranks **2<sup>nd</sup> in innovation quality** with top positions in the quality of scientific publications and the quality of its universities among middle-income economies.
  - As of May 2023, India is home to 108 **Unicorns** with a total valuation of USD 340.80 bn

#### What is Corporate Governance?

- **About:**
  - Corporate governance, which refers to the **system of rules, practices, and processes** by which a **company is directed and controlled**, plays a crucial role in

ensuring that businesses are run ethically and in the best interests of their stakeholders.

- It enforces **strong ethical standards** and **holds individuals accountable** for their actions.
- **Principles of Corporate Governance:**
  - **Fairness:** The board of directors should treat shareholders, employees, vendors, and communities with fairness and equal consideration.
  - **Accountability:** The board is required to explain the purpose of the company's activities and report on its conduct.
  - **Transparency:** The board should ensure that **timely, accurate, and clear information** is provided about financial performance, conflicts of interest, and risks to shareholders and other stakeholders.
  - **Risk Management:** The board and management are responsible for identifying and controlling various risks.
    - They should take action based on recommendations to manage these risks and inform relevant parties about their existence and status.
  - **Corporate Social Responsibility (CSR):** It involves integrating **environmental, social, and governance (ESG)** considerations into business strategy and operations, and contributing positively to society and the environment.
- **Regulatory Framework in India:**
  - **The Companies Act, 2013**
  - **Securities and Exchange Board of India (SEBI)**
  - **Institute of Chartered Accountants of India (ICAI)**
  - **Institute of Company Secretaries of India (ICSI):** It issues secretarial standards as per the provision of the Companies Act, 2013.
- **Committees Related to Corporate Governance:**
  - **Confederation of Indian Industry (CII) National Task Force on Corporate Governance (1996):**
    - The task force, chaired by Rahul Bajaj, **developed a voluntary code of conduct for Indian companies.**
  - **Kumar Mangalam Birla Committee (1999):**
    - This committee was set up by the **SEBI** to develop a **mandatory code of corporate governance** for listed companies.
    - The committee's recommendations addressed issues such as board composition, independent

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directors, audit committees, and risk management.

○ **Naresh Chandra Committee (2002):**

- This committee, constituted by the **Department of Company Affairs (DCA)**, examined various corporate governance issues related to statutory audits, the independence of auditors, and the role of independent directors.
- Its recommendations led to significant changes in the **Companies Act**.

○ **Narayana Murthy Committee (2003):** This SEBI-constituted committee reviewed the implementation of the corporate governance code by listed companies.

- The committee's recommendations helped strengthen the code and improve its effectiveness.

➤ **Importance of Corporate Governance:**

- **Strengthens Investors Confidence:** Strong corporate governance maintains investors' confidence in the financial market, as a result of which companies can raise capital efficiently and effectively.
- **International Flows of Capital:** It enables companies to reap the benefits of the global capital markets which will contribute to economic growth.
- **Increased Productivity:** It also minimises wastages, corruption, risks and mismanagement.
- **Brand Image:** It helps in brand formation and development of a company. It ultimately increases capital flows from **foreign institutional investors (FII)** and **foreign direct investment (FDI)**.

➤ **Challenges:**

- **Ensuring Objective Board:** It is a widespread practice in India for the associates and **relatives of company owners to be selected as board members**.
- **Performance Evaluation of Directors:** Corporate firms sometimes do not share the results of performance evaluations to avoid public scrutiny and negative feedback.
- **Removal of Independent Directors:** Sometimes, Independent directors are easily removed from their positions by the promoters if they do not side with promoters' decisions.
- **Founders Control and Succession Planning:** In India, founders' ability to control the affairs of the company has the potential of derailing the entire corporate governance system.

- Unlike developed economies, in India, the identity of the founder and the company is often merged.

### **How to Improve Corporate Governance in India?**

- **Strengthen Regulatory Framework:** Continuously update and enforce corporate governance regulations to align with international best practices.
- **Independent Directors and Diversity in Board Composition:** It ensures their autonomy and effectiveness and brings a broader range of perspectives and expertise to decision-making processes.
- **Transparency and Disclosure:** Mandate comprehensive and timely disclosure of financial information, ownership structures, related-party transactions, and corporate governance practices.
- **Shareholder Rights and Activism:** Enhance shareholder rights, including voting rights, information access, and participation in key decisions.
  - Foster constructive dialogue and engagement with all stakeholders.
- **Continuous Evaluation and Improvement:** Establishing mechanisms for ongoing evaluation and benchmarking of corporate governance practices.
  - Regularly solicit feedback from stakeholders and adapt policies and procedures accordingly.

## **Paradox of Savings**

### **Why in News?**

Recently, the **paradox of savings**, or the **paradox of thrift**, has been a topic of interest in economic discussions due to its implications on how personal savings behaviors might negatively affect broader **economic growth**.

- This counterintuitive economic concept has resurfaced in news and analyses, particularly in times of **economic downturns**, where the balance between saving and spending becomes crucial to policy debates on how best to **stimulate recovery** and sustain **economic stability**.

### **What is the Concept of the Paradox of Savings?**

➤ **About:**

- The paradox of savings, also known as the paradox of thrift, suggests that while **individual savings** are ostensibly good, an increase in overall **savings**

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**rates** across an economy may lead to a **decrease** in total economic savings.

- This theory contrasts with the intuitive belief that **higher personal savings** directly contribute to **increased economic savings**.

➤ **Origins and Development of the Theory:**

- **Key Historical Insights:** The idea was notably popularised by **John Maynard Keynes** in his influential 1936 book, **The General Theory of Employment, Interest, and Money**.
- **Keynesian Perspective:** **Keynesian economists** argue that an **increase in savings reduces consumer spending** on final goods and services, which in turn **decreases overall savings and investment**.
  - They contend that **consumer spending drives economic growth** and that **savings are channelized into investments** aimed at producing goods for consumer markets.
  - **Insufficient consumer spending** can lead to a **reduction** in these investments, thus **harming economic growth**.
- **Governmental Role:**
  - Keynesians advocate for **active governmental intervention**, particularly in times of economic downturns.
    - Measures could include **increasing government spending** to boost consumer purchasing power and stimulate demand.

➤ **Counter Arguments:**

- Critics of the paradox argue that **savings contribute to a pool of capital** that can be used for investment, potentially **leading to economic growth** even in the context of reduced consumer spending.
- A decrease in consumer demand **shifts investment from short-term, consumer-driven production to long-term projects**, potentially making previously unviable projects viable.

**How the Paradox of Thrift Plays Out in Indian Context?**

➤ **The Indian Context:**

- **Indian's high savings rate, beneficial for long-term security**, may hinder economic growth in slowdowns.
- A sizable informal sector with limited savings complicates matters; policies promoting

**formalisation can boost savings and enhance credit access.**

- Low demand may deter businesses from investing in new projects, shrinking the overall investment pool, a critical concern for India's infrastructure and job creation needs.

➤ **Mitigating Factors:**

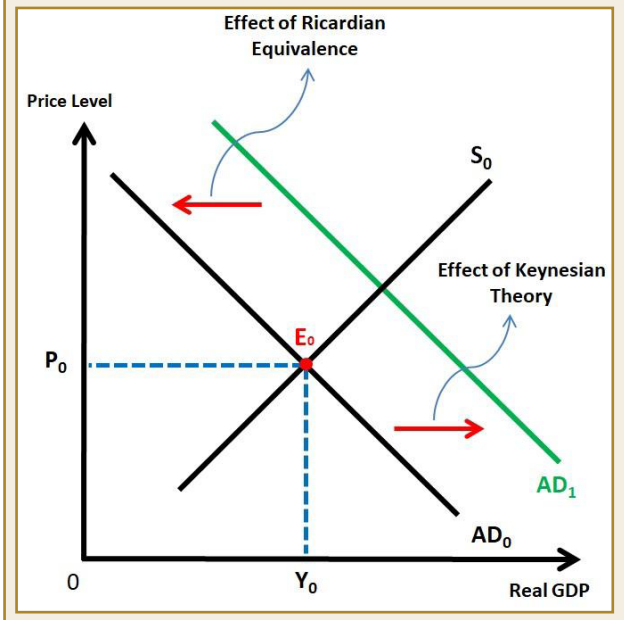
- An **efficient banking system** can channel savings into productive investments.
- During economic downturns, the **government can increase spending on infrastructure and social programs**, stimulating demand and creating jobs.
- Principles from **behavioral economics** can be used to encourage consumption during economic downturns.

**How Does the Ricardian Equivalence Proposition Plays Out in India?**

- **The Crowding-Out Effect:** The economic survey (2021) discusses the **crowding-out effect**, where increased government spending potentially reduces private investment by causing **higher interest rates**.
- This effect is linked to the **Ricardian Equivalence Proposition (REP)**, which assumes **perfect capital markets** and suggests that consumers save in anticipation of **future taxes**, thus neutralising government spending's impact.
  - However, the strict assumptions of REP may not hold true in **complex and developing economies** like India.
- **India's Economic Landscape:** Unlike the fixed savings supply assumed in the crowding-out theory, **India, as an emerging economy, sees an expanding savings supply** with income growth.
- Government spending can boost demand and employment, leading to increased savings and stimulating private investment.
- **Public expenditures** that support the **private sector's saving** and investment capacities can actually foster private investment, especially when directed towards infrastructure and development.
- **Economic Survey Insights:** The **Economic Survey of India (2020-21)** acknowledges potential **short-term crowding-out effects** but emphasises the long-term benefits where public investments stimulate private investments.

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- It highlights the growth in **credit to the MSME sector** and increased capital expenditure by the government as vital economic growth drivers.
- The survey suggests that in India, **public spending complements private investment**, aiding the country's overall economic progress.



### Conclusion

- The paradox of savings presents a **significant theoretical challenge** to conventional economic wisdom that favours savings unequivocally.
- While **Keynesian economists** highlight **potential negative impacts** of increased savings rates on economic activity, **critics offer a different perspective** that sees savings as a flexible tool for adjusting economic production and investment across time, potentially leading to more sustainable long-term growth.

## Redistribution of Private Property

### Why in News?

Recently, the **Supreme Court (SC)** of India has begun hearing on legal questions arising from various petitions about whether the government can acquire and redistribute privately owned properties.

- The question raised before the Court is whether **private properties** can be considered **“material resources of the community”** under **Article 39 (b)**

of the Constitution, which is part of the **Directive Principles of State Policy (DPSP)**.

### What is the Case All About?

- The case before the SC arose out of a challenge to the 1986 amendment to the **Maharashtra Housing and Area Development Act (MHADA), 1976** by owners of ‘cessed’ properties in Mumbai.
- **MHADA, 1976**, was enacted to address the problem of old, dilapidated buildings housing (poor) tenants despite becoming increasingly unsafe.
- MHADA imposed a cess on the buildings occupants, which would be paid to the Mumbai Building Repair and Reconstruction Board (MBRRB) to oversee repair and restoration projects.
- The Act was amended in 1986 by invoking **Article 39(b)** which
- It aims to execute plans for acquiring lands and buildings, in order to **transfer them to “needy persons”** and the “occupiers of such lands or buildings”.
- It contains provisions **allowing the state government to acquire cessed buildings** (and the land they are built on) if **70% of the occupants make such a request**.
- **Violation of Right to Equality:** The Property Owners’ Association in Mumbai challenged the MHADA at the Bombay High Court claiming that the provisions violate the property owners’ **Right to Equality** under **Article 14** of the Constitution.
- **Immunity to DPSP:** The court held that laws enacted in furtherance of **DPSP** could not be challenged on the grounds that they violated the right to equality, as per **Article 31C** of the Constitution (“Saving of laws giving effect to certain directive principles”).
- **Interpreting Material Resources of the Community:** The Association appealed the decision in the Supreme Court in December 1992.
- Thus, in the apex court, the central question became whether “material resources of the community” as per **Article 39(b)** includes privately owned resources which would include cessed buildings.

### What is the Legal View on Private Property and its Distribution?

- **Constitutional View:**
  - **Articles 19(1)(f) and Article 31:** This article guaranteed the property as a fundamental right.

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- However, the 44<sup>th</sup> Amendment Act of 1978 removed this right from the list of fundamental rights and placed it **under Article 300A as a constitutional right.**
  - **Article 300A:** This article declares that no person shall be deprived of his property save by authority of law.
- **9<sup>th</sup> Schedule:** It lists specific laws that cannot be challenged in courts on the grounds that they violate fundamental rights, including the (once) **Fundamental Right to Property.**
- Laws included in this Schedule like Land reforms (abolition of zamindari system).
- **Article 39:** It lists certain **Directive Principles of State Policy** (under **Part IV** of the **Constitution**), which are meant to be guiding principles for the enactment of laws, but are not directly enforceable in any court of law.
- **DPSP** aims at ensuring socio-economic justice for the people and establishing India as a welfare state.
  - **Article 39(b)** places an obligation on the state to create policy towards securing “the **ownership and control of the material resources** of the community are so distributed as best to subserve the common good”.
  - **Article 39(c)** ensures that wealth and the means of production are not “concentrated” to the “common detriment”.
- **Article 31C:**
- **Article 31C** saves the laws giving effect to certain **directive principles.**
  - As per **Article 31C**, these particular directive principles (**Articles 39(b) and 39(c)**) cannot be challenged by invoking the right to equality (**Article 14**) or the rights under **Article 19** (freedom of speech, right to assemble peacefully, etc).
  - In the **Kesavananda Bharati case, 1973**, the Court upheld the validity of **Article 31C** but made it subject to **judicial review.**
- **Interpretations of Article 39(b) by Supreme Court:**
- **State of Karnataka vs Shri Ranganatha Reddy Case, 1977:**
    - Court held that privately owned resources **did not** fall within the ambit of “material resources of the community”.
  - **Justice Krishna Iyer** held a **dissenting opinion** that privately owned resources must also be considered material resources of the community.
    - To exclude ownership of private resources from the coils of **Article 39(b)** is to cipherise (make hidden) its very purpose of redistribution the socialist way.
  - **Sanjeev Coke Manufacturing Company vs Bharat Coking Coal Case, 1983:**
    - Supreme **Court affirmed Justice Iyer’s opinion** and upheld central legislation that **nationalised coal mines** and their respective coke oven plants.
    - It held that **privately owned resources must also be considered** material resources of the community.
  - **Mafatlal Industries Ltd vs Union of India Case, 1996:**
    - Court felt the need for a **9-Judge Constitutional Bench** to interpret **Article 39(b).**
    - Court relied on the interpretation of **Article 39(b)** offered by **Justice Iyer** and the Bench in **Sanjeev Coke Manufacturing Case.**
    - Court held “the words ‘**material resources**’ occurring in Article 39 (b) will take in natural or physical resources and also movable or immovable property and it would **include all private and public** sources of meeting material needs, and not merely confined to public possessions.”

#### What are Directive Principles of State Policy (DPSP)?

##### ➤ About:

- The **Directive Principles of State Policy (DPSP)** aims at ensuring socio-economic justice for the people and establishing India as a welfare state.

##### ➤ Constitutional Provisions:

- **Part IV** of the Constitution of India (Article 36–51) contains the DPSP.
- **Article 37** of the Indian Constitution States about the application of the Directive Principles.

##### ➤ Background:

- The directive principles contained in the Indian constitution are taken from the **Irish Constitution.**
- The idea of such policies can be traced to the Declaration of Rights of Man and the Declarations of Independence by the American colonies as well as the **Gandhian concept of Sarvodaya.**

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### ➤ Objectives:

- **Checks & Balance:** DPSP aims at socio-economic justice which according to the framers of the constitution Indian State should strive for.
  - They lay down a code of conduct for the legislatures, executives and administrators of India to discharge their responsibilities in tune with these ideas.
- **Legal Actions & Government Policies:** They embody the aspirations of people objectives and ideals that the Union and the State governments must bear in mind while making laws and formulating policies.
- **Philosophy of Social Justice:** They represent the philosophy of social justice incorporated in the constitution of India although directive principles are not legally binding by any court however, they are fundamental in the governance of the country.

### ➤ Classification:



#### Classification of Directive Principles of State Policy

- The Directive Principles are classified on the basis of their ideological source and objectives. These are Directives based on:
  - **Socialist Principles:** Article 38, 39, 41, 42, 43, 43A, 47
  - **Gandhian Principles:** Article 40, 43, 43B, 46, 47, 48
  - **Liberal and Intellectual Principles:** Article 44, 45, 48A, 49, 50, 51

#### Famous Rulings for DPSP By Judiciary:

- **Champakam Dorairajan case (1951):** FR would prevail over the DPSP in case of conflict between the two. However, legislature can amend FR to give effect to DPSP
- **Golaknath case (1967):** FR are sacrosanct in nature and cannot be amended for implementation of DPSP
- **Minerva Mills case (1980)** Constitution is founded on the **bedrock of balance** between FR and DPSP

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### What are the Arguments Related to Redistribution of Wealth?

#### ➤ Arguments in Favour:

- **Social Justice:** This goes with the **principles of Preamble of the Constitution** which strives to ensure social justice.
  - Unrestricted property rights can exacerbate wealth inequality.

- The wealthy can accumulate vast amounts of property, leaving less for others. This can lead to social unrest and hinder economic mobility.
  - Eg: The Naxalbari uprising and subsequent **Naxal movement** originated primarily **due to economic and social inequality** in rural areas of India.
- **Poverty Alleviation:** Redistribution programs can help alleviate **poverty** by providing financial assistance, access to education, healthcare, and other essential services to those in need.
- **Address Social Issues:** As property is scarce resource, wise redistribution of wealth enables the government to address social issues like **poverty**, homelessness, or environmental degradation.
- **Enhanced Social Cohesion:** Reducing economic disparities can foster greater **social cohesion and solidarity** by bridging the gap between different socio-economic groups.

#### ➤ Arguments Against:

- **Disincentivizes Work:**
  - Redistribution discourages people from working hard and taking risks if they believe the **government will simply provide for them**.
  - It may disincentivize wealth creation and **entrepreneurship**, leading to slower economic growth and reduced prosperity for all.
- **Market Efficiency:** Redistribution can interfere with market mechanisms and distort resource allocation, leading to inefficiencies and decreased overall welfare.
- **Individual Freedom:** It can infringe upon individual freedom and property rights by forcibly taking wealth from one group of individuals and transferring it to another.
- **Administrative Costs:** Implementing and managing redistribution programs can be costly and inefficient, with significant administrative overhead and potential for bureaucratic abuse and corruption.
- **Earlier Failed Attempts for Redistribution:**
  - Property ownership has cultural and historical significance in many societies. It reflects notions of identity, heritage, and family legacy.
  - Also, previous redistribution efforts like **land reforms** failed in most states except in Kerala and West Bengal.

Note:



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## Indian Poultry Sector

### Why in News?

Recently, the **H5N1 outbreak** has highlighted **critical vulnerabilities** in the industrial **livestock sector**, underlining the imperative for a **comprehensive reassessment** of animal welfare within India's environmental and legal frameworks.

- This outbreak reinforces the **One Health principle**, which integrates public health, ecosystem health, and biodiversity conservation.

### What are the Issues Faced by the Indian Poultry Industry?

- **Disease Outbreaks and Biosecurity:**
  - **Avian Influenza:** Regular outbreaks of **Avian Influenza (bird flu)** disrupt production, lead to the culling of birds, and create market panic, impacting consumption.
  - **Newcastle Disease (ND):** ND is another highly contagious viral disease that affects poultry health and productivity.
  - **Biosecurity Concerns:** Inadequate **biosecurity measures** in farms and live bird markets facilitate the spread of diseases.
  - **Other Concerns:** Chickens in industrial settings are often **confined in wired cages, known as 'battery cages,'** in high densities, leading to overcrowding and stress.
    - This practice leads to **poor air quality**, waste accumulation, and **greenhouse gas emissions**, contributing to environmental pollution and degradation.
- **Market Fluctuations and Price Volatility:**
  - **Feed Price Fluctuations:** Volatile prices of **crucial poultry feed ingredients**, such as **corn** and **soybean meal**, not only affect production costs but also exacerbate **import dependence** due to their significant reliance on imports.
  - **Consumer Demand Fluctuations:** Rumors and misinformation surrounding poultry products during disease outbreaks can drastically **reduce consumption**, affecting overall market stability.
- **Infrastructure and Supply Chain Challenges:**
  - **Limited Cold Chain Infrastructure:** It leads to spoilage and wastage, especially during peak production periods.

- **Disorganised Supply Chain:** A fragmented supply chain with **multiple intermediaries** raises transaction costs and lowers farmer profits, while poor transportation infrastructure hampers product movement, affecting delivery times and freshness.

#### ➤ Policy and Regulatory Issues:

- **Fragmented Regulatory Framework:** Multiple overlapping regulations across different levels of government create **confusion and compliance challenges** for poultry farmers.
- **Limited Access to Credit:** Small and medium-scale poultry farmers often struggle to **access formal credit**, hindering growth and modernization.
- **Labour Challenges:** Finding and retaining skilled labour can be difficult for poultry farms, impacting operational efficiency.

#### ➤ Other Issues:

- **Environmental Concerns:** Poultry farming can contribute to **water pollution** and **air quality issues** if waste management practices are inadequate.
  - The rising demand for **protein has led to increased antibiotic** use in poultry farming, raising concerns about antibiotic resistance and public health risks.

#### Issue of H5N1 Avian Influenza

- The outbreak of **H5N1 avian influenza** has brought to light the critical need to address **animal welfare**.
- **First spillover to humans:** The first instance of H5N1 infection spilling over to humans occurred in **1997 in Hong Kong**, directly from chickens.
- **Impact of H5N1 on India:** India reported its first H5N1 patient in Maharashtra in 2006. Subsequent outbreaks in December 2020 and early 2021 spread across 15 states, highlighting the widespread nature of the pathogen.
- **Global impact of H5N1:** H5N1 has demonstrated its ability to **cross species barriers**, causing mortality among **polar bears in the Arctic** and **seals and seagulls in Antarctica**, indicating its global impact.
- **Fatality rate of H5N1 in humans:** The **World Health Organization (WHO)** estimates the **fatality rate for H5N1 at 52%** based on recorded cases since 2003, highlighting its high risk to human health.
- **Animal Welfare Concerns:** Ensuring proper animal welfare standards across the industry remains a challenge.

Note:

- **Difficult exit:** Poultry farmers often face challenges in exiting the industry due to **contract farming arrangements**, accumulated debts, and specialised skills required for the sector.

### ***What are the Various Provisions Related to the Poultry Sector in India?***

#### ➤ **Status of Poultry Birds in India:**

- According to the **20<sup>th</sup> Livestock Census**, there are 851.8 million poultry birds in India. About 30% of this is '**backyard poultry**' or small and marginal farmers.
  - Chickens, turkeys, ducks, geese, etc, are reared in poultry farms for meat and eggs.
  - Tamil Nadu, Andhra Pradesh, Telangana, West Bengal, Maharashtra, Karnataka, Assam and Kerala have the highest poultry populations.

#### ➤ **Legal Status of Poultry Units in India:**

- **Guidelines for Poultry Farmers, 2021:**
  - **New Definition of Poultry Farmer:**
    - **Small Farmers:** 5,000-25,000 birds
    - **Medium Farmers:** More than 25,000 and less than 1,00,000 birds
    - **Large Farmers:** More than 1,00,000 birds
  - A Certificate of Consent from the **State Pollution Control Board** or Committee under the **Water Act, 1974**, and the **Air Act, 1981**, is necessary for establishing and operating a medium-sized poultry farm, with permission granted for 15 years.
  - The **Animal Husbandry Department** will be responsible for implementing the guidelines at the state and district level.
- **Other Provisions:**
  - The **Central Pollution Control Board (CPCB)** classifies poultry units with **more than 5,000 birds as polluting industries**, subject to compliance and regulatory consent.
  - The **Prevention of Cruelty to Animals (PCA) Act, 1960**, prohibits the intensive confinement of animals, including chickens, recognising the importance of animal welfare.

- The **269<sup>th</sup> Law Commission of India Report** in 2017 **proposed draft rules** for the welfare of chickens in the meat and egg industries, emphasising improved animal welfare for safer food production.

- Despite recommendations, the Draft Rules for the egg industry released by the **Ministry of Agriculture and Farmers' Welfare** in 2019 are considered inadequate.

#### ➤ **Some Initiatives for the Poultry Industry:**

- **Poultry Venture Capital Fund (PVCF):** The **Department of Animal Husbandry and Dairying** is implementing it under "**Entrepreneurship Development and Employment Generation**" (EDEG) of the **National Livestock Mission**.
- **National Livestock Mission (NLM):** Different programmes under the NLM in which financial assistance is provided to States/Union Territories to implement **Rural Backyard Poultry Development (RBPDP)** and Innovative Poultry Productivity Project (IPPP).
- **Assistance to States for Control of Animal Diseases (ASCAD) Scheme:** ASCAD under "**Livestock Health and Disease Control**" (LH&DC) which covers the vaccination of economically important poultry diseases viz., Ranikhet Disease, Infectious Bursal Disease, Fowl Pox, etc., including control and containment of emergent and exotic diseases like **Avian Influenza**.

### ***What are the Steps Needed to Support the Poultry Industry?***

#### ➤ **Biosecurity** as a Global Priority:

- **Compartmentalisation:** Leading poultry producers worldwide **segregate flocks by age and health status**, minimising disease transmission risk.
  - This practice can be adapted in India by **establishing compartmentalised poultry farming zones** or encouraging multi-age rearing within biosecure facilities.
- **Vaccination Programs:** Rigorous vaccination protocols against prevalent diseases like Avian Influenza and Newcastle Disease are standard practice globally.

Note:



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- India can benefit by strengthening its **national vaccination programs** and ensuring wider outreach to small-scale farmers.

➤ **Enhancing Efficiency Through Technology:**

- **Precision Feeding:** Advanced feeding systems that adapt to individual bird needs and **optimise feed utilisation** are gaining traction worldwide.
- Encouraging Indian poultry farms to adopt these technologies, even in scaled-down versions, can improve feed conversion efficiency and reduce costs.
- **Environmental Monitoring Systems:** Real-time monitoring of factors like temperature, humidity, and ammonia levels in poultry houses is crucial for optimal bird health.
- Implementing such systems in Indian farms, even through low-cost sensors, can help maintain a healthy environment and prevent disease outbreaks.
- **Building a Sustainable Supply Chain:**
  - **Contract Farming:** Contract farming arrangements between producers and processors ensure market access and fair pricing for farmers.
  - **Cold Chain Infrastructure:** Investing in **robust cold chain infrastructure** to minimise spoilage during transportation and storage is a global best practice.
  - India can prioritise developing efficient cold chain networks, connecting remote production areas to major consumption centres.

## UN Panel on Critical Energy Transition Minerals

### Why in News?

Recently, the **United Nations (UN)** Secretary-General appointed a **panel on Critical Energy Transition Minerals** to develop **global common and voluntary principles** for the **minerals value chain** to safeguard environmental and social standards and embed justice in the energy transition.

### What are the Key Facts About the Panel on Critical Energy Transition Minerals?

- The panel will address issues relating to **equity, transparency, investment, sustainability, and human rights** in the context of **critical minerals** for renewable energy technologies.
  - Developing countries see **critical minerals** as an **opportunity** to create jobs, diversify economies, and boost revenues, but proper management is essential to avoid trampling over the poor.
- The **panel's objective** is aligned with the **2030 Agenda for Sustainable Development**, the **United Nations Framework Agreement on Climate Change**, and its **Paris Agreement** to harness the potential of critical minerals for shared prosperity and leaving no one behind.
- The panel **utilises past UN efforts**, especially the Working Group on Sustainable Extractive Industries and its 'Harnessing Critical Energy Transition Minerals for Sustainable Development' initiative.
  - It will help to **develop principles to ensure a fair and transparent approach** globally and for local communities in the **entire value chain** — upholding the highest **sustainability** and human development standards.
- The goal of combating climate change and **limiting global warming to 1.5°C** hinges on a **secure and accessible supply of critical energy transition minerals**.
  - These minerals, such as copper, lithium, nickel, cobalt, and rare earth elements, are **essential components of clean energy technologies** like wind turbines, solar panels, electric vehicles, and battery storage, **which are crucial for powering a sustainable future**.

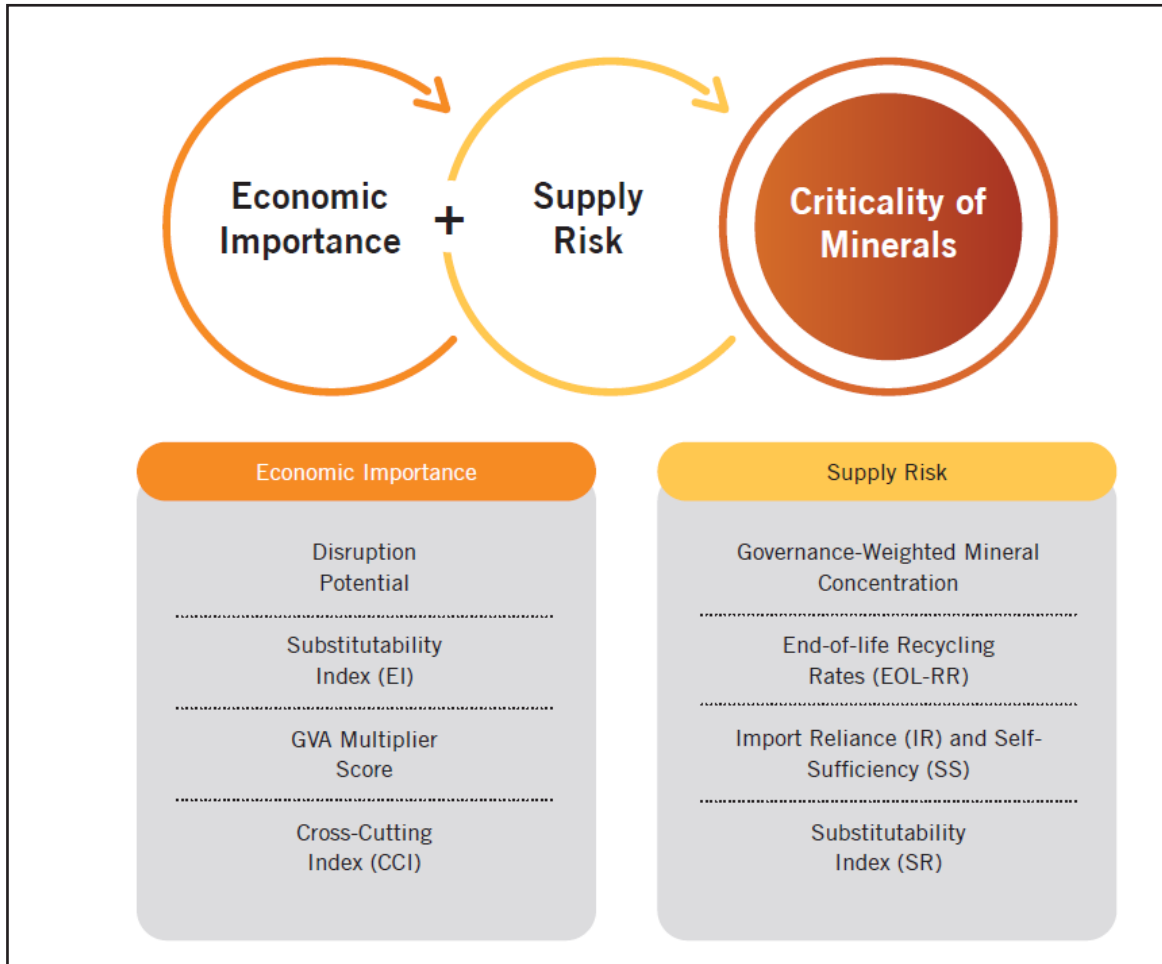
### What are Critical Minerals?

- **Critical Minerals:**
  - These are those minerals that are **essential for economic development and national security**, the lack of availability of these minerals or concentration of extraction or processing in a few geographical locations may lead to supply chain vulnerabilities and even disruption of supplies.

Note:



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#### ➤ Declaration of Critical Minerals:

- It is a **dynamic process**, and it can evolve over time as new technologies, market dynamics, and geopolitical considerations emerge.
- **Different countries** may have their **own unique lists** of critical minerals based on their specific circumstances and priorities.
  - The **US has declared 50 minerals** critical in light of their role in national security or economic development.
  - **Japan** has identified a set of **31 minerals** as critical for its economy.
  - The **UK** considers **18 minerals** critical, **EU (34)** and **Canada (31)**.
  - **Critical Minerals for India:**
- Expert Committee under Ministry of Mines has identified a set of **30 critical minerals** for India.
- These are Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium,

Indium, Lithium, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, **Rare Earth Elements (REEs)**, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium and Cadmium.

- The creation of **Centre of Excellence for Critical Minerals (CECM)** in the **Ministry of Mines** is also recommended by the Committee.
  - CECM will **periodically update the list of critical minerals** for India and notify the critical mineral strategy from time to time.

#### What are the Key Critical Minerals and Their Applications?

##### ➤ Lithium, Cobalt, and Nickel:

- These minerals are indispensable components of **lithium-ion batteries**, widely utilized in **electric vehicles, portable electronic devices, and energy storage systems**.

Note:



- **Rare Earth Elements (REEs):**
  - Consisting of **17 elements**, **REEs** play pivotal roles in manufacturing **high-strength magnets, electronics, wind turbines**, and military equipment.
  - Notably, **neodymium and dysprosium** are crucial for the production of **permanent magnets** used in motors.
- **Copper:**
  - It holds significant importance in **electrical wiring, renewable energy infrastructure, and electric vehicle components**, owing to its remarkable electrical conductivity.
- **Titanium:**
  - In the **aerospace industry**, titanium finds **extensive use** due to its **exceptional strength-to-weight ratio, resistance to corrosion**, and ability to withstand high temperatures.
- **Platinum Group Metals (PGMs):**
  - PGMs are indispensable in the **fabrication of catalytic converters for vehicles**, fuel cells, and various electronic devices.
- **Graphite:**
  - It is a **critical material** for the **anodes of lithium-ion batteries** and is valued for its lubricating properties in diverse industrial applications.

### ***What is the Significance of Critical Minerals for India?***

- **Economic Self-Reliance:**
  - **High-Tech Electronics:** Critical minerals like **lithium** are used in **lithium-ion batteries, powering laptops, smartphones**, and other devices. India's growing electronics industry heavily relies on a steady supply.
  - **Telecommunications:** Rare earth elements are essential for **fiber optic cables** and advanced telecommunication equipment, driving faster internet speeds and network capacity.
  - **Electric Vehicles:** **Lithium, cobalt, and nickel** are crucial for **electric vehicle batteries**. As India pushes for cleaner transportation, access to these minerals is vital for domestic EV production.
- **Technological Innovation:**
  - **Defense Aircraft:** Rare earth elements and titanium are used in high-performance jet engines and airframes, enabling **advanced fighter jets** and military aircraft.

- **Nuclear Energy:** **Vanadium and zirconium** are crucial for **nuclear reactors**, ensuring safe and reliable nuclear power generation.
- **Space Exploration:** **Lithium and beryllium** are used in **lightweight and high-strength materials** for rockets and satellites, critical for India's space program ambitions.
- **Environmental Sustainability:**
  - **Solar Panels:** **Silicon** is a key component of **solar photovoltaic cells**, enabling the conversion of sunlight into clean electricity.
  - **Wind Turbines:** **Neodymium and dysprosium** are used in **high-strength magnets** for wind turbine generators, promoting **renewable energy generation**.
  - **Battery Storage:** **Lithium-ion batteries**, containing **lithium and cobalt**, are essential for storing energy from renewable sources like solar and wind, enabling a shift from fossil fuels.

### ***What are the Challenges for India Related to Critical Minerals?***

- **Supply Chain Disruptions:**
  - The ongoing **conflict between Russia and Ukraine**, both significant producers of critical minerals, disrupts established supply chains, threatening reliable access for India.
- **Limited Domestic Reserves:**
  - India **lacks sufficient reserves** of critical minerals like **lithium, cobalt, and rare earth elements**, crucial for clean energy technologies and **electric vehicles**.
- **Heavy Reliance on Imports:**
  - The lack of domestic reserves forces India to rely heavily on imports, making it vulnerable to:
    - **Price Fluctuations:** Global market fluctuations can significantly impact the cost of critical minerals.
    - **Geopolitical Factors:** Strained relations with supplier countries can restrict access to critical minerals.
    - **Supply Disruptions:** Events like wars or natural disasters can disrupt critical mineral supply chains.
- **Growing Demand:**
  - India's **ambitious clean energy and electric vehicle** goals require ever-increasing quantities of critical minerals.

Note:

- India's has set the target of **"Panchamrit"** regarding its climate action plan. These include:
  - Achieving a **non-fossil energy capacity of 500 GW by 2030**.
  - Sourcing 50%** of its total energy needs from **renewable energy** sources by 2030.
- This rising demand, coupled with limited domestic reserves, intensifies India's dependence on foreign suppliers.

## Inheritance Tax

### Why in News?

Recently, a prominent political leader of India's opposition party has expressed interest in the proposed legislation on **Inheritance Tax**.

- There has been a lot of discussion about using **inheritance tax** as a tool for redistribution of wealth to address **Income Inequality** in India.

### What is Inheritance Tax?

- About:**
  - Inheritance tax is a tax paid for **inheriting a property or asset** from a deceased person.
  - It is levied on the **value of the inheritance** received by the beneficiary, and it is **paid by the beneficiary**.
  - Depending on the country, it can be as high as 55%.
  - A person can receive inheritance either **under a Will** or under the **personal law** of the deceased.
  - In India**, the concept of levying tax on inheritance **does not exist** now.
- Calculation of Inheritance Tax:**
  - The first step is to determine the **total value of assets**.
    - This involves assessing the value of all assets owned by the deceased, including **real estate, investments**, bank accounts, vehicles, and personal belongings, while also considering any outstanding debts or liabilities.
  - Whether or not inheritance tax applies depends on several factors, including the total value of the estate and the laws of the jurisdiction.
    - In some places, certain beneficiaries, such as spouses or children, may be exempt from paying inheritance tax or may receive a reduced tax rate.

### Reason to Abolish it:

- Procedural Harassment:** Taxpayers were being unduly harassed with the existence of two separate taxes on property ie. **wealth tax** (before death) and **estate duty** (after death).
- Unmet Objectives:** There was no reduction in the unequal distribution of wealth whereas, the tax did not assist states in financing their development schemes significantly either.
- Economically Not Feasible:** While the yield from estate duty is only about Rs 20 crore in 1985, whereas its cost of administration and collection was relatively high.
- Tax Evasion:** High rates of taxation often result in flight of capital and investment to tax havens or tax jurisdictions with favourable tax rates.

### Examples of Inheritance Tax Around the World

- Most European, American and even African nations levy inheritance tax.
- In Europe, the top nations levying tax on inherited properties are France (60%), Germany (50%), United Kingdom (40%), Spain (33%) and Hungary (18%).
- Other countries with high inheritance taxes are Japan (55%), South Korea (50%), Ecuador (37%), Chile (25%), South Africa (25%) and Taiwan (20%).

### What Factors Influence the Demand for Implementing Inheritance Tax in India?

- Rise in Wealth and Income Inequality in India:**
  - According to the **World Inequality Report 2022**, India ranks among the most unequal countries globally, with the **top 10% and top 1% holding 57% and 22% of the national income**, respectively.
    - Meanwhile, the share of the bottom 50% has decreased to 13%.
  - India exhibits staggering **wealth inequality**, with the top 10% of the population holding 77% of the total national wealth.
  - The **richest 1% owns 53% of the country's wealth**, leaving the poorer half with a mere 4.1%.
- Tax Burden on Poor:**
  - Approximately **64% of the total goods and services tax (GST)** in the country **came from the bottom 50% of the population**, while only 4% came from the top 10%.

Note:



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➤ **Lack of Inclusive Growth:**

- **Skewed Distribution of Economic Gains:** Economic growth may disproportionately benefit certain sectors or income groups, leading to an uneven distribution of wealth.
- **Lack of Social Safety Nets:** Inadequate social safety nets and welfare programs may leave vulnerable populations without sufficient support, widening the wealth gap.
  - According to NITI Aayog's **National Multidimensional Poverty Index (MPI)**, India's population living in multidimensional poverty was **14.96%** in 2019-21.
    - The rural areas of India experienced multidimensional poverty of **19.28%**.
    - In urban areas, the poverty rate was **5.27%**.
- The **Gini wealth coefficient** in India has gone up from 81.3% in 2013 to 85.4% in 2017 (100% represents maximal inequality). The growth in India has not been inclusive.

➤ **Endowments to Social Sector Institutions:** Endowments and funds from **inheritance tax** are essential for Indian hospitals, universities, and other institutions. For example, **Harvard University, receiving funds from estates, is exempt from inheritance tax.**➤ **Need for more Direct Taxes:** The government's **fiscal deficit** has increased in recent years. Hence, additional sources of direct taxes like inheritance tax need to be explored to contain the fiscal deficit as mandated by the **FRBM Act**.➤ **International Practices:** Developed countries such as England, France, Germany, the USA and India's Southeast Asian counterparts like Philippines, Taiwan and Thailand have been charging inheritance tax.**World Bank Study 2000 (India's poverty Reduction During 1970s-1990s)**

- When GDP growth picked up from a mere **3.5%** in the initial years, India could achieve a sustained decline in poverty.
- The study found that a staggering **87%** of the cumulative decline in poverty was attributed to the **rise in the growth of mean consumption**, while **redistribution** contributed to only **13%**.

**What are Advantages and Challenges in Implementation of Inheritance Tax in India?**➤ **Advantages:**

- **More Efficient Dispersion of Wealth:** In India, the richest and wealthy families inherited a large amount of wealth.
  - This is not only unhealthy from an economic perspective, but also restricts social mobility.
  - Thus, a proper implementation of **inheritance taxes** can remedy this malaise to a considerable extent.
- **Based on Egalitarian Ideals:** The redistribution of initial endowments is an important step in that direction to ensure equality as enshrined on the Principle of the **Right to Equality** in the Constitution of India.
- **Additional Source of Revenue for Public Welfare:** Inheritance tax provides additional sources of revenue to the government for **expansion of social sector programmes**, and its push towards public welfare schemes.
- **Progressive in Nature:** Inheritance tax is a progressive tax as it places a higher tax burden on wealthy individuals only.
  - By this additional tax revenue collected in the form of Inheritance Tax, the Government would have the liberty of reducing the basic **income tax liability** on the economically weaker sections of the country.
  - This could help combat the high barrier to entry to starting more entrepreneurial ventures.

➤ **Challenges:**

- **Complexity of the Tax Structure:** India already has a complex tax system with multiple taxes at the central and state levels.
  - Introducing an additional tax like inheritance tax would add to this complexity, making compliance and enforcement challenging.
  - Enforcing and administering an inheritance tax requires a robust administrative infrastructure.
- **Resistance from Wealthy Families:** Wealthy families in India may resist the imposition of an inheritance tax, as it would reduce the amount of wealth they can pass on to their heirs.
  - This resistance could manifest politically and socially, making it difficult for the government to introduce and sustain such a tax.

Note:



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- Inheritance taxes can have implications for family-owned businesses, particularly in sectors where succession planning is crucial.
- **Lack of Comprehensive Data:** Implementing an effective inheritance tax requires accurate data on individuals' wealth and assets.
- In India, there may be challenges in collecting comprehensive data on inheritance and wealth distribution, especially in rural areas where informal economies are prevalent.
- **Avoidance and Evasion:** High net worth individuals may attempt to avoid or evade inheritance tax through various means such as **trusts**, offshore accounts, or gifting **assets** during their lifetime.
- **Impact on Agricultural Land:** In India, agricultural land holds significant cultural and economic value, and it often passes down through generations.
  - Imposing an **inheritance tax on agricultural land could face resistance from agricultural communities** and lead to concerns about the fragmentation of landholdings.

#### What other Similar Taxes Does India Have?

- **Death Tax:** In 1953, India's Parliament had passed the **Estate Duty 'Death Tax' Act**, which was later abolished in 1985.
  - As per the Act, **tax/duty was imposed on the principal value of movable and immovable property**, including agricultural land, passed on to any person after the death of the owner of such property.
  - The Act was applicable only if the property-owning person died as an **adult** (i.e. completed 18 years of age).
    - Also, **Estate duty** was applicable only on inherited properties with a value above the exclusion limit set by the Act, and the tax rate was calculated as per the market value at the time of death.
  - It included **immovable and movable property** owned by the deceased in India and outside, which were passed on to a successor— if the person died when domiciled in India.
- **Gift Tax:**
  - The **Gift Tax** Act was passed by **Parliament** in **1958**. It imposed a duty on any '**gift**' made by one person to another in that financial year.

- It was imposed with a duty at the rate of **30%**.
- A gift was defined as **any existing movable or immovable property** transferred by one person to another **voluntarily, without considering its value** in terms of money, after 01<sup>st</sup> April 1957.
- The purpose was that the government sought to recover some of the tax revenue lost when a high income tax donor transferred property to a donee falling in the lower income tax bracket.
- Due to similar constraints to those faced while implementing estate duty, this tax was **abolished in 1998**.
- It was reintroduced in **2004** in the **Finance Act** as part of additions to the **Income Tax Act**.
  - Any cash gifts above Rs. 50,000 and any gifts in kind (i.e. immovable property) above the value of Rs. 50,000 are taxable.
  - Exceptions include donations, inheritance, and gift money received during weddings.

#### ➤ **Wealth Tax:**

- It was introduced in **1957** to impose a duty on a person's net worth.
- A **1% duty** was imposed on earnings of **over Rs 30 lakh** earned by a citizen in that **financial year**.
- The tax was imposed on all assets of Indian citizens and only Indian assets of **non-residential Indians (NRIs)**.
- Assets under the purview of this regime were gold, silver, and platinum ornaments, transport vehicles like private aircrafts, ships, and cars, property apart from one's residential home, and any cash above Rs. 50,000.
- Exemptions under the law included rental properties, business property, smaller properties below the prescribed limit, and investments in schemes.
- This tax was also **abolished in 2015** due to heavy costs in execution.

## **Bima Vistaar**

### **Why in News?**

Recently, the **Insurance Regulatory and Development Authority of India (IRDAI)** has proposed to **price Bima Vistaar**, its ambitious all-in-one affordable insurance mass product aimed at the rural areas of the country, at Rs 1,500 per policy.

Note:



### What is Bima Vistaar?

#### ➤ About:

- Bima Vistar, which is part of the **Bima Trinity**. The first-of-its-kind all-in-one affordable insurance product, Bima Vistaar will offer **life, health and property cover**.
  - The product has been designed to provide a basic social safety net cover with combined features of **life, health, personal accident and property insurance**.

#### ➤ Key Features:

- The product includes Life cover premium of Rs 820, Health cover Rs 500, Personal accident cover at Rs 100, and Property cover at Rs 80.
- If taken for the entire family on a floater basis, the policy will cost Rs 2,420, with an additional Rs 900 charged for the rest of the family members.
- The sum assured for life, personal accident, and property covers is Rs 2 lakh each, while the health cover (hospital cash) offers a sum assured of Rs 500 for 10 days, with a maximum amount of Rs 5,000 available without producing bills or documents.
- Agents selling Bima Vistaar policies stand to earn a commission of 10%, incentivising wider distribution and adoption of the product.

#### ➤ Benefits for Broader Insurance Landscape in India:

- Bima Vistaar is expected to provide a reliable insurance solution at a reasonable cost, thereby promoting **financial inclusion**.
- Bima Vistaar policy underscores its importance in safeguarding individuals and families against various risks and uncertainties.
- It is considered a mass product for **increasing insurance penetration in the country**, it is expected that, unlike **micro insurance products**, it will generate a large sales volume.

#### ➤ Future Prospects:

- IRDAI, along with the **General Insurance Council (GIC)** and **Life Insurance Council (LIC)**, is working towards creating a “Bima Trinity” -Bima Sugam (digital platform), Bima Vistaar (product), and Bima Vahak (women-centric distribution channel) - to effectively distribute and promote these products.
  - The competitive pricing and comprehensive coverage of Bima Vistaar are expected to make it a viable and sustainable solution in the long run.

### Insurance Regulatory and Development Authority of India (IRDAI)

- The (IRDAI) is an **autonomous and statutory body** formed under the **Insurance Regulatory and Development Authority Act, 1999 (IRDA Act, 1999)**. It is responsible for managing and regulating the insurance and reinsurance industry in India.
- It is a **10-member body- a chairman**, five full-time members and four part-time members. **Headquartered in Hyderabad.**
- **The Role of IRDAI:**
  - It has to protect the interests of insurance policyholders and ensure that they are treated in a just manner. It also has to monitor policy issuers to ensure that the common man's interests are not subverted.

### History of India's Insurance Industry

- In 1950, the Government of India nationalised India's insurance industry and established the **Life Insurance Corporation (LIC) of India**.
- In the 1990s, the government decided to open up the insurance sector to private players. A committee was set up to propose reforms and the IRDAI was formed.
- **In 2000**, when the market was opened up, foreign firms were allowed to buy up to **26% stake in Indian insurance companies**.
  - Later, **foreign direct investment** in the insurance sector was capped at 49%.
- In the financial year 2022-23 (FY23), India's overall insurance penetration **was down at 4% from the level of 4.2% in FY22**, according to a **Swiss Re Sigma report**. This is much below the **global insurance penetration of 6.8%**.
  - In FY23, the insurance density in India increased from USD 91 in FY22 to USD 92.
    - Insurance density is the **ratio of insurance premiums collected by insurance companies** to the total population of a country, usually expressed in US dollars.

Note:

## India's De-globalised Food Inflation

### Why in News?

In 2023, world food prices dropped significantly from their 2022 highs. However, India's **food inflation** remained high at **9.5%** in **December 2023**, contrasting with global deflation of **-10.1%**.

- The **UN Food and Agriculture Organization's (FAO)** food price index averaged **143.7** points in 2022, but fell to 124 points in 2023, a decline of 13.7%.

### What Factors are Contributing to the Drop in Global Food Prices?

- **Abundant Supply of Key Crops:** Bumper harvests of major crops like **wheat** in 2023 led to a **surplus in the global market**.
  - This abundance contrasts with concerns in **2022**, when worries about supply disruptions due to the war in **Ukraine**, a major grain exporter, caused prices to spike.
- **Improved Supply from Russia and Ukraine:** Despite the disruption of the **Black Sea Grain Initiative** in **July 2023**, both Russia and Ukraine have managed to maintain wheat exports.
  - This continued flow of grain from the region has helped to alleviate some of the supply anxieties.
- **Lower Demand for Vegetable Oils:** The UN's Food and Agriculture Organization **Vegetable Price Index** saw the biggest drop in 2023, falling by 32.7%.
  - This decline is due to a combination of factors, including improved vegetable oil supplies and a **decrease in its use for biofuel production**.
  - As more oil becomes available for food purposes, and less is diverted for biofuels, the overall demand for vegetable oil goes down, leading to lower prices.
- **Slowing Demand:** High inflation and fears of an economic recession have dampened consumer demand in many parts of the world, including in major food-importing regions, leading to a **decline in import demand for certain food commodities** and putting downward pressure on global prices.

### Why is India Experiencing High Food Inflation Despite Falling Global Food Prices?

- **Limited Transmission of Global Prices:** While global food prices fell, India's food prices stayed elevated due to **limited transmission of international prices to domestic markets**.
  - India's import dependence is significant only for **edible oils (60% of consumption)** and pulses.
  - For most other agri-commodities, including **cereals, sugar, dairy, and fruits and vegetables**, India is self-sufficient or an exporter.
- **Export Bans and Import Duties:** The Indian government imposed bans on exports of certain food items like **wheat, non-basmati white rice, sugar, and onions** and provided **import duty waivers on others**, effectively reducing global market influences on domestic prices.
- **Domestic Production Challenges:** Issues like weather conditions affecting crop yields, particularly for **cereals, pulses, and sugar**, contributed to supply shortages and higher prices domestically.
  - Cereal and pulse inflation stood at **9.9% and 20.7%** year-on-year, respectively, in December 2023.
- **Low Stock Levels:** Low stock levels for commodities like **wheat and sugar** further exacerbated price pressures.

#### Note:

- India remains largely unaffected by international supply chain disruption due to issues in the Red Sea route because imports of arhar and urad primarily come from **Mozambique, Tanzania, Malawi, and Myanmar**, bypassing the recently disrupted **Suez waterway-Red Sea route**.
- Masoor from **Australia and Canada** takes the North Pacific-Indian Ocean route.
- In edible oils, imports from **Indonesia, Malaysia, Argentina, and Brazil** through the South Atlantic and Indian Ocean remain **unaffected by the Houthi conflict**.
- Also, declining global prices, such as Russian wheat at USD 240-245 per tonne and Indonesian palm oil at USD 940 per tonne, have eliminated the risk of imported inflation in India.

Note:

### What is Imported Inflation?

- **About:** **Imported inflation** refers to the rise in prices of goods and services in a country due to an increase in the price or cost of imports.
  - To maintain profit margins, companies often pass on the increased import costs to consumers by raising the prices of their goods and services.
- **Responsible Factors:**
  - **Currency Depreciation Factor:** A **depreciation in a country's currency** is often seen as the primary driver of imported inflation.
    - When a currency depreciates, more local currency is required to purchase foreign goods or services, effectively increasing import costs.
    - The **Asian Development Bank** recently warned that India could face **imported inflation** due to a potential rupee depreciation amid rising interest rates in the West.
  - **Rising Import Costs Without Currency Depreciation:** Even without currency depreciation, a rise in import costs due to factors like an **increase in international crude oil prices** can lead to imported inflation.
    - This is a **variant of cost-push inflation**, which states that rising input costs can cause inflation in the prices of final goods and services.

### How Food Inflation is Calculated in India?

- **About:** Food inflation in India is primarily measured by the **Consumer Price Index (CPI) for Food and Beverages**. CPI is a key measure of inflation in India that tracks the changes in the prices paid by typical consumers for a basket of goods and services over time.
- **Recent Trends:** Food has a weight of 45.9% in the **consumer price index** but its contribution to overall inflation has increased from **48%** in April 2022 to **67%** in November 2023.

- The government's first **Household Consumption Survey** released recently showed that food's share of the rural consumption basket fell **below 50%** for the first time to 46% and to 39% for urban consumers.
- According to the RBI, about **90% of food inflation** is determined by **non-cyclical factors** like the weather, supply conditions, international prices and availability.
  - On average, however, 10% of food inflation is driven by demand factors with significant time variation.

### How India can Address Food Inflation Effectively?

- **Increase Agricultural Productivity:** Investing in agricultural infrastructure, technology, and research to **improve crop yields and reduce production costs** can boost supply and stabilise prices.
- **Efficient Supply Chain Management:** Enhancing **logistics, storage facilities, and distribution networks** can reduce wastage and ensure a steady supply of food items to the market, mitigating price fluctuations.
- **Diversification of Agriculture:** Promoting diversification by encouraging the **cultivation of a variety of crops** and supporting alternative farming practices can reduce reliance on a few commodities and balance market dynamics.
- **Price Monitoring and Regulation:** Monitoring food prices regularly and **implementing effective price regulation** mechanisms can prevent price manipulation and ensure fair pricing for consumers and producers alike.
- **Climate Resilience:** Addressing climate change challenges through sustainable farming practices, water management strategies, and crop diversification can reduce production risks and enhance food security in the long term.



Note:

# International Relations

## Highlights

- Vietnam Push for Non-Market Economy Status
- India Sugarcane Subsidy under WTO Scrutiny
- Nepal's Currency Featured Kalapani Region
- Japan's Shifting Diplomatic Posture

## Vietnam Push for Non-Market Economy Status

### Why in News?

Vietnam has urged the **United States** administration to promptly reclassify its status from “**non-market economy**” to “**market economy**”.

- This would provide relief to Vietnam, as currently goods imported from Southeast Asian nations are **facing high taxes** on imports.

### What is USA's Concept of Non-Market Economies (NME)?

#### ➤ About:

- In US, a **Non-Market Economy (NME)** refers to any foreign country that the **US Department of Commerce** determines **does not follow market-based cost or pricing structures**. Consequently, sales of goods in such countries may not accurately reflect their fair value.
- Countries in this list are Armenia, Azerbaijan, Belarus, China, Georgia, Kyrgyz Republic, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan and Vietnam.

#### ➤ Criteria:

- The **United States** designates a country as **non-market economy** based on several factors namely:
  - If the country's currency is **convertible**.
  - If wage rates are determined by free bargaining between labour and management.
  - If joint ventures or other **foreign investment** are allowed
  - Whether the means of production are owned by the state.

- If the state controls the allocation of resources and price and output decisions.
- Other factors like **human rights**.

#### ➤ Anti-Dumping Duty on Non-market Economy:

- The designation of a ‘**non-market economy**’ allows the US to levy **Anti-dumping duties** on products imported from designated countries.

- **Dumping** in international trade occurs when a country deliberately sets its **export prices lower than its domestic prices**, causing **harm to industries in the importing country**.

- **Anti-dumping duties** are tariffs imposed by a country's government on imported goods that are sold at unfairly low prices, typically below their market value or the cost of production.

- These duties are intended to **protect domestic industries from the harmful effects of dumping**, which can include undercutting prices, harming domestic producers, and distorting competition.

#### ➤ Determining the Level of Anti-Dumping Duty:

- The US determines anti-dumping duties for non-market economies like Vietnam **by comparing the product's value to a third country**, such as Bangladesh, which is considered a market economy, and that value is then assumed to be the production cost for the company in the non-market economy.
- This method is used because **non-market economies may not have transparent pricing mechanisms**, leading to reliance on surrogate countries for comparison.

#### ➤ NME and World Trade Organisation (WTO):

- The **WTO** **does not explicitly recognize or endorse the NME status**. However, it allows members to

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use alternative methodologies to calculate normal values in antidumping investigations.

- The **WTO Antidumping Agreement** provides flexibility for members to choose an appropriate methodology for NMEs. It does not prescribe a specific approach.

#### What is market Economy?

- It is a system in which **production decisions and the prices of goods and services are guided primarily by the interactions of consumers and businesses**, i.e. the law of supply and demand is allowed to determine what is available and at what price.
  - A market economy gives entrepreneurs the freedom to pursue profits by creating new products, and the freedom to fail if they misread the market.

#### What are Vietnam's Arguments Regarding its Non-Market Economy (NME) Status?

- **Vietnam's Arguments:**
  - **Currency Convertibility:** Vietnam's currency is **convertible** into other currencies transparently based on market principles.
  - **Wage Determination:** Wage rates result from **free bargaining** between labour and management.
  - **Foreign Investment:** Foreign investment is **permitted**, and Vietnam has become an attractive destination for it.
  - **Means of Production:** The government does not **own or control** the means of production significantly.
  - **Resource Allocation:** The government does not have significant control over **resource allocation** or price/output decisions.
  - **Market Principles:** Vietnam's economy operates on **market principles**, including legal frameworks, corporate governance, and diversified foreign relations.
  - **Flaws in Calculations:** Vietnam's Center for **WTO and International Trade** has said that the method used to calculate anti-dumping duties is flawed because it results in artificially high dumping margins, which do not accurately reflect the actual practices of Vietnamese companies.

#### ➤ US Apprehensions:

- The US Commerce Department is currently reviewing Vietnam's status.
- The US steelmakers and the American Shrimp Processors Association have asked the US administration not to change Vietnam's status to a market economy.
  - They cited Vietnam's restrictions on land ownership, weak labour laws, and lower shrimp duties that would hurt their members as reasons for their request.
- The change in Vietnam could benefit Chinese state firms invested in Vietnam by allowing them to bypass US tariffs more easily.



#### What is the Status of India and Vietnam's Bilateral Trade?

- India and Vietnam share **traditionally close and cordial bilateral relations**. Over the years, their economic ties have strengthened significantly.
- **Financial Year (FY) April 2020 – March 2021:**
  - Bilateral trade between India and Vietnam reached **USD 11.12 billion**.
  - Indian exports to Vietnam amounted to **USD 4.99 billion**.
  - Indian imports from Vietnam stood at **USD 6.12 billion**.
- **Recent Trends:**
  - In **2022**, bilateral trade continued to grow, reaching **USD 15 billion**.
  - Vietnam is India's **15<sup>th</sup> largest trading partner**, and India is Vietnam's **8<sup>th</sup> trading partner** globally.

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# India Sugarcane Subsidy under WTO Scrutiny

## Why in News?

Recently, the **US** and **Australia** have contended that India is giving sugarcane **subsidies** to its farmers beyond the limits set in the **World Trade Organisation's (WTO) Agreement on Agriculture (AoA)** calling it violative of global standards that can distort global trade.

## What is the WTO's Agreement on Agriculture (AoA)?

### About:

- The Agreement on Agriculture (AoA) is an **international treaty** established by the **World Trade Organization (WTO)**.
- It was negotiated during the Uruguay Round of the **General Agreement on Tariffs and Trade (GATT)** and entered into force with the establishment of the WTO on 1<sup>st</sup> January 1995.

### Objective:

- AoA is aimed to **remove trade barriers** and to **promote transparent market** access and integration of global markets.
- The AoA aims to establish a **fair and market-oriented** agricultural trading system.
- It sets out rules applicable to all WTO members to provide for **substantial progressive reductions in agricultural support and protection** in their country.

### 3 Pillars of AoA:

- **Domestic Support:** It calls for reduction in domestic subsidies that distorts free trade and fair price.
  - Under this provision, the **Aggregate Measurement of Support (AMS)** is to be reduced by 20% over a period of 6 years by **developed countries** and 13% over a period of 10 years by **developing countries**.
  - Under this, subsidies are categorised into: **Blue Box, Green Box and Amber Box subsidies**.

## WTO AGREEMENT ON AGRICULTURE (AoA)

A WTO treaty negotiated during the Uruguay Round of the General Agreement on Tariffs and Trade (GATT); formally ratified in 1994 at Marrakesh, Morocco; Came into effect in 1995

### FEATURES

- Market access (Promote market access for agricultural products by reducing trade barriers)
- Domestic support (Subsidy Boxes are included in this)
- Export subsidies (Reduce the use of export subsidies, which can distort trade)

### SUBSIDY BOXES

#### Amber Box Subsidies:

- Can distort international trade by making a country's products cheaper in comparison to those of other countries
- Examples: Subsidies for inputs such as fertilisers, seeds, electricity, irrigation, and Minimum Support Price (MSP)
- Amber box is used for all domestic support measures that are deemed to distort production and trade
- As a result, the signatories are required to commit to reducing domestic supports that fall into the amber box
- Members who do not make these commitments must keep their amber box support within 5-10% of their value of production. (*De Minimis Clause*)
  - 10% for developing countries
  - 5% for developed countries
- India's MSP program remains under scrutiny, as it exceeds 10% ceiling

#### Blue box Subsidies:

- "Amber box with conditions" — designed to reduce distortion
- Any support that would normally be in the amber box is placed in the blue box if it requires farmers to limit production
- These subsidies aim to limit production by imposing production quotas or requiring farmers to set aside part of their land
- At present there are no limits on spending on blue box subsidies

#### Green Box Subsidies:

- Domestic support measures that don't cause trade distortion or at most cause minimal distortion
- These subsidies are government funded without any price support to crops
- Also include environmental protection and regional development programmes
- Allowed without limits (except in certain circumstances)



Note:

- **Market Access:** Market access for goods in the WTO means the conditions, tariff and non-tariff measures, agreed by members for the entry of specific goods into their markets.
  - Market access requires that **tariffs fixed** (like custom duties) by individual countries **be cut progressively to allow free trade**. It also required countries to **remove non-tariff barriers** and convert them to Tariff duties.
- **Export Subsidy:** Subsidy on inputs of agriculture, making export cheaper or other incentives for exports such as import duty remission etc are included under export subsidies.
  - These can result in dumping of highly subsidised (and cheap) products in other countries and damage the domestic agriculture sector of other countries.

### ***What are the Allegations against India Regarding Violating AoA?***

- **Background of the Incident:**
  - This allegation follows a previous one from 2019 when Brazil, Australia, and Guatemala initiated a dispute against India at the WTO, alleging that India's sugar subsidies are inconsistent with global trade rules.
  - Consequently, a WTO panel in 2021 confirmed the claims, however, India appealed the findings and prevented the panel's report from being adopted by the WTO's Dispute Settlement Body.
- **Complaint Against India:**
  - The US and Australia have claimed that India's domestic support measures are inconsistent with various articles of the WTO's **Agreement on Agriculture**.
    - For the Period 2018-2022, India's Market Price Support constituted over 90% of the value of production of sugar every year against the permitted level of 10% as per WTO's AoA.
  - The US and Australia also highlighted a crucial absence in India's reporting claiming that India hadn't included sugarcane or its derivatives in any domestic support notifications since the marketing year 1995-96.
    - This omission has left the WTO without adequate information to assess India's compliance with global trade regulations.
    - Since the WTO's Appellate Body is currently inactive due to the lack of appointed members,

no appeals can be decided on until it becomes operational once more.

#### ➤ **India's Stand:**

- In 2022, India had appealed against a ruling of the WTO's trade dispute settlement panel which ruled that the country's domestic support measures for **sugar and sugarcane** are inconsistent with global trade norms.
  - In its appeal, India argued that the panel had erred in finding that India's FRP and SAP constitute market price support under the AoA.
- India pointed out the error and said that US-Australia analysis uses the entire sugarcane production in India in a given year for calculating the subsidies, regardless of whether or not the sugarcane was actually delivered to sugar mills for crushing under the Sugarcane (Control) Order.
  - The Sugarcane (Control) Order, 1966 is a regulatory framework that governs various aspects related to sugarcane production, pricing, and trade in India.

#### **Note:**

- **Fair and Remunerative Price (FRP):** It is a set price that is determined by the government and serves as the minimum price that sugar mills must pay to farmers for their sugarcane. This price ensures that farmers receive a fair and reasonable payment for their crops.
- **State-Advised Prices (SAPs):** In some States, farmers receive extra payments in addition to FRP for improving production efficiency, and in certain states, sugar mills provide additional payments to farmers through specific state-level support called State-Advised Prices (SAPs).

#### **What is the World Trade Organisation (WTO)?**

- **About:**
  - WTO is an international organisation that regulates and promotes global trade.
  - It was established in 1995 and currently has 164 member countries (including the European Union).
  - It provides a forum for member countries to negotiate and enforce trade agreements, resolve disputes, and promote economic growth and development.
  - It's headquartered in Geneva, Switzerland.

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### ➤ Origin of WTO:

- The WTO is the successor to the **General Agreement on Tariffs and Trade (GATT)**, which was created in 1947.
- The Uruguay Round (1986-94) of the GATT led to the WTO's creation.
  - WTO began operations on 1st January 1995.
- The Agreement Establishing the WTO, commonly known as the "Marrakesh Agreement", was signed in Marrakesh, Morocco in 1994.
  - India was one of the founding members of the 1947 GATT and its successor, the WTO.
- Main difference between GATT and WTO was that GATT mostly dealt with trade in goods, the WTO and its agreements could not only cover goods but also trade in services and other **intellectual properties** like trade creations, designs, and inventions.

### ➤ Dispute Redressal Mechanism of WTO:

- According to WTO rules, a WTO member or members can file a case in the Geneva-based multilateral **Dispute Settlement Body (DSB)**, if they feel that a particular trade measure is against the norms of the WTO.
  - **Bilateral consultation** is the first step to resolve a dispute. If both the sides are not able to resolve the matter through consultation, either can approach for the establishment of a **dispute settlement panel**.

### ➤ Dispute Settlement Body (DSB):

- The DSB makes decisions on trade disputes between member countries. It consists of all **WTO members**.
  - The DSB makes all its decisions by **consensus**.
  - The DSB has the sole authority to establish panels of experts to consider the case, and to accept or reject the panels' findings or the results of an appeal.
  - It monitors the implementation of the rulings and recommendations, and has the power to authorise retaliation when a country does not comply with a ruling.
- The panel's ruling or report can be challenged at the **WTO's Appellate Body (WTOAB)**.

- However, as of now, the WTOAB is not functioning due to the differences among member countries to appoint members in this body.
- Over 20 disputes are already pending with the appellate body. The US has been blocking the appointment of the members.

## Nepal's Currency Featured Kalapani Region

### Why in News?

Recently, **Nepal announced** the printing of a **new Rs 100 currency note** with a map that shows the contentious territories of **Lipulekh, Limpiyadhura and Kalapani**, already termed as "artificial enlargement" and "untenable" by India.

- India responded sharply to Nepal's decision, with India's External Affairs Minister stating that it **will not change the situation** or the reality on the ground.

### What are the Regions of Border Dispute Between India and Nepal?

#### ➤ About:

- Currently, **India and Nepal** have border disputes over the **Kalapani-Limpiyadhura-Lipulekh trijunction** and **Susta area (West Champaran district, Bihar)**.
- **Kalapani-Limpiyadhura-Lipulekh Trijunction (Kalapani Region):**
  - This is a **35-square-kilometre area** located in the northwestern part of Nepal, near the tri-junction where India, Nepal, and China meet.
  - **Kalapani** is a **valley** that is **administered by India** as a part of the Pithoragarh district of **Uttarakhand**. It is situated on the Kailash Mansarovar route.
  - Kalapani is advantageously located at a height of **over 20,000 ft** and serves as an **observation post** for that area.
  - The **Kali River** in the **Kalapani region** demarcates the border between India and Nepal.
  - The **Treaty of Sugauli** was signed by the **Kingdom of Nepal and British India** (after the **Anglo-Nepalese War**) in **1816**.
    - The treaty designated the Kali River (or the Mahakali River) as the western boundary of Nepal.

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- Land east of the Kali River came under Nepal's control, while territory west of the river became part of British India (present-day India).
- The discrepancy in locating the source of the Kali River led to boundary disputes between India and Nepal, with each country producing maps supporting their claims.



#### ➤ Claims of Different Parties over Kalapani Region:

- **Nepal's Stand:**
  - According to Nepal's claims, the **Kali River** originates from a stream at Limpiyadhura, northwest of Lipu Lekh.
    - Thus Kalapani, Limpiyadhura, and Lipu Lekh, fall to the east of the river and are part of Nepal's Dharchula district.
  - The territory of Kalapani was offered to India by King Mahendra after the 1962 India-China war who wanted to help India's security concerns due to perceived lingering Chinese threats.

#### ○ India's Stand:

- India claims that the **Kali River** originates in springs well below the **Lipu-lekh Pass** (or Lipulekh Pass itself), effectively bringing the Kalapani region under Indian control.
  - The Sugauli Treaty does not demarcate the area north of these streams.
- The **administrative and revenue records of the nineteenth century** also show that Kalapani was on the Indian side, and counted as part of Pithoragarh district of Uttarakhand.

#### ➤ Susta Region:

- The **Treaty of Sugauli** defined the **Gandak River** as the international boundary between India and Nepal.
- The **right bank of the river** was under Nepal's control while the left bank was under India's control.
- **Susta village was initially on the right bank** when the treaty was signed and it was a part of Nepal.
- However, over the years, the **Gandak River changed its course and Susta moved to the left bank** and is now currently under India's control.



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## Japan's Shifting Diplomatic Posture

### Why in News?

In the recent past of changing geopolitics, the world is witnessing a turning point as Japan, long a symbol of post-war pacifism, strengthens its military capabilities. This transformation has the potential to significantly alter the balance of power in Asia and beyond.

### What are the Key Facts About the Japan's Diplomatic Posture?

#### ➤ Japan's Diplomatic Journey Before World War II:

##### ○ Seclusion (1600s-1850s):

- For over 200 years, Japan remained largely closed off from the world. This **policy of isolation aimed to preserve social order and prevent foreign influence**.

##### ○ Catching Up (1850s-1900s):

- The arrival of **Portuguese Commodore Perry's "Black Ships" in 1853** forced Japan out of its self-imposed seclusion. The Japanese government aimed to:
  - They **modernised the military and adopted Western technology** to become a strong nation.
  - Japan renegotiated previous treaties to regain control of its trade and foreign policy.

##### ○ Aggressive Stance (1900s-1930s):

- Despite its victories, Japan wasn't treated as a full equal by Western powers, particularly regarding racial equality (e.g., rejection of the racial equality clause in the Treaty of Versailles).
- This frustration with the West fueled a shift towards aggressive expansionism like the militaristic takeover of Manchuria in 1931, formed **the Axis Alliance before World War II** etc.

- This sense of disrespect and a desire to challenge the Western-dominated world order ultimately led Japan down a path of militaristic conquest that culminated in **World War II**.

#### ➤ Japan's Diplomatic Journey After World War II:

- After the **defeat of Japan in World War II**, the United States led the Allies in the occupation and rehabilitation of the Japanese state. Thus, Japan embraced a **policy of pacifism**.
- Military spending was strictly limited, and the nation focused on rebuilding its economy. This strategy proved wildly successful, propelling **Japan** to become the world's second-largest economy by the 1970s.
- Over the recent decades, Japan has undergone a significant **shift in its diplomatic posture**, moving away from strict post-war pacifism and towards a more assertive role on the world stage.

### What Factors led Japan to Change its Diplomatic Posture?

#### ➤ External Factors:

- **China's Rise:** China's growing military power and **assertive claims in the East China Sea**, particularly regarding disputed territories like the **Senkaku Islands**, have created a sense of urgency for Japan to strengthen its defences.
- **North Korean Threat:** North Korea's continued **development of nuclear weapons and ballistic missiles** remains a major security concern for Japan.
- **Uncertain US Commitment:** The **perceived erosion of US commitment to Asian security** under the Trump administration, along with the **rise of isolationist tendencies in the US**, has pushed Japan to become **more self-reliant** in its defence.
  - Examples include the **failure of USA's Middle East policy in maintaining peace**.

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➤ **Internal Factors:**

- **Conservative Resurgence:** A growing number of **conservative voices** in Japan advocate for a **more active security role** and argue that Japan, as a “normal power,” has a responsibility to contribute to regional stability and defend its interests.
- **Pacifist Fatigue:** Decades of relying solely on the US for security have led some to question the sustainability of this approach, especially in the face of a changing regional landscape.

**How is Japan Changing its Diplomatic Posture?**

➤ **Manifestations of Change:**

- **Increased Defence Spending:** Japan has **significantly increased its defence budget**, ending the self-imposed cap of 1% of GDP.
  - From 1960 to 2020, Japan’s military spending remained at or **below 1% of GDP**
- **Military Buildup:** Japan is **acquiring new military capabilities**, including offensive weapons like cruise missiles, and easing restrictions on arms exports.
  - Prime Minister Kishida announced that Japan will **increase annual defence spending to 2% of GDP by 2027**.
- **Deeper Security Cooperation with the Allies:** Japan is working closely with the **US on joint military exercises** and exploring deeper integration of command structures.
  - The **Key Japan-US joint military exercises** are Keen Sword, Orient Shield, and Valiant Shield (a ballistic missile defence-focused exercise).
  - The **Global Combat Air Programme (GCAP)** is a multinational initiative led by the **United Kingdom, Japan, and Italy** to jointly develop a **sixth-generation stealth fighter** by 2035.
  - Also, Japan has decided to **ease its strict defence export** rules, allowing it to **collaborate with Britain and Italy** to build a next-generation fighter jet for export under certain conditions.

- **Active Regional Diplomacy:** Japan is strengthening its relationships with other regional powers like **India and Australia**, promoting a “**free and open Indo-Pacific**” vision.

- **Quadrilateral Security Dialogue (QUAD):** A **strategic security dialogue** involving **Japan, the US, India, and Australia** to address regional security concerns.
- **Pacific Island Forum (PIF):** Japan actively engages with **Pacific Island nations**, offering development assistance and fostering closer ties.
- **Support for Ukraine:** Japan’s strong stance in support of Ukraine against Russia is seen as a signal of its commitment to upholding international norms and deterring similar aggression in Asia.

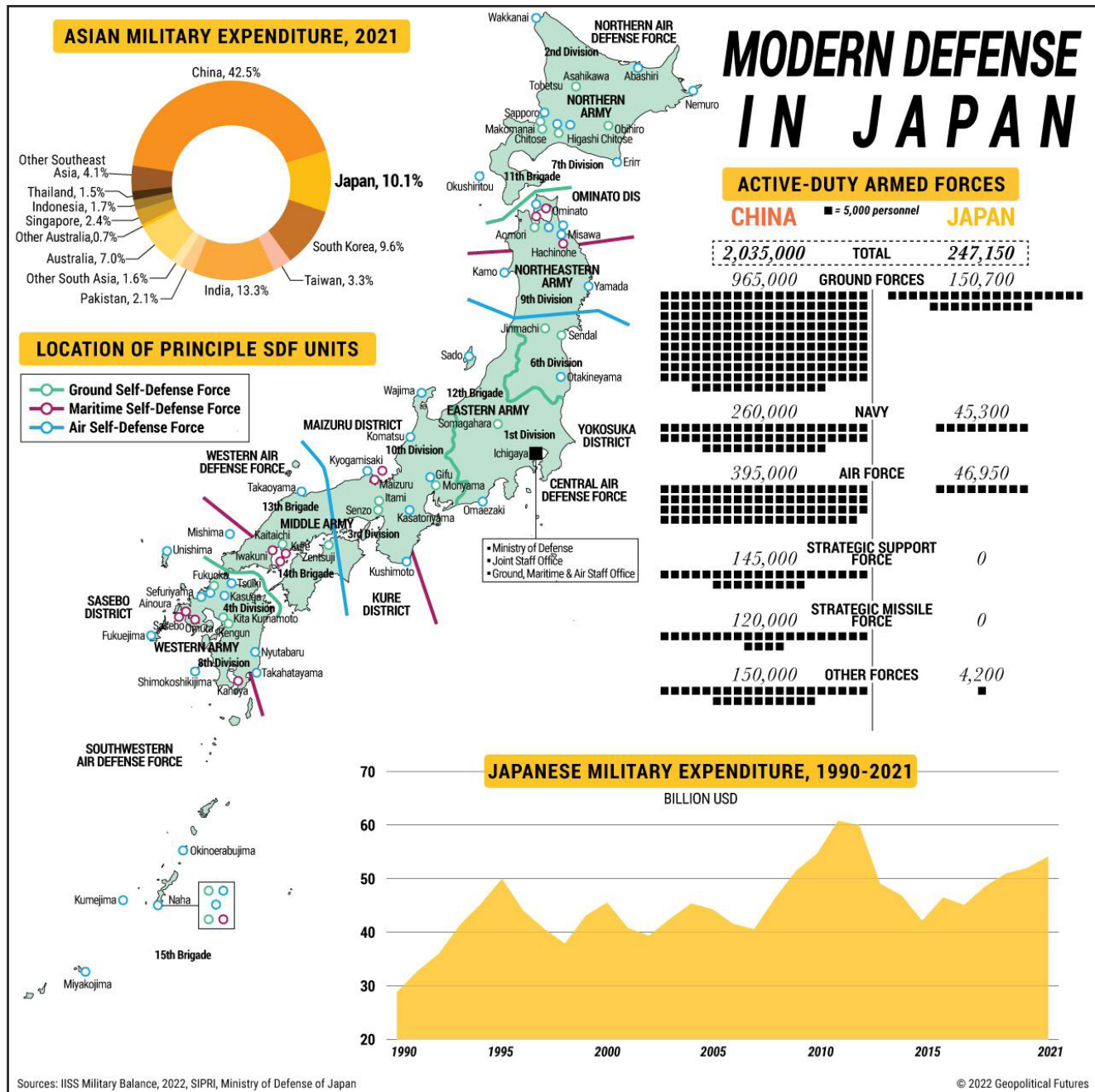
- **Shifting Stance on Historical Issues:** Japan is attempting to **reconcile with South Korea**, a historical adversary, in an effort to create a more cohesive regional security architecture.

**Note:**

- Japan has displayed a “**panoramic diplomacy**” under the late Prime Minister Abe Shinzo, expanding its global visibility and normalising its security policy.
- The term “**panoramic diplomacy**” translates to “**diplomacy that takes a panoramic perspective of the world map**” or “diplomacy with panoramic views.”
- It emphasises a proactive and multifaceted approach to international relations, aiming to build strong ties with a wide range of countries.
- **Key Characteristics:**
  - **Broader Scope:** Unlike traditional alliances focused on specific regions or ideologies, panoramic diplomacy seeks to **establish reciprocal relations with as many countries as possible, even if their values don’t entirely align with Japan’s**.
  - **Cooperation over Confrontation:** While concerns about China’s growing influence might have played a role, panoramic diplomacy didn’t solely focus on the Indo-Pacific region but **actively engaged with countries across Africa, Latin America, and other areas**.

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### How Japan's Changing Posture will Affect Indian Interest?

#### ➤ Potential Benefits:

- **Countering China:** Both India and Japan see China as a strategic concern. Japan's increased military capabilities and focus on the Indo-Pacific could strengthen the ability of both countries to deter Chinese aggression.
- Both **India and Japan** are members of

### Quad grouping, G20 and G-4, International Theronuclear Experimental Reactor (ITER).

- The India-Japan Act East Forum was established in 2017 which aims to provide a platform for India-Japan collaboration under the fabric of India's "**Act East Policy**" and Japan's "**Free and Open Indo-Pacific Strategy**".
- **Enhanced Security Cooperation:** The new strategy emphasises cooperation with like-minded countries like India. This could lead to more joint military

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exercises, technology sharing, and potentially relaxed export restrictions on Japanese defence equipment for India.

- Japan is one of the few countries with whom India has **2+2 ministerial dialogue**.
- India and Japan's defence forces also organise a series of bilateral exercises such as **JIMEX (naval)**, **Malabar exercise** (Naval Exercise), '**Veer Guardian**' and **SHINYUU Maitri** (Air Force), and **Dharma Guardian (Army)**.
- **Infrastructure Development:** The new **Japanese Official Development Assistance (ODA) Loan framework** for strategic purposes could provide India with much-needed funding for infrastructure projects in border areas with China. This would improve India's defence preparedness and connectivity.
  - India has been the **largest recipient** of the **Japanese ODA Loan framework** for the past decades.
  - **Delhi Metro** is one of the most successful examples of **Japanese cooperation** through the utilisation of ODA.
  - India's **Western Dedicated Freight Corridor (DFC)** project is funded by a soft loan provided by the Japan International Cooperation Agency.

- **Economic Cooperation:** A stronger Japan could be a more reliable economic partner for India, potentially leading to increased trade and investment.

- **Japan's bilateral trade** with India **totalled USD 20.57 billion** during FY 2021-22. India was the 18<sup>th</sup> largest trading partner for Japan, and Japan was the 12<sup>th</sup> largest trading partner for India in 2020.

➤ **Potential Challenges:**

- **Competition:** Both India and Japan are developing long-range strike capabilities. This could lead to an arms race in the region, potentially straining resources.
  - Competition between Japan and India to **export defence equipment** in common nature of market and allies like Africa, Philippines and South America might harm India's interests in the long run.
- **Diplomatic Challenges:** It might become challenging for India to balance more **assertive powers** in competing blocks like the **Quad grouping** and **BRICS**.
- **Ideological Conflicts:** Ideological conflicts may arise in areas such as **human rights, nuclear proliferation, and international interventions**, where India's stance can differ from Japanese stance.



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# Social Issues

## Highlights

- Allegations of Child Labour in Trade Negotiations with Australia
- PM-EAC Report on Share of Religious Minorities
- WHO Report on Global Immunisation
- Women in Global Capability Centers

## Allegations of Child Labour in Trade Negotiations with Australia

### Why in News?

The Indian Ministry of Commerce and Industry has firmly refuted allegations of **child labour** made in a recent report by Australia's Joint Standing Committee on Trade and Investment Growth.

- The allegations surfaced amid ongoing negotiations between India and Australia for the Comprehensive Economic Cooperation Agreement (CECA), which aims to broaden the existing **Economic Cooperation and Trade Agreement (ECTA) signed in 2022**.

### What are the Allegations Made by the Australian Panel?

- The Australian committee's report highlighted concerns about child and forced labour in India, based on claims by the Community and Public Sector Union (CPSU) and the State Public Services Federation (SPSF Group).
- The report recommended that the Australian Government include human rights, labour, and environmental chapters in its trade agreements, aligning with **United Nations and International Labour Organisation conventions** and declarations signed by Australia.
- **Facts Supporting Australia's Claim:**
  - According to the **2023 Global Slavery Index** estimates by Walk Free, an international human rights group focused on the eradication of modern slavery, there were **11 million people living in modern slavery in India** on any given day in 2021, the highest number of any country.
  - As per Census 2011, the total child population in India in the **age group (5-14) years is 259.6 million**.

- Of these, **10.1 million (3.9% of total child population) are working**, either as 'main worker' or as 'marginal worker'. In addition, more than 42.7 million children in India are out of school.

### How has India Responded?

- **Child Labour is Prohibited:** The Indian government has categorically refuted the allegations, stating that existing rules and regulations **prohibit child labour and bonded labour**.
- **Constitutional Protection:** India's Constitution protects labour rights and empowers **both central and state governments to enact laws like the Bonded Labour System (Abolition) Act, 1976 to safeguard workers' rights**, including forming unions and preventing harassment.
- **Strict Licensing and Compliance:** All business entities in India are licensed by local governing bodies and must comply with **labour welfare laws prescribed by the union and state governments**.
- **Comprehensive Records:** Processing units maintain comprehensive records related to processing, quality checks, employee training, and compliance with applicable rules and regulations.

### What does India's Legal Framework Say About Child Labour and Forced Labour?

- **Constitutional Rights:**
  - **Article 23:** It prohibits **trafficking in human beings and forced labour**, ensuring protection against exploitation and degrading work conditions.
    - It allows for **compulsory service for public purposes, with no discrimination based on religion, race, caste, or class**.
    - The article aims to eradicate practices that exploit individuals and uphold principles of equality, justice, and respect for human rights.

Note:



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- **Article 24:** Of the Indian Constitution **prohibits the employment of children under 14 in factories, mines, or hazardous occupations.**

- The aim is to protect children from exploitation, ensure their health and development, and provide access to education.
- The government can determine specific hazardous occupations and enforce this provision through legislation and regulations.
- Article 24 is closely connected to **Article 21A**, which **ensures the right to education for children aged 6 to 14.**
  - By banning child labour, Article 24 supports the fulfilment of the right to education and ensures that children can develop their potential and skills through proper schooling.

- **Article 39:** It **outlines principles that the State should follow**, including ensuring equal rights to livelihood for men and women, equal pay for equal work, **protection of workers' health and children's well-being**, and **opportunities for children to develop in a healthy and dignified manner.**

➤ **Legislations Against Child Labour:**

- **Child Labour (Prohibition & Regulation) Act, 1986 (amended in 2016):**
  - Bans employing children under 14 in all work. However, it **makes an exception for work in family businesses, outside of school hours and during vacations**, and in the entertainment industry (subject to safety measures), provided it does not affect their school education.
  - Restricts adolescents (14-18) from hazardous occupations.
  - Lists expand progressively based on recommendations.
- **Factories Act, 1948:** No children under 14 in factories.
- **Mines Act, 1952:** No children under 18 in mines.
- **Juvenile Justice (Care and Protection of Children) Act, 2015:**
  - Working children are considered "in need of care and protection."
    - A child in need of care and protection is defined as a child who is **homeless, engaged in illegal labour**, living on the streets or begging, living with an abusive guardian,

at risk of drug abuse or trafficking, facing exploitation, suffering from incurable diseases or disabilities, a victim of armed conflict or natural disasters, or at risk of early marriage.

- **National Policy on Child Labour (1987):** Focuses on rehabilitation of children already working.
- **The Right of Children to Free and Compulsory Education (RTE) Act, 2009:** Ensures free education and **indirectly prevents child labour by keeping children in school.**
- In 2001, there were **1.26 crore working children aged 5-14 out of a total child population of 25.2 crore.** A survey in 2004-05 estimated the number of working children at 90.75 lakh.
  - By 2011, the number of working children in the **same age group had further reduced to 43.53 lakh**, indicating successful government efforts.

➤ **Legislations Against Forced Labour:**

- **Bonded Labour System (Abolition) Act, 1976:** Criminalises bonded labour (debt traps).
  - The act freed all bonded labourers, liquidated their debts, and made the **practice of bondage punishable by law.**
  - The Act is being **implemented by the State Governments.** District Magistrates have been given responsibilities for implementing the Act, and vigilance committees are required to be formed at district and sub-divisional levels. Offences under the Act can result in imprisonment for up to three years and fines of up to two thousand rupees.
- **Central Sector Scheme for Rehabilitation of Bonded Labourer, 2021:**
  - Launched in 1978, by the Ministry of Labour, **provides financial assistance for the rehabilitation of freed bonded labour**, shared by Central and State Governments.
  - The scheme was later modified and revamped in 2016 and 2022, **offering financial assistance of Rs. 1-3 lakhs per beneficiary.**
  - State Governments are not required to pay matching contributions for cash rehabilitation assistance.
  - A total of 315,302 bonded labourers have been released till date, and from 1978 to January 2023, a total of 296,305 bonded labourers have been rehabilitated.

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**Note:**

- Bonded labour, defined by the **National Human Rights Commission of India**, is a form of slavery called **debt bondage** that has persisted for centuries.
- It is considered the most severe form of modern slavery, where workers are forced to **work for long periods with little pay**. This can include being coerced to work without pay for a specific period by an employer as a way to settle a debt.
- In 1983, the **Supreme Court** ruled in the **People's Union For Democratic Rights (PUDR) vs. Union of India** case that the **right against forced labour includes the right to a minimum wage**.
  - The Court recognised that migrant and contract labourers often had no choice but to accept work for less than the minimum wage, and held that this economic compulsion was a form of forced labour.
- The Court emphasised the need for a constitutional guarantee of the minimum wage to address this issue.

**What are International Labour Organisation Conventions Regarding Child Labour?**

- The Core Conventions of the ILO (also called fundamental/human rights conventions) are:

Convention	Key Provisions	Status in India
<b>Forced Labour Convention, 1930 (No. 29)</b>	Prohibits all forms of forced or compulsory labour, including debt bondage.	Ratified
<b>Equal Remuneration Convention (No. 100)</b>	Outlines principles for equal remuneration for work of equal value, regardless of gender. Focuses on gender discrimination in employment.	Ratified
<b>Minimum Age Convention, 1973 (No. 138)</b>	Stipulates that the minimum age for work should not be below the age of compulsory schooling and in any case not less than 15 years, with possible exceptions for developing countries.	Ratified
<b>Worst Forms of Child Labour Convention, 1999 (No. 182)</b>	Prohibits hazardous work likely to jeopardize children's physical, mental, or moral health, aiming at the immediate elimination of the worst forms of child labour for children below 18 years.	Ratified
<b>Right to Organise and Collective Bargaining Convention (No. 98)</b>	Establishes rules for freedom of unionisation and collective bargaining, protecting workers from discrimination for union activities. Requires promotion of voluntary negotiations between governments and workers.	Not Ratified

## PM-EAC Report on Share of Religious Minorities

**Why in News?**

According to a new analysis by the **Economic Advisory Council to the Prime Minister (PM-EAC)**, the percentage of Hindus in India has decreased by 7.82% between 1950 and 2015, while the percentages of Muslims, Christians, and Sikhs have increased.

**What are the Key Findings of this PM-EAC Report?**

- **Declining Majority Population across the World:**
  - From 1950 to 2015, as per the data collected on

the religious demographics of **38 OECD countries**, 30 of these countries experienced a **significant decrease in the proportion of Roman Catholics**, the predominant religious group.

- In 167 surveyed countries, the average reduction of majority populations globally during the period 1950-2015 was **22%**.
  - The decline of the majority religious population was steeper in OECD countries, with an average decline of **29%**.
  - In **Africa, animism or native religion** was the dominant religion in 24 countries in 1950.
    - By 2015, they are no longer a majority in any of these 24 countries in Africa.
  - In the **South Asian** region, the **majority religious**

Note:



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group is increasing while minority populations have significantly declined in countries such as Bangladesh, Pakistan, Sri Lanka, Bhutan, and Afghanistan.

#### ➤ Findings for India:

- **Decline in Share of Hindu Population:** The population of Hindus has declined by 7.82%. As per **2011 census**, Hindu population in India as of 2011 is approximately 79.8%.
- **Rising Share of Minority Population:** The share of Muslim population rose from 9.84% to 14.095% and Christian population rose from 2.24% to 2.36%.
  - Sikh population increased from 1.24% to 1.85% and the share of the Buddhist population rose from 0.05% to 0.81%.
  - The Jain and Parsi community populations decreased. The share of Jains dropped from 0.45% to 0.36%, and the share of the Parsi population decreased by 85% from 0.03% to 0.0004%.
- **Healthy Population Growth Rate:** As per the data from **National Family Health Survey**, India's **Total Fertility Rate (TFR)** is currently around 2, which is close to the preferred TFR of 2.19. TFR is a reliable indicator for projecting population growth.
  - For Hindus, it declined from 3.3 in 1991 to 2.1 in 2015, and further to 1.9 in 2024.
  - In Muslims, it declined from 4.4 in 1991 to 2.6 in 2015, and further to 2.4 in 2024.
- **Equality for Minorities:** In India, minorities experience equal benefits and live a comfortable life, while global demographic shifts remain a cause for concern.

### What are Demographic Patterns and its Relevance?

#### ➤ Demographic patterns

- It refers to the **systematic variations and trends observed in human populations**.
- These patterns **emerge from the study of population dynamics**, including factors such as birth rates, death rates, migration, and population composition.

#### ➤ Relevance:

- **Understanding Population Trends:**
  - Demographic data is used to identify patterns over time. By studying birth and death rates, they **can predict population growth or decline**.

- It is crucial for **planning infrastructure, healthcare, education, and social services**.
- **Analysing Causes and Consequences:**
  - It investigates the **causes behind population changes**. Factors like economic development, education, healthcare, and cultural norms influence birth and death rates.
  - **Consequences include workforce dynamics**, dependency ratios (proportion of non-working age groups), and implications for social security systems.
- **Policy Formulation and Implementation:**
  - **Healthcare:** Understanding age-specific health needs helps allocate resources effectively.
  - **Education:** Demographics guide educational planning, such as school infrastructure and teacher recruitment.
  - **Urban Planning:** Population distribution affects city infrastructure, housing, and transportation.
  - **Ageing Population:** Policies address the needs of elderly citizens, including pensions and healthcare.

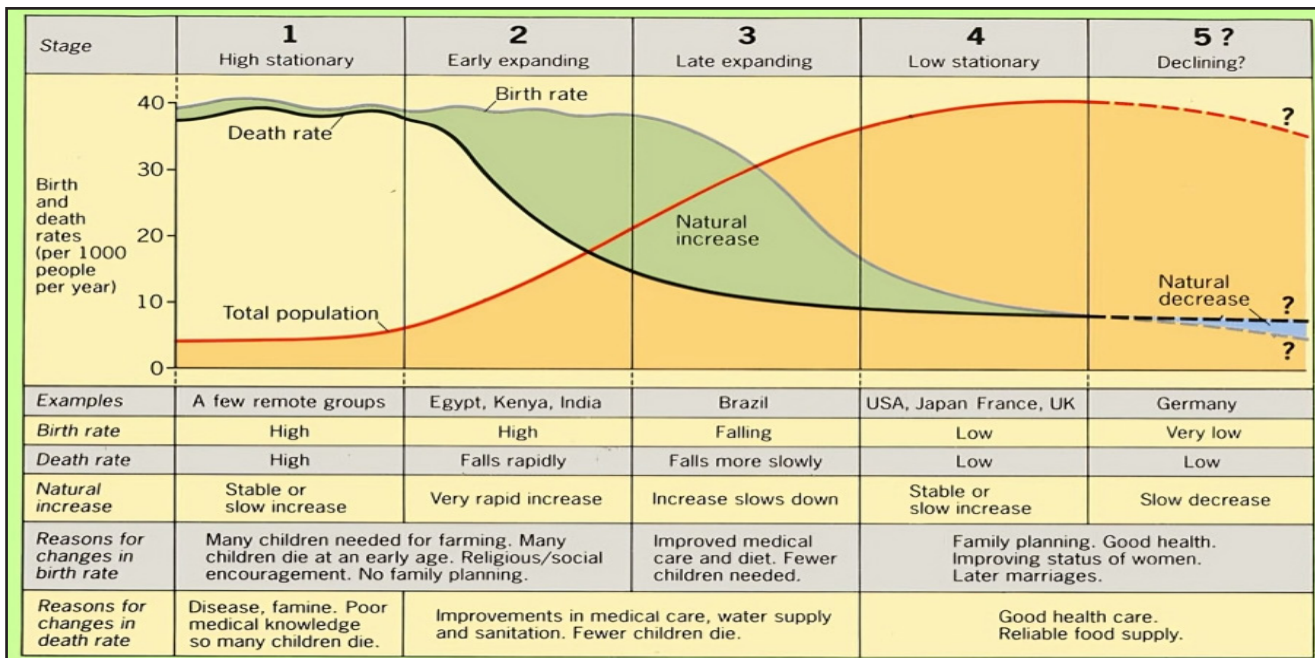
### What are the Basic Population Control Theories?

- **Malthusian Theory:** It was proposed by Thomas Robert Malthus, an English economist and demographer, in his 1798 work "**An Essay on the Principle of Population**."
  - It revolves around the **relationship between population growth and resources**.
  - **Population Growth:** Malthus argued that **populations tend to grow exponentially**, meaning they increase at a geometric rate (1, 2, 4, 8, 16, etc.), while the **availability of resources only increases arithmetically** (1, 2, 3, 4, 5, etc.).
    - Therefore, population growth will eventually outstrip the capacity of resources to sustain it.
  - **Resource Constraints:** Malthus identified two primary constraints on resources: **subsistence (food)** and the ability of the environment to support the population (**limited land, water, etc.**).
    - He believed that as **population increased**, **pressure on these resources** would intensify, leading to scarcity, famine, and ultimately, a decrease in population through "positive checks" such as disease, starvation, and war.

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- **Checks on Population Growth:** Malthus classified checks on population growth into two categories:
  - **Positive Checks:** These are the natural forces that decrease population growth, such as **famine, disease, and war.**
  - **Preventive Checks:** These are **conscious decisions made by individuals or societies** to control population growth, such as delayed marriage, abstinence, and birth control.
- However, **Malthus was ultimately proved wrong as breakthroughs** in agricultural technology made countries, such as India, net food surplus.
- **Demographic Transition Theory:** It outlines the **process of population change over time** as societies progress through **different stages of economic and social development.**
- **Stage 1 - Pre-Industrial Society:**
  - Characterised by **high birth rates and high death rates**, resulting in a **relatively stable population size.**
  - Birth rates are high due to the **absence of birth control** and cultural preferences for large families.
  - Death rates are also high due to **limited medical knowledge, poor sanitation, and widespread disease.**

- **Stage 2 - Transitional Phase:**
  - Begins with industrialisation and improvements in healthcare and sanitation.
  - **Death rates decline significantly due to advances in medicine, hygiene, and food production.**
  - **Birth rates remain high initially, leading to rapid population growth** as death rates plummet.
  - This stage often witnesses a **population explosion.**
- **Stage 3 - Industrial Society:**
  - Birth rates start to decline due to various factors such as urbanization, education, economic changes, and the empowerment of women.
  - However, birth rates remain somewhat higher than death rates, resulting in continued population growth, albeit at a slower pace.
- **Stage 4 - Post-Industrial Society:**
  - **Both birth rates and death rates are low**, resulting in a stable or slowly growing population.
  - Birth rates may even fall below replacement level, leading to concerns about population ageing and demographic imbalance.
- **Stage 5:**
  - In some models, a **fifth stage is proposed where birth rates fall below replacement level**, resulting in population decline (**E.g. Germany**).
  - This stage is characterised by a significant ageing population and potential demographic challenges.



Note:

## WHO Report on Global Immunisation

### Why in News?

Recently, a study by the [World Health Organisation \(WHO\)](#) revealed that **Global Immunisation efforts** have saved an estimated **154 million** lives over the past 50 years.

- The Report was released on the occasion of [World Immunization Week](#), ahead of the 50<sup>th</sup> anniversary of the [Expanded Programme on Immunization \(EPI\)](#) to take place in May 2024.

### What are the Key Findings of the Report?

- Report shows that **Immunization** is the single greatest contribution of any health intervention to ensuring healthy lives of babies.
- **Measles vaccination:**
  - Nearly **94 million** of the estimated 154 million lives saved since 1974, were a result of protection by measles vaccines.
    - There are still 33 million children who missed a measles vaccine dose in 2022.
  - Currently, the **global coverage rate** of the first dose of measles vaccine is **83%** and the second dose is **74%**, contributing to a very high number of outbreaks across the world.
    - Coverage of **95%** or greater with 2 doses of measles-containing vaccine is needed to protect communities from outbreaks.
  - It accounts for **60%** of the lives saved due to immunisation and the vaccine likely remain the **top contributor** to preventing deaths in the future.
- **Coverage for DPT Vaccine:**
  - Before the launch of **EPI**, less than 5% of infants globally had access to routine immunisation.
  - Today, **84%** of infants are protected with 3 doses of the vaccine against [diphtheria, tetanus and pertussis \(DTP\)](#).
    - DPT refers to a class of combined vaccines given to protect **against three infectious diseases** in humans (diphtheria, pertussis or whooping cough and tetanus).

### ➤ Reduced Infant Deaths:

- **40% Reduction** in infant death for 14 diseases like Diphtheria, Haemophilus influenzae type B, [Hepatitis B](#), Japanese encephalitis, measles, meningitis A, pertussis, invasive pneumococcal disease, polio, rotavirus, rubella, tetanus, [tuberculosis](#), and yellow fever.
- Above **50%** reduction in the African Region over the past 50 years.

### ➤ Eradication and Containment of Disease:

- **Wild poliovirus cases have decreased by over 99%** since 1988. Of the 3 strains of wild poliovirus (type 1, type 2 and type 3), **wild poliovirus type 2 was eradicated in 1999 and wild poliovirus type 3 was eradicated in 2020.**
- **India was declared polio-free** by the [World Health Organisation \(WHO\)](#) in 2014.
- Vaccines against [malaria](#) and [cervical cancer](#) have been highly effective in containment of these diseases.

### ➤ Gain in Full Health Years:

- For each life saved through immunisation, an average of 66 years of full health were gained.
- With a total of 10.2 billion full health years gained over the five decades.

### What is the Status of Immunisation in India?

#### ➤ About:

- India's immunisation programme, [UIP \(Universal Immunization Programme\)](#), is one of the world's most extensive public health programmes.
- Under the UIP, India **annually vaccinated more than 30 million pregnant women and 27 million children.**
  - A child is considered fully immunised if they receive all the required vaccines as per the national immunisation schedule within their first year of life.

#### ➤ Status:

- The country was certified **polio-free in 2014** and eliminated **maternal and neonatal tetanus** in 2015.
- New vaccines, including the [Measles-Rubella, Pneumococcal Conjugate Vaccine \(PCV\)](#) and [Rotavirus Vaccine \(RVV\)](#), have been introduced and expanded nationwide.

Note:



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- According to UNICEF, only **65%** of children in India receive full immunisation during the first year of their life.
- Also, as per the latest **WUENIC (WHO-UNICEF Estimates National Immunization Coverage)** estimates, India has successfully reduced the number of **zero-dose (ZD) children** to 1.1 million in 2022 from 2.7 million in 2021, covering an additional 1.6 million children with life-saving vaccination.
  - **Zero-dose** refers to children who failed to receive any routine vaccination.
  - 63% of ZD children live in the five states of Bihar, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh.
- **Mission Indradhanush (MI)** was launched by the Ministry of Health and Family Welfare (MOHFW) in 2014 with the aim to vaccinate all unvaccinated and partially vaccinated children under UIP.
  - **Intensified Mission Indradhanush (IMI)** has been launched to bring down the number of zero-dose children.

➤ **Other Supporting Measures:**

- **Electronic Vaccine Intelligence Network (eVIN)**
- **National Cold Chain Management Information System (NCCMIS).**

➤ **Challenges:**

- **Lack of Access:**
  - In 2022, **14.3 million** infants did not receive the first **DPT vaccine** globally, pointing to a lack of access to immunisation and other health services.
  - Of the 20.5 million who are either not vaccinated or partially vaccinated, nearly **60%** of children live in 10 countries, including India.
- **Death by Infectious Diseases:**
  - It contributes to a significant proportion of **child mortality** and **morbidity**.
  - Nearly **one million children die before their fifth birthday**.
  - Many of these deaths are preventable and can be averted by interventions such as **breastfeeding**, immunisation and access to treatment.
- **Full Coverage Goal Still to Achieve:** According to **National Family Health Survey (NFHS)-5**, 2019-21,

the country's full immunisation coverage stands at 76.1%.

- It means that one out of every four children is missing out on essential vaccines.

### **What is the Universal Immunization Programme (UIP)?**

➤ **Background:**

- The **Expanded Programme on Immunization** was launched in 1978. It was renamed as **Universal Immunization Programme** in 1985 when its reach was expanded beyond urban areas.
- Since the launch of the National Rural Health Mission in 2005, the **Universal Immunization Programme (UIP)** has always been an integral part of it.

➤ **About:**

- Under UIP, immunisation is provided free of cost against **12 vaccine-preventable diseases**.
  - **Nationally Against 9 Diseases:** Diphtheria, Pertussis, Tetanus, Polio, Measles, Rubella, severe form of Childhood Tuberculosis, Hepatitis B and Meningitis & Pneumonia caused by Haemophilus influenzae type B.
  - **Sub-nationally Against 3 Diseases:** Rotavirus diarrhoea, Pneumococcal Pneumonia and Japanese Encephalitis.

#### **What are the Major Global Initiatives Related to Immunization?**

- **Immunization Agenda 2030**
- **World Immunization Week**
- **Expanded Programme on Immunization (EPI):**
  - It was founded in 1974 by the **World Health Assembly**.
  - EPI's original goal was to vaccinate all children against diphtheria, measles, pertussis, polio, tetanus, tuberculosis, as well as smallpox, the only human disease ever eradicated.
  - It includes **universal recommendations to vaccinate against 13 diseases**, and **context-specific recommendations for another 17 diseases**, extending the reach of immunisation beyond children, to adolescents and adults.

Note:



## Women in Global Capability Centers

### Why in News?

A recent report highlighted that **nearly 5 lakh women currently work** in Indian **Global Capability Centers (GCCs)**, across GCCs in India.

- Global Capability Centers are **offshore units established by multinational corporations** to perform a range of strategic functions.

### What are the Key Highlights of the Report?

#### ➤ GCCs Growth:

- India hosts **nearly 1,600 GCCs**, with a substantial addition of 2.8 lakh employees in 2022-23, expanding its talent base to over 1.6 million.
- Nearly **five lakh women currently work** in Indian global capability centres (GCCs), comprising **28% of the total 16 lakh employees** across GCCs in India. Gender diversity in the deep tech ecosystem stands at 23%.

#### ➤ Executive and Senior Level Roles:

- **Only 6.7% of women** hold executive roles in GCCs, and **5.1% in deep tech** organisations.
- At the senior level (9-12 years of experience) in GCCs, the representation of women stands at **15.7%**.

#### ➤ Graduate Representation:

- The **median representation of women graduates** from top engineering universities stands at **25%** between 2020-23.

#### ➤ Challenges and Systemic Barriers:

- Women's attrition is influenced by factors such as **family and caregiving responsibilities**, limited access to career advancement and leadership opportunities, and poor work-life balance.

### What are Global Capability Centers (GCCs)?

#### ➤ About:

- Global capability centres (GCCs) represent **offshore establishments set up by companies** to deliver a range of services to their parent entities.
- Operating as internal entities within the global corporate framework, these centres **offer specialised capabilities including IT services, research and development**, customer support, and various other business functions.

- GCCs play a crucial role in **capitalising on cost efficiencies, tapping into talent reservoirs**, and fostering collaboration between parent enterprises and their offshore counterparts.

- **Special Economic Zones (SEZs)** can provide a fertile ground for GCCs to flourish by offering several advantages like tax breaks, simplified regulations and streamlined bureaucracy.

#### ➤ Present Status:

- In **2022–23**, around **1,600 GCCs** made up a **market of USD 46 billion**, employing 1.7 million people.
- Within GCCs, professional and consulting services are the fastest-growing segment despite only accounting for 25% of India's services exports.
- Their compounded annual growth rate (CAGR) of 31% over the last four years significantly outpaces computer services (16% CAGR) and R&D services (13% CAGR).

### What are Special Economic Zones (SEZ)?

- An SEZ is a territory within a country that is **typically duty-free (Fiscal Concession)** and has **different business and commercial laws** chiefly to encourage investment and create employment.
  - SEZs are created also to better administer these areas, thereby increasing the **ease of doing business**.
- **Asia's first EPZ** (Export Processing Zones) was established in **1965 at Kandla, Gujarat**.
- **The Special Economic Zones Act was passed in 2005**. The Act came into force along with the SEZ Rules in 2006.
- Presently, 379 SEZs are notified, out of which 265 are operational. About **64% of the SEZs are located in five states** – Tamil Nadu, Telangana, Karnataka, Andhra Pradesh and Maharashtra.
- The **Baba Kalyani-led committee** was constituted by the Ministry of Commerce and Industry to study the existing SEZ policy of India and had submitted its recommendations in November 2018.
  - It was set up with a broad objective to **evaluate the SEZ policy** towards making it **WTO (World Trade Organisation)** compatible and to bring in global best practices to maximise capacity utilisation and to maximise potential output of the SEZs.



Note:

# Science & Technology

## Highlights

- West Nile Fever
- Xenotransplantation
- Indian Space Situational Assessment Report 2023
- Side-Effects of Covid-19 Vaccine
- Understanding Magnetic Resonance Imaging
- Artificial General Intelligence
- Black Hole Gaia BH3
- Occultation in Astronomy

## West Nile Fever

### Why in News?

The detection of **West Nile fever** in 3 Kerala districts has prompted health authorities to issue alerts and intensify preventive measures.

### What is West Nile Fever?

#### ➤ About:

- It is caused by the **West Nile virus (WNV)**, a single-stranded RNA virus that is transmitted to humans through the bite of an infected mosquito (*Mosquitoes of the genus Culex* are generally considered the principal vectors of WNV) and Birds serve as reservoir hosts.
  - The virus is a member of the **Flaviviridae family and the flavivirus genus**.
- The virus is commonly found in Africa, Europe, the Middle East, North America, and West Asia.
- It was first isolated in a woman in the West Nile district of Uganda in 1937. It was identified in birds in the **Nile Delta region in 1953**, according to the **World Health Organization**.

#### ➤ Transmission:

- Mosquitoes become infected when they feed on infected birds, subsequently transmitting the **virus to humans and animals through bites**.
- The virus may also be transmitted through **contact with other infected animals, their blood, or other tissues**.
- Rare cases of transmission through organ transplant, blood transfusions, and transplacental transmission.
- No human-to-human transmission of WNV through casual contact has been documented.

#### ➤ Symptoms:

- Asymptomatic in about 80% of cases.
- Symptoms of West Nile fever include **fever, headache, tiredness, body aches, nausea, vomiting, and skin rash**.
- Severe cases may lead to neurological symptoms such as **neck stiffness, stupor, coma, tremors, convulsions, muscle weakness, and paralysis**.

#### ➤ Treatment:

- Supportive care for neuro-invasive cases involves hospitalization, intravenous fluids, and respiratory support.
- No vaccine is available for humans.

#### ➤ India's Initiatives:

- **National Vector-Borne Disease Control Programme**.
- **Integrated Vector Management (IVM)**.
- **National Framework for Malaria Elimination**.

## Xenotransplantation

### Why in News?

Recently, the first recipient of a modified pig kidney transplant passed away after his groundbreaking **xenotransplantation surgery**. His death was not linked to the transplant.

### What is Xenotransplantation?

#### ➤ Definition:

- According to the **US Food and Drug Administration (FDA)**, "Xenotransplantation is any procedure that involves the **transplantation, implantation or infusion** into a human recipient of either **live cells, tissues, or organs from a nonhuman animal**

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source, or human body fluids, cells, tissues or organs that have had ex vivo contact with live nonhuman animal cells, tissues or organs.

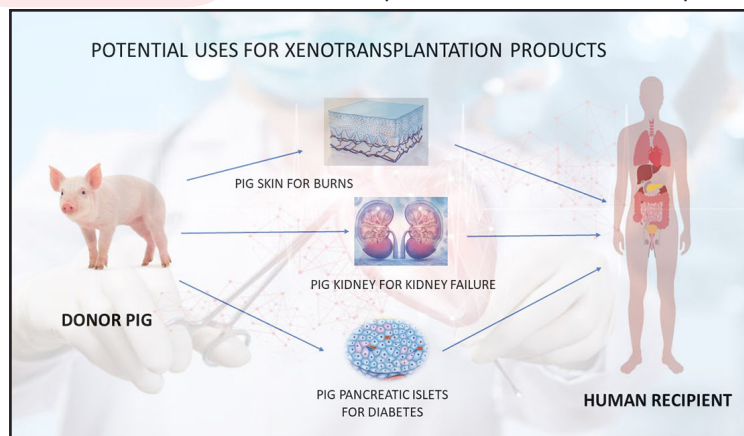
- **Purpose:** The primary aim is to address the shortage of **human donor organs**.
  - For instance, in the United States, nearly 90,000 people are waiting for a kidney transplant, with over 3,000 dying annually while still waiting.
- **Historical Context:** The practice dates back to the 1980s, with the heart being one of the first organs attempted for transplantation from animals to humans.
- **Procedure:** In xenotransplantation, the animal organ selected, such as a pig kidney, undergoes **genetic modifications to improve its compatibility with the human body**.
  - This involves using **gene-editing technologies** like **CRISPR-Cas9** to remove certain pig genes that produce sugars with **antibodies** our immune systems react to and adding human genes to improve the organ's compatibility.
- **Complications in Xenotransplantation:**
  - **Organ Rejection:** Preventing the human body from rejecting the pig organ is a significant challenge. Techniques such as embedding the **pig's thymus gland with the kidney** help reduce immune responses.
  - **Infection Risks:** The FDA highlights concerns about potential infections from both recognised and unknown infectious agents, which could spread to close contacts and the general population.
  - **Retroviruses:** There is a risk of **cross-species infection by retroviruses**, which may remain latent and cause diseases years after infection.
- **Xenotransplantation in India:** In 1997, a surgeon in Assam, performed a **xenotransplantation procedure by transplanting a pig's heart into a human patient**.
- Unfortunately, the patient passed away a week later, leading to legal repercussions.

### CRISPR-Cas9

- It is a revolutionary technology that allows **scientists to modify the genome by adding, removing, or altering sections of the Deoxyribonucleic Acid (DNA) sequence**.
- It consists of two key molecules, an enzyme called **Cas9**, which acts as molecular scissors to cut the DNA, and a piece of **RNA called guide RNA (gRNA)** that guides Cas9 to the right part of the genome.
  - The guide RNA is designed to bind to a specific sequence in the DNA, allowing the Cas9 enzyme to make a precise cut.
- This triggers the cell's DNA repair machinery, which can be used by scientists to introduce changes to the genes in the cell's genome.
- **Emmanuelle Charpentier and Jennifer A. Doudna** received the **2020 Nobel Prize in Chemistry** for finding a powerful tool in gene technology called CRISPR/Cas9.

### Why are Pigs Often Used for Xenotransplantation?

- **Historical Use:** Pig heart valves have been used in human surgeries for over 50 years.
- **Similarity to Humans:** Pigs have anatomical and physiological similarities to humans. Their widespread farming makes them a cost-effective and accessible source.
- **Size Matching:** Various pig breeds offer a range of organ sizes, which can be matched to the specific needs of human recipients.



## Indian Space Situational Assessment Report 2023

### Why in News?

The **Indian Space Research Organisation (ISRO)** has released the **Indian Space Situational Assessment Report (ISSAR)** for 2023, which provides a comprehensive overview of the current state of

Note:

India's space assets and their vulnerability to potential collisions in space.

### What does the ISSAR 2023 Report Highlight?

#### ➤ Space Object Population:

- **Global Increase:** Globally, 3,143 objects were added in 2023 from 212 launches and on-orbit breakup events.
- **Indian Additions:** India contributed to this with the launch of 127 satellites by the end of December 2023.
  - In the year 2023, all seven launches of ISRO, namely **SSLV-D2/EOS7, LVM3-M3/ONEWEB 2, PSLV-C55/TeLEOS-2, LVM3-M4/Chandrayaan-3, and PSLV-C57/Aditya L-1**, were successful.
  - A total of 5 Indian satellites, 46 foreign satellites, and 8 rocket bodies (including **POEM-2**) were placed in their intended orbits.

#### ➤ Indian Space Assets:

- **Operational Satellites:** As of 31<sup>st</sup> December 2023, India has 22 operational satellites in **Low Earth Orbit (LEO)** and 29 in **Geostationary Orbit (GEO)**.
- **Deep Space Missions:** There are three active Indian deep space missions, **Chandrayaan-2 Orbiter, Aditya-L1, and Chandrayaan-3 Propulsion Module**.

#### ➤ Space Situational Awareness Activities:

- ISRO regularly carries out analyses to predict close approaches by other space objects to Indian space assets.
- In case of critical close approaches, ISRO carries out **Collision Avoidance Maneuvers (CAMs)** to safeguard its operational spacecraft.
  - About 1 lakh close approach alerts were received from **USSPACECOM (US Space Command)**, and over 3,000 alerts for close approaches within a distance of 1 km were detected for ISRO satellites.
- No close approaches with other space objects were detected for the Chandrayaan-3 mission throughout its mission phases, and also for Aditya-L1 during its Earth-bound phase.

#### ➤ Collision Avoidance Maneuvers (CAMs):

- The report highlights a significant increase in the number of CAMs conducted by ISRO in 2023.
- ISRO conducts **Collision Avoidance Analysis (COLA)** to assess and prevent potential collisions.

- A total of 23 Collision Avoidance Maneuvers (CAMs) were carried out during 2023 to protect Indian space assets, compared to 21 in 2022 and 19 in 2021.

#### ➤ Satellites Re-entry:

- The report details the successful re-entry of 8 Indian satellites in 2023. This includes the controlled **de-orbiting of Megha-Tropiques-1**, showcasing ISRO's commitment to responsible space debris management.

#### ➤ International Cooperation on Space Sustainability:

- ISRO is an active participant in many international fora such as the **Inter-Agency Debris Coordination Committee (IADC)** with 13 space agencies, the **International Academy of Astronautics (IAA) space debris working group**, **International Astronautical Federation (IAF) space traffic management working group**, **International Organization for Standardization (ISO) space debris working group** and **UN-Committee on the Peaceful Uses of Outer Space (COPUOS)**, contributing to discussions and guidelines on space debris and long-term sustainability of outer space activities.
  - ISRO, as the chair of **IADC for 2023-24**, hosted the 42<sup>nd</sup> annual IADC meeting in April 2024.
  - ISRO participated in the IADC annual re-entry campaign and contributed to the revision of IADC space debris mitigation guidelines and other space sustainability aspects.
- #### ➤ Challenge of Space Debris:
- The report also acknowledges the ongoing challenge of space debris. It notes that **82 rocket bodies from Indian launches remain in orbit**, with fragments from a 2001 PSLV-C3 mishap still contributing to the total.

#### Indian Space Research Organisation (ISRO)

- ISRO is a major constituent of the **Department of Space (DOS)**, Government of India.
  - The department executes the Indian Space Programme primarily through various Centres or units within ISRO.
- ISRO was previously the **Indian National Committee for Space Research (INCOSPAR)**, set up in 1962, as envisioned by **Dr Vikram A Sarabhai**.

Note:



- ISRO was formed on **15<sup>th</sup> August 1969** and superseded INCOSPAR with an expanded role to harness space technology.
  - DOS was set up and ISRO was brought under DOS in 1972.
- The prime objective of ISRO/DOS is the development and application of space technology for various national needs.
- ISRO has developed satellite launch vehicles, PSLV and GSLV, to place the satellites in the required orbits.
- **ISRO has its headquarters in Bengaluru.**
- Its activities are spread across various centres and units.
  - Launch Vehicles are built at **Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram**
  - Satellites are designed and developed at **U R Rao Satellite Centre (URSC), Bengaluru.**
  - Integration and launching of satellites and launch vehicles are carried out from **Satish Dhawan Space Centre (SDSC), Sriharikota**
  - Development of liquid stages including cryogenic stage is carried out at Liquid Propulsion Systems Centre (LPSC), Valiamala & Bengaluru
  - Sensors for Communication and Remote Sensing satellites and application aspects of the space technology are taken up at Space Applications Centre (SAC), Ahmedabad
  - Remote Sensing satellite data reception processing and dissemination is entrusted to **National Remote Sensing Centre (NRSC), Hyderabad.**
- The activities of ISRO are guided by its Chairman, who would also be the **secretary of DOS and Chairman of Space commission** (the apex body that formulates the policies and oversees the implementation of the Indian Space Programme).

## Side-Effects of Covid-19 Vaccine

### Why in News?

Recently, there has been a lot of controversy over the side-effects of **Oxford-AstraZeneca's** vaccine. It is sold in India under the brand name of "**Covishield**" by **Serum Institute of India (SII)**

- It is being linked to a rare adverse side effect called **Thrombosis with Thrombocytopenia Syndrome (TTS).**

### What is Thrombocytopenia Syndrome?

#### ➤ About:

- **TTS** is also referred to as **vaccine-induced prothrombotic immune thrombocytopenia (VIPIT)** or vaccine-induced immune thrombotic thrombocytopenia (VITT).
- This rare syndrome has been observed in individuals who have received **Covid-19** vaccines utilising **adenoviral vectors**.
- It is generally believed to be caused by an **immune reaction** triggered by the **adenovirus vector** used in these vaccines.
  - **Adenoviruses** are non-enveloped, **double-stranded DNA** viruses which are considered excellent vectors for delivering target antigens to mammalian hosts because of their capability to induce both innate and adaptive immune responses.

#### ➤ Symptoms:

- **TTS** is linked to a variety of symptoms such as **difficulty breathing, chest or limb pain**, small red spots or bruising beyond the injection site, headaches, numbness in body parts, and more.
- **Thrombosis** refers to the formation of blood clots, while **thrombocytopenia** is characterised by a low platelet count.

#### ➤ Risk- Benefit Analysis:

- **Risk:**
  - TTS most commonly occurs in **healthy young women** around thirty years old at a low frequency of about one to two cases per 100,000.
    - At a general population level, it is estimated to occur at only about **two to three** cases per million vaccinated people.
  - The annual risk of TTS is still much lower than the annual risk of dying in a road accident.
- **Benefit:**
  - Covishield has shown over **80% protection** against severe COVID-19 and over **90%** protection against death in various studies, even during the Delta wave.
  - For a 50% chance of getting Covid-19 and a 0.1% risk of death, the vaccine provides a significant mortality benefit, outweighing the risks by far.

Note:



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- It has not only **reduced disease severity** and **minimised immediate suffering** and stress on healthcare systems but also to **lower the risk of long-term disabilities** and premature heart attacks and strokes.
- This risk was noted early in the pandemic, before vaccines were available, and vaccination has been shown to reduce this risk.

➤ **Other Rare Side Effects of Covid-19 Vaccines:**

- A study of 99 million people found that cases of **Guillain Barre Syndrome**, **myocarditis**, **pericarditis**, and **cerebral venous sinus thrombosis (CVST)** were at least 1.5 times higher than expected after receiving mRNA and **ChAdOX1 (or Covishield) vaccine for Covid-19**.
- The study confirmed that these illnesses were classified as **'rare' side effects** following the vaccination for Covid-19.
  - **CVST** refers to cerebral venous sinus thrombosis, which is the presence of blood clots in the brain.
  - **Guillain-Barre syndrome** is an immune system disorder that attacks the nerves, causing muscular damage and requiring prolonged treatment.
  - **Myocarditis** and **pericarditis** are conditions involving inflammation of the heart tissue.

***What were the Regulations and Concerns Related to Covid-19 Vaccination in India?***

➤ **Regulations Related to Covid-19 Vaccines in India:**

- India has used **nearly 1.75 billion doses to vaccinate** approximately 80% of its vaccinated population.
- Covid-19 vaccines were **administered without the completion of phase-3 trials**, and the manufacturers did not have complete information on possible short-term or long-term side effects or fatalities.
  - **E.g.** The Phase 3 protocol for **Covaxin** (by Bharat Biotech) was **approved before the completion of Phase 2**, and the final vaccine candidate was chosen without considering the Phase 2 trial data.
- The **Corbevax** vaccine (by Biological E) received **emergency use authorisation** from the **Drug**

**Controller General of India (DCGI)** for vaccinating 12-14-year-old children.

➤ **Concern Related to Covid-19 Vaccines:**

- In March 2021, Several European countries temporarily paused the use of **AstraZeneca's** vaccine due to reported cases of **blood clotting**.
- The **World Health Organization** stated that TTS was being reported in some cases after vaccinations with **Covishield** and **Vaxzevria**, but emphasised that the risk appears to be very low based on available data.
- European nations, UK, USA, and Australia **halted the use of Covishield** due to TTS reports, despite the benefits outweighing the risks.
  - They had enough mRNA (like Pfizer-BioNTech and Moderna Covid-19) vaccines available, which were more immunogenic and not linked to TTS, although cases of non-fatal **myocarditis** had been seen.
- In 2023, the **WHO** included **vaccine-induced immune thrombotic thrombocytopenia (VITT)** in its classification of **thrombosis with thrombocytopenia syndrome (TTS)**.

➤ **India's Stand:**

- Before the Covid-19 vaccines were rolled out in India, the Indian government issued a **fact sheet in January 2021** cautioning the use of **Covishield** for individuals with low platelet counts.
- In May 2021, the Indian government reported **26 potential cases of blood clots related to the Covishield vaccine**, with a rate of 0.61 cases per million doses.
- The government maintained that the **risk is minimal** and that Covishield has a positive benefit-risk profile. No such events were reported for the indigenous vaccine, **Covaxin (by Bharat Biotech)**.
- The Ministry of Health and Family Welfare, GoI also noted that the **risk of blood clotting is lower in individuals of South and Southeast Asian descent** compared to those of European descent.

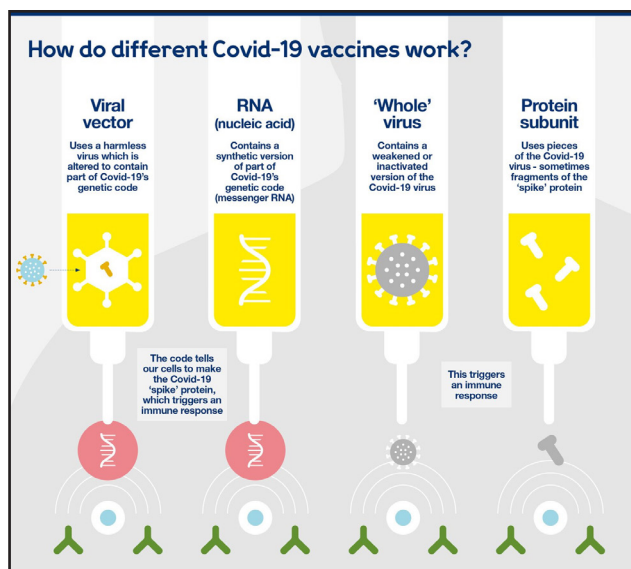
Note:



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**FLiRT- A New Variant of Covid-19**

- It is a new variant within the **Omicron** JN.1 lineage.
- It has been detected in the US and is rapidly spreading.
- This variant shows significant alterations in **spike (S) protein structure** and **increased resistance** to existing vaccines.
- Its **symptoms are similar to Omicron**, including sore throat, cough, congestion, tiredness, headache, muscle or body aches, runny nose, fever or chills, loss of smell and taste, and breathlessness in extreme cases.
- This variant is **highly transmissible** and can spread via respiratory droplets or touching infected surfaces.



## Understanding Magnetic Resonance Imaging

### Why in News?

Recently, **Magnetic Resonance Imaging (MRI)** has been a topic of discussion as an indispensable tool for non-invasive exploration inside the human body.

### What is Magnetic Resonance Imaging (MRI)?

- **About:**
  - MRI is a **non-invasive diagnostic procedure** used to obtain **images of soft tissues** within the body.
    - Soft tissue is any tissue that hasn't become **harder through calcification**. Calcification of soft tissue is a condition where calcium salts accumulate in soft tissue, causing it to harden.

- It is widely utilised for imaging various body parts such as the brain, cardiovascular system, spinal cord, joints, muscles, liver, and arteries.
  - Unlike **X-rays**, which use radiation, MRI scans leverage powerful magnets and **radio waves** to create detailed images of **soft tissues** within the body.
- **Professor Paul C. Lauterbur and Peter Mansfield** won the **2003 Nobel Prize in Physiology or Medicine** for their innovative research which resulted in the **invention of MRI**.
- **Working Principle of MRI:**
  - **Hydrogen Atom Utilisation:** An MRI procedure utilises **hydrogen atoms** present in the body part being scanned.
  - **MRI Machine Components:** The MRI machine consists of four essential components, including a **superconducting magnet**, a radiofrequency pulse emitter, and a detector.
  - **Magnetic Field Application:** The superconducting magnet produces a **strong and stable magnetic field** around the body, causing the hydrogen atoms' spin axes to align either parallel or antiparallel to the field.
  - **Radiofrequency Pulse Emission:** A radiofrequency pulse is emitted into the body part under the scanner, exciting only the small population of unmatched hydrogen atoms.
  - **Signal Detection and Image Formation:** The emitted energy from the excited atoms is detected by a receiver and converted into signals.
    - These signals are then used by a computer to create **two- or three-dimensional images** of the scanned body part.
- **Importance of MRI:** MRI plays a crucial role in observing and treating cancers like prostate and rectal cancer, as well as tracking neurological conditions including **Alzheimer's, dementia, epilepsy, and stroke**.
  - Additionally, researchers use MRI scans to study changes in blood flow, aiding in understanding brain activity, known as functional MRI.
- **Advantages of MRI:**
  - **High Precision:** MRI machines scan specific body portions with gradient magnets.
  - **Safety:** MRI scans pose no long-term harm, and magnetic field effects are well-studied.

Note:



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- **Early Disease Detection:** MRI aids early detection of diseases like cancer and multiple sclerosis.
- **Minimally Invasive Procedure:** MRI is safe and comfortable, unlike surgery, benefiting children and the elderly.
- **Disadvantages of MRI:**
  - **Cost:** MRI machines are expensive to purchase and maintain, leading to high diagnostic costs for patients.
  - **Discomfort and Claustrophobia:** Patients must lie still for extended periods inside the MRI machine, which can be uncomfortable, especially for **claustrophobic individuals**.
  - **Limited Imaging Capability:** MRI struggles to image certain tissues like bone, air, and some types of implants effectively due to their physical properties.
  - **Strong Magnetic Fields:** The powerful magnetic fields used in MRI can pose potential risks for patients with certain medical implants (e.g., pacemakers) or metallic objects lodged in their bodies.

## Artificial General Intelligence

### Why in News?

During a recent interview, the CEO of **OpenAI** stated his dedication to investing in the advancement of **Artificial General Intelligence (AGI)**.

- AGI is highly advanced, has more scope, and is more capable than **Artificial Intelligence (AI)**, more commonly used in present times.

### What is Artificial General Intelligence (AGI)?

- **About:**
  - It is highly advanced and more capable than **Artificial Intelligence (AI)** used commonly.
  - AGI envisions a broader, more generalised form of intelligence, not confined to any particular task.
  - It aims to create machines that possess human-like intelligence across a wide range of tasks.
    - This includes reasoning, common sense, abstract thinking, background knowledge, transfer learning, ability to differentiate between cause and effect, etc.
  - AGI aims **to emulate human cognitive abilities** such that it allows it to do unfamiliar tasks, learn from new experiences, and apply its knowledge in new ways.

### Characteristics:

- **Generalisation:** AGI can generalise knowledge and skills across tasks and domains, applying learning from one context to solve new problems.
- **Complex Reasoning:** AGI can engage in intricate reasoning and problem-solving.
- **Learning:** AGI exhibits robust learning capabilities, allowing it to acquire knowledge and skills from data, experience, or instruction.
- **Self-Awareness and Consciousness:** AGI would be aware of its own existence and able to set goals.
- **Human-Level Abilities:** AGI's capabilities would match or surpass human intelligence.
- **Creativity:** AGI demonstrates creativity by generating novel solutions, ideas, or artefacts that are not explicitly programmed or predefined.

### Applications of AGI:

- **Healthcare:** AGI has numerous positive implications in various fields, including healthcare.
- **Personalised medicine**, which tailors medical treatment to individual characteristics, can be greatly enhanced by AGI's ability to analyse diverse datasets and identify personalised treatment options.

### Finance and Business:

- AGI has the potential to automate different tasks and improve decision-making, providing real-time analysis and accurate market predictions.

### Education Sector:

- AGI has the potential to revolutionise **adaptive learning** platforms that cater to the individual requirements of students, potentially making **personalised education** accessible to people all over the world.

### Space Exploration:

- It can boost the space industry by operating autonomous systems for space exploration and research.
- AGI could also analyse data from space missions to develop insights and contribute to discoveries.

- **Military and Defense:** A typical use of AGI would be enhanced surveillance, military involvement, real-time strategies on the battlefield, and combat systems.

Note:



### What is Artificial Intelligence (AI)?

- AI refers to a broad field of computer science where machines are designed to perform tasks that typically require human intelligence in particular task.
- These tasks can include language translation, image recognition, decision-making, etc.
- It is also called as '**Narrow or Weak AI**' as they excel at specific tasks but lack broader cognitive abilities. These **AI tools are task-specific** and optimised for predefined goals.
- **Examples:**
  - **Chatbots:** AI-powered chatbots can handle customer inquiries.
  - **Recommendation Systems:** AI algorithms suggest personalised content (e.g., Netflix recommendations).
  - **Image Recognition:** AI identifies objects in images.
- **Some Major AI Tools:** [ChatGPT Chatbot](#), [Google's Bard](#), [Chatbot](#).

### What are Some Concerns Related to AGI?

- **Environmental Concern:** The significant computational power needed for developing AGI systems raises concerns about **its environmental impact, including energy consumption and e-waste generation**.
- **Job Losses and Unemployment:** AGI has the potential to result in a substantial decrease in job opportunities and **create extensive social and economic inequality**, with a concentration of power among those who oversee the AGI.
- **Human Oversight and Accountability:** The immense cognitive abilities of AGI could potentially enable it to control information environments and influence results, especially in important areas like elections.
- **Loss of Basic Human Skills and Creativity:** Due to less involvement of humans even for small work.
  - Reducing human involvement may **reduce creativity** at work and AGI's work may be a more innovative carbon copy of human works.
- **Existential Risk:** AGI could surpass human intelligence and potentially pose existential risks. Its capabilities may surpass those of human beings, making its

behaviour challenging to comprehend and anticipate.

- This could result in a scenario where it becomes excessively autonomous, to the extent that humans lose their ability to control it.
- **Ethical Dilemmas:** The advancement of AGI raises ethical challenges, such as concerns about responsibility, confidentiality, and the risk of biased decision-making.
  - It is crucial to guarantee that AGI systems comply with ethical norms in order to avoid unintended outcomes and inequalities.

### What are India's Initiatives Related to Artificial Intelligence?

- [INDIAai.](#)
- [Global Partnership on Artificial Intelligence \(GPAI\).](#)
- [US India Artificial Intelligence Initiative.](#)
- [Responsible Artificial Intelligence \(AI\) for Youth.](#)
- [Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform.](#)
- [Artificial Intelligence Mission.](#)

## Black Hole Gaia BH3

### Why in News?

Recently, astronomers have discovered a massive **Black Hole** in our **Galaxy**, named "**Gaia BH3**".

- It's the **2<sup>nd</sup>-closest** known Black hole to Earth. It is **33 times heavier** than the sun and the **most massive** black hole of **stellar origin** in the Milky Way, surpassing **Cygnus X-1**.
  - **Stellar black holes** are formed as a result of the collapse of a single star.

### What are Black Holes?

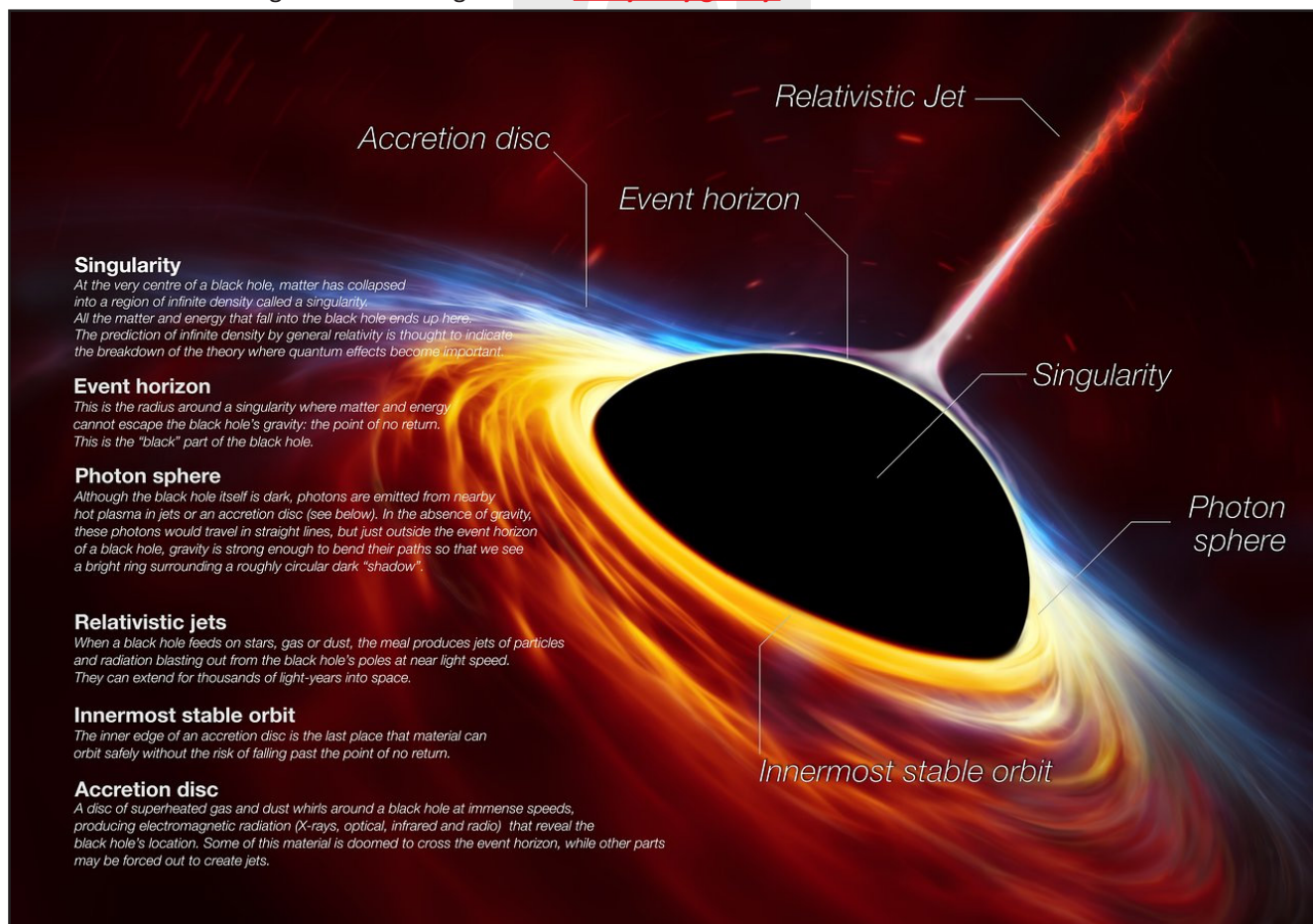
- **About:**
  - Black holes are extraordinarily dense objects with **gravity** so strong that not even light can escape, making it difficult to spot them.
  - They are formed when a massive star collapses in on itself at the end of its life, creating an incredibly dense object with a gravitational pull that is **so strong that it warps space-time around it**.

Note:



### ➤ 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.



Note:

**What is a Galaxy?**

- A galaxy is a huge collection of gas, dust, and billions of stars and their solar systems, all held together by gravity.
- Earth is the part of the **Milky Way Galaxy**, which also has a super Massive Black Hole named **Sagittarius A at its centre** whose mass is about 4 million times that of suns.

## Occultation in Astronomy

### Why in News?

Recently, the **Indian Institute of Astrophysics (IIA)** has released a video capturing the occultation of the moon passing in front of the **bright red star Antares (Jyeshtha)**.

**Note:**

- Since the moon is relatively close to the Earth, such **occultations will be visible only from some locations on the globe**, similar to why a **solar eclipse** is seen only from a particular part of the globe.

### What is an Occultation in Astronomy?

- **About:**
  - An occultation in astronomy occurs when **one celestial body passes in front of another, obscuring it from view**.
    - Occultations can also be artificially produced to take a look at certain phenomena in detail. Perhaps the **best-known use is blocking the light of the sun or a star to see what is nearby**.
  - In the case of lunar occultations, the Moon appears to move in front of other objects in the sky, such as stars, planets, or asteroids.
- **Lunar Occultations of Stars:**
  - The Moon regularly occults bright stars as it moves along its apparent path in the sky.
  - Approximately 850 naked-eye stars, including prominent ones like **Aldebaran** (reddish giant star

in the constellation Taurus), **Regulus** (constellation Leo), **Spica** (constellation of Virgo), and **Antares**, may be occulted by the Moon in a year.

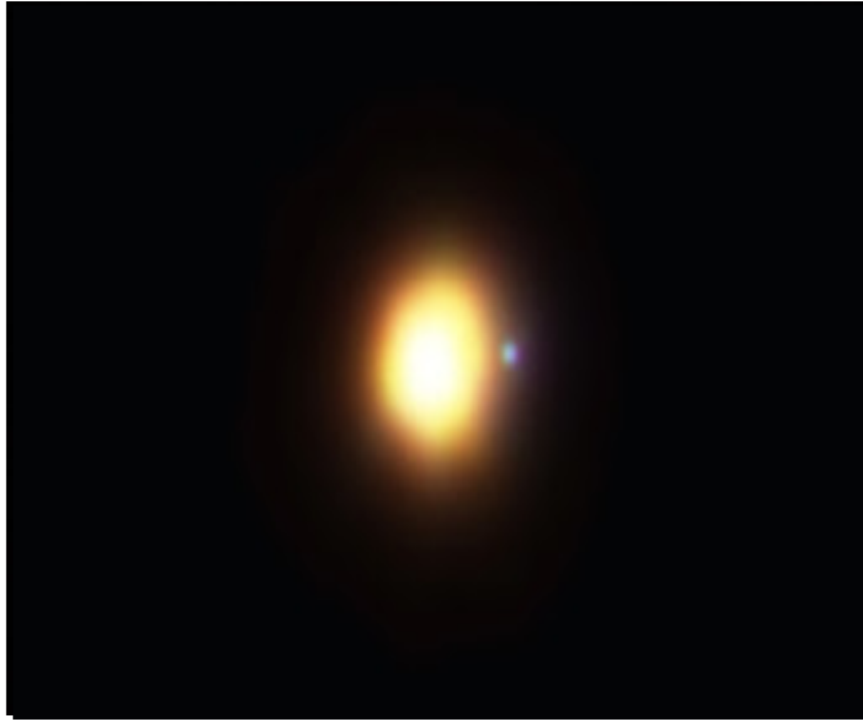
- During a lunar occultation of a star, the star appears to abruptly disappear as the Moon moves in front of it, demonstrating the lack of atmosphere on the Moon.
- **Lunar Occultations of Planets:**
  - Occultations of planets, such as **Venus, Jupiter, Mars, and Saturn**, by the Moon are notable astronomical events.
  - During a lunar occultation, observers can witness phases on both the planet and the Moon, offering unique viewing opportunities.
- **Asteroid Occultations:**
  - Asteroids are small, rocky bodies that orbit the Sun. Sometimes, they pass in front of distant stars, causing an occultation.
- **Planetary Occultations:**
  - Planetary occultations are rare and intriguing events where one planet passes in front of another from our perspective on Earth, temporarily hiding it from view.
    - These events are similar to asteroid occultations but involve planets instead.
  - Historically, **mutual planetary occultations have been extremely rare**. The most recent one occurred on January 3, 1818, when Venus passed in front of Jupiter.

**Antares**

- It is the **brightest star in the constellation Scorpio**. The star is a red supergiant about **12 times the mass of the sun, 750 times the diameter of the sun**.
- Antares is part of a **binary star system**. The fainter secondary star is **called Antares B, a main-sequence star with a blue-white hue**.
  - These two stars are projected to be more than 220 Astronomical Units (AU) away from each other.

Note:

## The Antares Star



**Color:** Red (M-type)

**Spectral type:** M1.5Iab-Ib

**Apparent magnitude:** 0.6–1.6

**Mass:**  $\approx$  12 solar masses

**Radius:**  $\approx$  680 solar radii

**Luminosity:** 10,000 Suns

**Temperature:** 3,660 K

**Constellation:** Scorpius

**Distance:**  $\approx$  550 light-years from Earth

### Indian Institute of Astrophysics (IIA)

- The IIA is a premier institute devoted to research in astronomy, astrophysics and related physics. It originated from an observatory set up in 1786 in Madras, which later moved to Kodaikanal in 1899.
- In 1971, it became the Indian Institute of Astrophysics and shifted its **headquarters to Bengaluru in 1975**.
  - The institute's main observing facilities are located at Kodaikanal, Kavalur, Gauribidanur, and Hanle.
- It conducts research in physical sciences, engineering sciences, astronomy, and space sciences under the **Department of Science & Technology (DST)**.



Note:



# Environment and Ecology

## Highlights

- India Hosts 46<sup>th</sup> ATCM and 26<sup>th</sup> Meeting of CEP in 2024
- Balanced Fertilisation
- Snow Leopards
- Illegal Mining in Orchha Wildlife Sanctuary
- Himalayan Magpies
- Recipe For A Livable Planet Report of World Bank
- Carbon Farming: A Path to Sustainable Agriculture
- Failure of Market-Based Approaches to Forest Conservation
- Constructed Wetlands
- Climate Migration
- New Collective Quantified Goal on Climate Finance (NCQG)
- 4<sup>th</sup> Session of Intergovernmental Negotiating Committee
- Regenerative Blue Economy
- Unclassed Forests in India

## India Hosts 46th ATCM and 26th Meeting of CEP in 2024

### Why in News?

India, through the Ministry of Earth Sciences (MoES) and the **National Centre for Polar and Ocean Research (NCPOR)**, is set to host the **46<sup>th</sup> Antarctic Treaty Consultative Meeting (ATCM 46)** and the **26<sup>th</sup> Meeting of the Committee for Environmental Protection (CEP 26)** in Kochi, Kerala, from 20<sup>th</sup> to 30<sup>th</sup> May 2024.

- This reflects India's commitment to global dialogue on environmental stewardship and scientific collaboration in Antarctica.

### What is the Antarctic Treaty Consultative Meeting (ATCM)?

- **About:**
  - ATCM is an annual meeting of the original 12 parties to the **Antarctic Treaty**, and other parties that have shown interest in Antarctica through research.
  - The **Antarctic Treaty, signed in 1959** and established Antarctica as a region dedicated to **peaceful purposes, scientific cooperation, and environmental protection**.
    - Over the years, the Treaty has garnered widespread support, with 56 countries currently party to it.
    - **India has been a Consultative Party** to the Antarctic Treaty since 1983. In 2022, India enacted the **Antarctic Act**, reaffirming its commitment to the Antarctic Treaty.

- From 1961 to 1994 the ATCM generally met once every two years, but **since 1994 the meetings have occurred annually**.

#### ➤ 46<sup>th</sup> ATCM Agenda:

- It covers **strategic planning for sustainable management of Antarctica and its resources**, policy, legal, biodiversity prospecting, inspections and exchange of information and data, research, collaboration, capacity building and cooperation, addressing climate change impacts, development of tourism framework, and promoting awareness.

#### ➤ India's Engagement in the ATCM:

- India as a Consultative Party, participates in the decision-making process alongside other Consultative Parties.
- **Antarctic Research Stations:**
  - **Establishment:** Its first Antarctic research station, Dakshin Gangotri, in 1983.
    - India operates two year-round research stations in **Antarctica: Maitri (1989) and Bharati (2012)**.
  - Indian Scientific Expeditions to Antarctica have been conducted annually since 1981.

### What is the Committee for Environmental Protection (CEP)?

#### ➤ About:

- The CEP was established under the **Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol)** in 1991.

Note:

- The CEP advises the ATCM on environmental protection and conservation in Antarctica.
- ATCM and CEP are pivotal in the **international community's ongoing efforts to safeguard Antarctica's fragile ecosystem** and promote scientific research in the region.
- Convened annually under the **Antarctic Treaty System**, these meetings serve as forums for Antarctic Treaty Consultative Parties and other stakeholders to address Antarctica's pressing environmental, scientific, and governance issues.
- **26<sup>th</sup> CEP Agenda:**
  - It focuses on evaluating the Antarctic environment, assessing impacts, managing and reporting; responding to climate change; developing area protection and management plans, including marine spatial protection; and conserving Antarctic biodiversity.

#### Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol) in 1991

- Protocol designates Antarctica as a "natural reserve, devoted to peace and science".
- It sets **basic principles for human activities in Antarctica** and prohibits mineral resource activities, except for scientific research.
- The Protocol **can only be modified by unanimous agreement of all Consultative Parties until 2048**, and the prohibition on mineral resource activities cannot be removed without a binding legal regime.
- The Protocol builds upon the Antarctic Treaty and Recommendations to extend and improve the Treaty's effectiveness in protecting the Antarctic environment.

#### National Centre for Polar and Ocean Research (NCPOR)

- NCPOR is an autonomous **institution established in 1998, under MoES**.
- India's scientific and strategic endeavours **in the polar regions (the Arctic and Antarctic)**, the Himalayas, and the Southern Ocean are under the NCPOR in Goa.

## Balanced Fertilisation

### Why in News?

Post Lok Sabha elections 2024, balanced fertilisation is likely to be a key policy goal for the government taking over.

- Despite efforts to curb excessive fertiliser consumption, **urea consumption** has steadily increased in India, reaching a **record 35.8 million tonnes in 2023-24** (up **16.9% since 2013-14**).

### What is Balanced Fertilisation?

#### ➤ About:

- **Balanced fertilisation** is a practice in agriculture that focuses on providing plants with the **optimal amounts of the nutrients** that are needed for their healthy growth and development.

#### ➤ Essential Nutrients:

- **Primary Nutrients:** **Nitrogen (N), Phosphorus (P), and Potassium (K)** are the most crucial nutrients needed in larger quantities. They play **vital roles in plant structure, energy production**, and overall health.
- **Secondary Nutrients:** Sulphur (S), Calcium (Ca), and Magnesium (Mg) are also essential but **required in smaller amounts** compared to primary nutrients.
- **Micronutrients:** Trace elements like Iron (Fe), Zinc (Zn), Copper (Cu), Manganese (Mn), Boron (B), and Molybdenum (Mo) are needed in very small quantities but are still critical for specific plant functions.

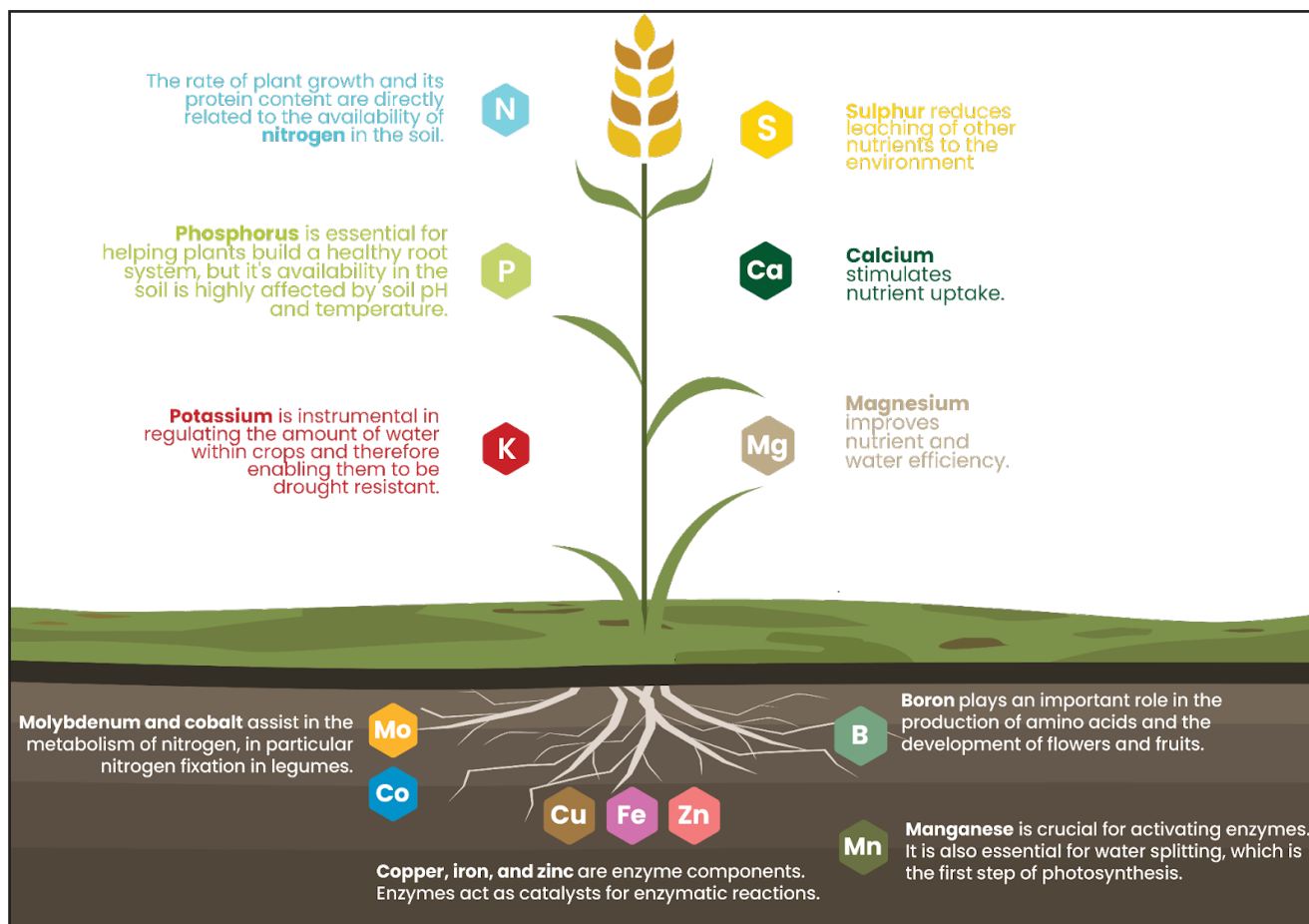
#### ➤ Right Proportion:

- **Balanced fertilisation** emphasises supplying these essential nutrients in the correct ratios based on several factors:
  - **Soil Type:** Different soil types have varying levels of inherent nutrients. Testing the soil reveals its **nutrient profile**, guiding fertiliser selection and application rates.
  - **Crop Requirements:** Different crops have **specific nutrient needs at different stages of growth**. For example, legumes might require more nitrogen for nitrogen fixation, while fruits might benefit from additional potassium for better quality.

Note:



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### What are the Benefits Associated with Balanced Fertilisation?

- **Improved Crop Yields:**
  - By providing the **optimal mix of nutrients**, plants can grow to their full potential, leading to higher yields.
- **Enhanced Crop Quality:**
  - Balanced nutrients contribute to stronger plants with **better resistance to pests and diseases**, ultimately improving the quality of the harvest.
- **Promotes Soil Health:**
  - Overuse of **single-nutrient fertilisers** can disrupt soil health. Balanced fertilisation helps maintain a **healthy soil ecosystem**, promoting long-term sustainability.
- **Reduced Environmental Impact:**
  - Excessive fertiliser application can contribute to **nutrient runoff, polluting water bodies**. Balanced use minimises this risk.

### ➤ Cost-Effectiveness:

- By **preventing over-fertilisation** and nutrient deficiencies, balanced fertilisation can **optimise resource utilisation** and reduce overall fertiliser costs.

### What are the Challenges related to Balanced Fertilisation?

#### ➤ Price Distortions:

- **Urea**, a single-nutrient nitrogen fertiliser, is heavily subsidised by the government, making it **cheaper than other fertilisers like DAP** (diammonium phosphate) containing phosphorus and MOP (muriate of potash) containing potassium.
- This incentivises overuse of urea and neglects other crucial nutrients.

#### ➤ Distorted Fertiliser Pricing Hinders Potash Use:

- The current system for setting **fertiliser prices** fails to consider market forces, leading to imbalances. For example, the price of Muriate of Potash (MOP), a key source of potassium, is **too high for both**

Note:

farmers using it directly and fertiliser companies including it in blends.

- This **discourages MOP use**, contributing to widespread potassium deficiencies in Indian farms.

➤ **Soil Testing Infrastructure:**

- **Lack of adequate soil testing facilities** in the rural and remote areas of India, makes it difficult for farmers to access them for balanced fertilisation.
- Even if tests are done, **interpreting the results and translating them** into fertiliser recommendations requires proper training and mechanism for both farmers and extension workers.

➤ **Farmer Awareness and Education:**

- Many farmers lack awareness about soil testing and the specific needs of their crops.
- Traditional practices and limited knowledge mostly hinders adoption of balanced **fertilisation techniques**.

- It is due to the lack of precise fertiliser application techniques resulting in issues of over-fertilisation and under-fertilisation along with **limited focus on micronutrients**.

➤ **Limited Success of Past Schemes:**

- The **Nutrient-Based Subsidy (NBS) scheme**, meant to encourage balanced use, failed because it didn't address urea pricing. Urea consumption continued to rise despite NBS.



## Nutrient Based Subsidy Scheme

### About:

- A fixed rate of subsidy (in ₹per Kg) **decided on an annual basis**
- Being implemented since **2010**

### Implemented by:

- Department of Fertilisers, Ministry of Chemicals & Fertilizers

### Ambit of NBS:

- Given on nutrients - Nitrogen, Phosphate, Potash and Sulphur
- For Phosphatic and Potassic (P&K) fertilisers
- **Doesn't include Urea based fertilisers**
- NBS is available for imported complex fertilisers except Ammonium Sulphate

### Aim:

- Ensure the **availability of fertilisers** to farmers at an affordable price
- Increase consumption of P&K fertilizers to achieve optimum NPK ratio (4:2:1)

### Fertilisers in India:

- 3 basic fertilisers – Urea, Diammonium Phosphate (DAP), and Muriate of Potash (MOP)
- Urea is the **most – produced, consumed, imported and physically regulated** fertiliser of all
- Urea is subsidised only for agricultural uses

Nutrient	Main Source
Nitrogen (N)	Urea
Phosphorus (P)	DAP
Potassium (K)	MOP



### What are the Government Initiatives to Ensure Balanced Fertilization?

- **Nutrient-Based Subsidy (NBS) Scheme**
- **PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth (PRANAM)**
- **Soil Health Card (SHC) Scheme**
- **Paramparagat Krishi Vikas Yojana (PKVY)**
- **Liquid Nano Urea** and **Nano DAP**

### What Steps Can be Taken by India to Achieve Balanced Fertilisation?

- **Integrated Nutrient Management (INM):**
  - It recognises the limitations of relying solely on chemical fertilisers or organic matter.

Note:



- It advocates for a holistic approach that combines:
  - **Chemical Fertilisers:** Provide **essential nutrients** like NPK.
  - **Organic Matter:** Improves **soil health, water retention**, and nutrient availability. This **includes manure (cow dung), compost, and crop residues (dhaincha crop)**.
  - **Crop Rotations:** Introducing diverse crops helps **break pest and disease cycles** and improves nutrient utilisation.
- **Customising Fertilisers Using Technology:**
  - Customised fertilisers are **multi-nutrient carriers** containing **macro and micronutrients** for satisfying crop needs that are **site-specific and validated by scientific crop models**.
  - It is the **emerging concept** based on the **balanced nutrient fertilisation approach** to address the crops' multiple nutrient needs.
  - In Israel, some remarkable steps are being followed:
    - **High-resolution soil mapping** and its integration with **Geographic Information Systems (GIS)** to create user-friendly maps and fertiliser application recommendations for farmers.
    - **Advanced laboratory analyses** go beyond basic NPK tests and delve into micronutrients, organic matter content, and cation exchange capacity (CEC).
- **Advanced Approaches Beyond Soil Testing:**
  - **Soil Test Crop Response (STCR):**
    - Tailors **fertiliser recommendations** based on specific soil type, crop variety, and climatic conditions.
    - It **considers nutrient uptake** by the crop and soil nutrient availability.
  - **Diagnosis and Recommendation Integration System (DRIS):**
    - **Analyses plant tissue** for nutrient ratios (e.g., N/P, N/K) and compares them to established optimal ratios for high yields.
    - **Deficient nutrients** are then supplemented through top dressing. (More suitable for long-duration crops).
- **Other Steps:**
  - **Farmer Education and Training:** Equipping farmers with the knowledge and skills to implement these approaches effectively.

- **Improved Market Access:** Ensuring the availability of customised fertilisers and micronutrients at reasonable prices.
- **Policy and Subsidy Reforms:** Encouraging the use of balanced fertilisers through targeted subsidies and promoting sustainable practices.
- **Continued Research and Development:** Developing new technologies and crop-specific nutrient management solutions.

## Snow Leopards

### Why in News?

Recently there was a significant discovery of **snow leopards** in the **Kishtwar High Altitude National Park** of Jammu and Kashmir's **Chenab Valley** region by a team of scientists.

- This discovery holds importance for snow leopard conservation in India, shedding light on a lesser-known population of this **apex predator**.

### Why is the Sighting Significant?

#### ➤ Importance of the Discovery:

- Snow leopards are highlighted as an **apex predator** and a **flagship species** of High Mountain Asia.
- India's role as home to 2% of the global snow leopard range emphasizes the importance of conservation efforts.
  - The **occupancy** and **abundance** of the snow leopard is **poorly known** across its range in India.
- India is home to 718 snow leopards, most of whom live in areas that are not under legal protection.
  - **Population surveys** in the Western Himalayas have been limited to Ladakh, Himachal Pradesh and Uttarakhand.

#### ➤ Findings:

- Snow leopards were found at altitudes ranging from 3,004 to 3,878 meters.
  - This is mostly an **arid alpine region** above the treeline, with **steep and rugged terrain** flanked by high-altitude pastures of junipers, grasses, and legumes on rolling hills.
- **Anthropogenic pressure**, particularly from **livestock grazing**, was observed in certain catchments, posing threats to **habitat and prey availability**.

Note:

- This could lead to **human-wildlife conflict** and drive the snow leopard and its prey into suboptimal areas, thus exposing them to other threats.

### What are the Characteristics of Snow Leopard?

# Snow Leopard

*Panthera Uncia*



*Often referred to as the "ghost of the mountains"*

## HABITAT

- Mountainous regions of **Central and Southern Asia**
- **12** Range Countries
- In India:
  - **Western Himalayas:** Jammu and Kashmir, Ladakh, Himachal Pradesh
  - **Eastern Himalayas:** Uttarakhand and Sikkim and Arunachal Pradesh

## MAJOR SITES

- Hemis National Park, Ladakh
  - **Snow leopard capital of the world**
- Great Himalayan National Park, Himachal Pradesh
- Gangotri National Park, Uttarakhand
- Khangchendzonga National Park, Sikkim

## PROTECTION STATUS

- **Vulnerable:** IUCN Red List
- **Appendix I:** CITES
- **Schedule I:** Indian Wildlife (Protection) Act 1972

## THREATS

- Human Snow Leopard Conflict
- Climate Change
- Loss of Prey and Habitat
- Poaching

## CONSERVATION EFFORTS

- Global Snow Leopard and Ecosystem Protection (GSLEP) Programme
- Himal Sanrakshak- Community Volunteer Programme
- Project Snow Leopard
- Snow Leopard Conservation Breeding Programme- Padmaja Naidu Himalayan Zoological Park, West Bengal






Note:

➤ **Some Key Facts:**○ **Physical Features**

- Height: 55-65 cm (22 – 26 inches)
- Length: 90 – 115 cm (36 – 44 inches)
- Its **extra large paws** act like a pair of natural snow shoes preventing the cat from sinking into the snow.
- Its **round, short ears reduce heat loss**, and the wide, short nasal cavity warms the air before it reaches the cat's lungs.
- The cat has **strong, short front limbs** and longer hind limbs helping launch the cat up to 30 feet (10 meters) in one leap.
- Its **extra long tail** helps the cat keep its **balance** and provides **extra warmth** when it's wrapped around the body.
- **Unlike other big cats, snow leopards can't roar.**
- Despite being called the snow 'leopard', this big cat is **more closely related to the tiger** than the leopard.

**Kishtwar High Altitude National Park**

Information	Details
Location	Kishtwar district, Jammu and Kashmir
Region	Forms Chenab Valley region along with Doda and Ramban
Habitat	Potential snow leopard habitat
Connectivity	Connects greater Himalayas of Jammu and Kashmir, trans-Himalayas of Ladakh (via Zaskar), and lesser Himalayas of Himachal Pradesh
Importance	Acts as a corridor connecting snow leopard populations in Himalayan and trans-Himalayan regions to the global snow leopard range, enabling gene flow for healthy populations
Altitude Restriction	Protected area inaccessible above 4,300 meters due to rugged terrain and extreme weather
Other Fauna	Home to Siberian ibex, Himalayan musk deer, and wolves

## Illegal Mining in Orchha Wildlife Sanctuary

### Why in News?

Recently, the **National Green Tribunal (NGT)** formed a committee to look into the complaint of the **illegal operation** of stone crushers and mining quarries in an **eco-sensitive zone** of **Orchha Wildlife Sanctuary**.

- According to the NGT, **immediate action is required** for the **disposal of 337 tonnes of chemical waste**, addressing **groundwater contamination**, shortage of piped water, and monitoring **iron, manganese and nitrate concentrations** exceeding the permissible limit.

### What are the Key Points About the Orchha Wildlife Sanctuary?

➤ **About:**

- It was established in **1994** and is located within a large forest area.
- It is **situated near the Betwa River** (a tributary of the Yamuna), in the **border region between Madhya Pradesh and Uttar Pradesh**, contributing to its unique ecosystem and biodiversity.

➤ **Fauna Species:**

- It is home to a **diverse range of fauna**, including **spotted deer, Blue Bull, Peacock, Wild pig, Monkey, Jackal, Nilgai, Sloth Bear**, and various bird species.
- **Birdwatching** is particularly popular, with around 200 bird species found in the sanctuary's river ecosystem. These include **both resident birds and migratory species** such as peafowls, peacocks, swans, Jungle Bush Quail, minivet, etc.

➤ **Forest Types:**

- It has **southern tropical dry deciduous forests**. The sanctuary **features dense plantations of Dhawa Trees, Kardhai Trees, Teak, Palaash, and Khair**, contributing to its rich biodiversity and natural ambiance.

Note:



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## What are Eco-Sensitive Zones?

### ➤ About:

- The **National Wildlife Action Plan (2002-2016)** of the **Ministry of Environment, Forest and Climate Change (MoEFCC)** stipulated that state governments should declare land falling **within 10 km of the boundaries of national parks and wildlife sanctuaries** as eco-fragile zones or **Eco-Sensitive Zones (ESZs)** under the **Environmental (Protection) Act, 1986**.

### ➤ Activities around ESZs:

- **Prohibited Activities:** Commercial mining, establishment of major **Hydroelectric Projects (HEP)**, commercial use of wood.
- **Regulated Activities:** Establishment of hotels and resorts, commercial use of natural water, drastic change of agriculture system, such as: adoption of heavy technology, pesticides, etc, widening of roads.
- **Permitted Activities:** **Rainwater harvesting, organic farming**, use of renewable energy sources.

### ➤ Significance of ESZs:

- **Protect Core Ecological Areas:**
  - Acts as **buffer zone** reducing impact from activities like construction and pollution.
  - **Minimises threats to wildlife** and ecosystems.
  - **Promotes in-situ conservation** within natural habitats.
- **Ensure Sustainable Development:**
  - **Reduces human-wildlife conflict** by minimising disturbances.
  - Encourages **sustainable practices** in surrounding communities.
  - Creates a **transition zone** between high-protection and lower-restriction areas.

### ➤ Read More: **Wildlife Protection Act, 1972**

## Himalayan Magpies

### Why in News?

Recently, the enchanting **Himalayan magpies** have garnered increased attention as researchers delve deeper into their habitats and behaviours.

- These captivating birds adorn the mountainous landscapes from Kashmir to Myanmar, adding vibrancy to the region.



### What are the Key Facts

#### About Himalayan Magpies?

- **Corvidae Family and Magpies:** Magpies belong to the **Corvidae family** of birds, which includes **crows, jays, and ravens**.
  - Corvids are generally considered to be **noisy, inquisitive birds** that are often associated with omens, both good and bad, in folklore from around the world.
  - Despite their folklore associations, magpies are striking in appearance, and some of the most noticeable species are found in the Himalayas.
  - Himalayan magpies are classified as **"least concern"** on the **ICUN Red List of Threatened Species**.
- **Himalayan Magpie Species:** From Kashmir to Myanmar, a few closely related blue magpie species are a common sight in the Himalayas.
  - The **gold-billed magpie (Urocissa flavirostris)**, also called the **yellow-billed blue magpie**, occupies the high-altitude zone between 2,000 and 3,000 meters above sea level.
  - The **red-billed magpie (Urocissa erythroryncha)** is found at slightly lower heights, while the **blue magpie** is found at lower altitudes where human populations are larger.
- **Corridors and Bird Diversity:** The best sightings of the yellow-billed and red-billed magpies are in the trekking corridor in **Western Sikkim, which leads from the town of Yuxsom (1,780 meters) to the Goche La pass (around 4,700 meters)**.
- **Nesting and Behavior of Himalayan Magpies:** Yellow-billed blue magpies build nests in **rhododendron trees**, hastily constructed with twigs and grass.
  - The blue magpie and red-billed magpie are similar in appearance, though a little smaller than the yellow-billed variety.

Note:



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- Magpies can be spotted as solitary birds, in pairs, or noisy flocks of 8-10 individuals.
- **Threats and Conservation Concerns:** Increasing human activity in forested areas raises concerns about the ability of magpies to cope with habitat changes.
  - Tourist attractions like rhododendron flowers pose sustainability challenges, as villagers may resort to forest resources to support tourism.

## Recipe For A Livable Planet Report of World Bank

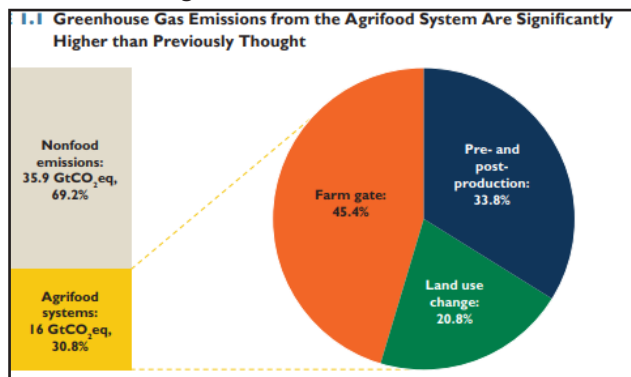
### Why in News?

Recently, the **World Bank** released a **Recipe For A Livable Planet Report** stating that annual investments of USD 260 billion are necessary to **cut agrifood emissions in half by 2030** and achieve **net zero by 2050**.

- The report highlights that this figure is **twice the amount currently spent** on agricultural subsidies.

### What are the Key highlights of the Reports?

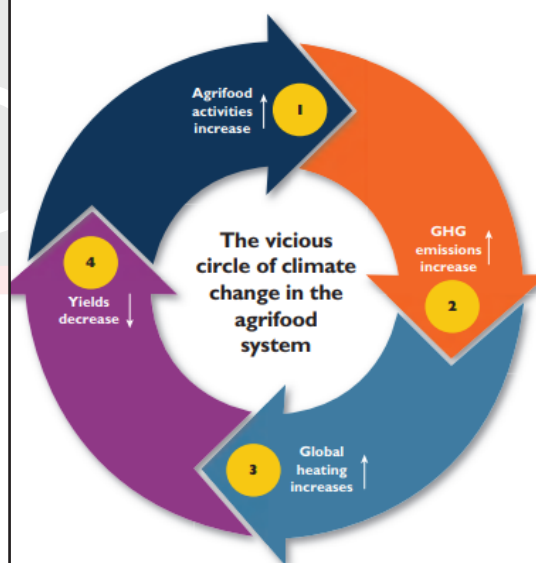
- **About:**
  - “**Recipe for a Livable Planet**” provides a **global strategic framework** for reducing the agrifood system’s impact on climate change.
  - It outlines how the **world’s food production** can significantly **lower greenhouse gas (GHG) emissions** while continuing to ensure global food security.
- **Potential and Benefits of Agrifood System Reform:**
  - **Reduction Potential:** The **global agrifood system** can decrease nearly a third of the world’s GHG emissions through **feasible and accessible measures**.
    - These measures will enhance food security, increase the climate resilience of the food system, and **protect vulnerable communities** during this transition.



### ➤ Agrifood’s Role in Climate Change:

- **Contribution to Emissions:** Agrifood contributes roughly **one-third of global GHG emissions**, more than all of the **world’s heat and electricity emissions** combined.
- **Main Contributors of Emissions:** About three-quarters of these emissions originate from developing countries, necessitating **targeted mitigation actions** as per the specific needs of the region.
- **Emissions from Food Value Chain:** Addressing emissions from the entire **food value chain**, including land use changes, is critical as over half of the emissions stem from beyond the farm level.

**Positive Feedback Loops between Agrifood Activities and the Climate Have Created a Vicious Circle that Precludes Adaptation Alone as a Solution to the Crisis**



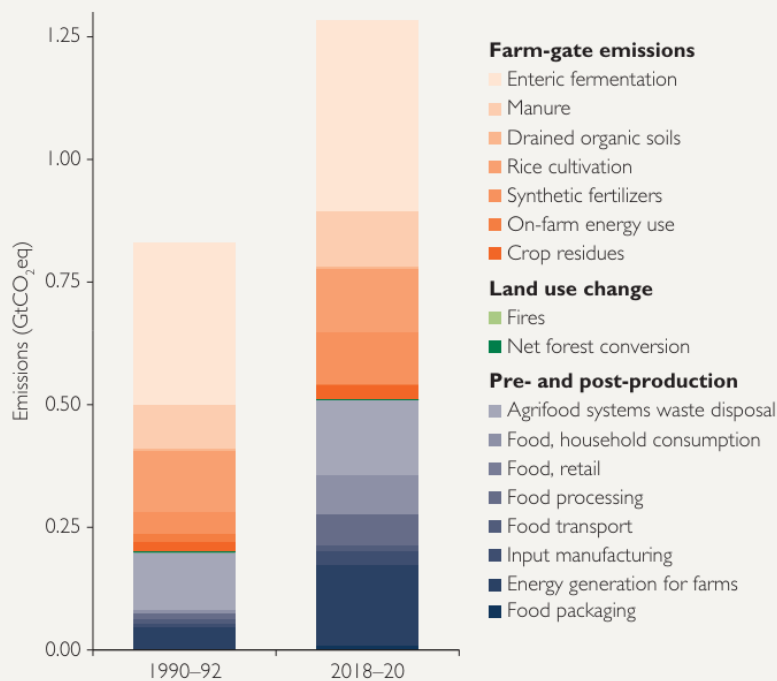
### What are the Big Opportunities Reports Highlighted?

- **Economic and Environmental Benefits:**
  - **Untapped Potential:** The agrifood sector offers significant, cost-effective opportunities for climate action, including drawing carbon from the atmosphere through enhanced land management.
  - **Return on Investment:** The financial outlay required to halve agrifood emissions by 2030 would yield substantial returns, greatly outweighing the costs with beneficial impacts on health, the economy, and the environment.

Note:

- **Opportunities for Action in Countries and Globally:**
  - **Role of High-Income Countries:** These countries should **reduce their agrifood energy demands**, support lower-income countries through **funding and technology transfer**, and modify consumer diets away from high-emission foods.
  - **Middle-Income Countries' Role:** These countries can achieve significant emissions reductions through better land use management and agricultural practices.
  - **Low-Income Countries' Role:** Focus on **sustainable growth** without the burden of high-emission infrastructures, leveraging strategies like agroforestry to boost productivity and resilience.
- **Actions at the Country and Global Levels:**
  - **Investment and Policy Initiatives:** Enhance private sector investment in agrifood mitigation, repurpose subsidies, and implement policies favoring low-emission technologies.
  - **Innovation and Institutional Support:** Use digital technologies for better emissions data and invest in innovations to transform the agrifood system, ensuring inclusive stakeholder participation for a just transition.

**FIGURE B3.1.1 India's Agrifood System Emissions, 1990–92 and 2018–20**



Source: Data from World Bank and FAOSTAT 2023c.  
Note: GtCO<sub>2</sub>eq = gigatons of carbon dioxide equivalent.

### What are the Key Highlights Related to India in the Report?

- **India's Contribution to Global Agrifood Emissions:**
  - The report identifies India as one of the **top 3 countries in terms of total annual agrifood system emissions**, along with **China, and Brazil**.

- **Cost-Effective Mitigation Potential in India:**
  - The report notes that countries like India, around 80% of the technical mitigation potential in agriculture could be achieved by **adopting cost-saving measures alone**.
    - This represents a major opportunity for India to reduce emissions while also improving agricultural productivity and incomes.
- **Key Mitigation Options for India:**
  - Key mitigation options for India include **better livestock feeding (Harit Dhara, a nti-methanogenic feed)** and breeding, fertiliser management, and better water management in water intensive crops.
    - A **marginal abatement cost curve** for India's agriculture sector shows these are some of the most cost-effective interventions India can pursue to cut agrifood emissions **substantially by 2030**.
  - India needs to **curb methane emissions** from **agricultural production**.
    - Adopting practices like **intermittent irrigation** and promoting varieties that emit less methane provide mitigation opportunities.

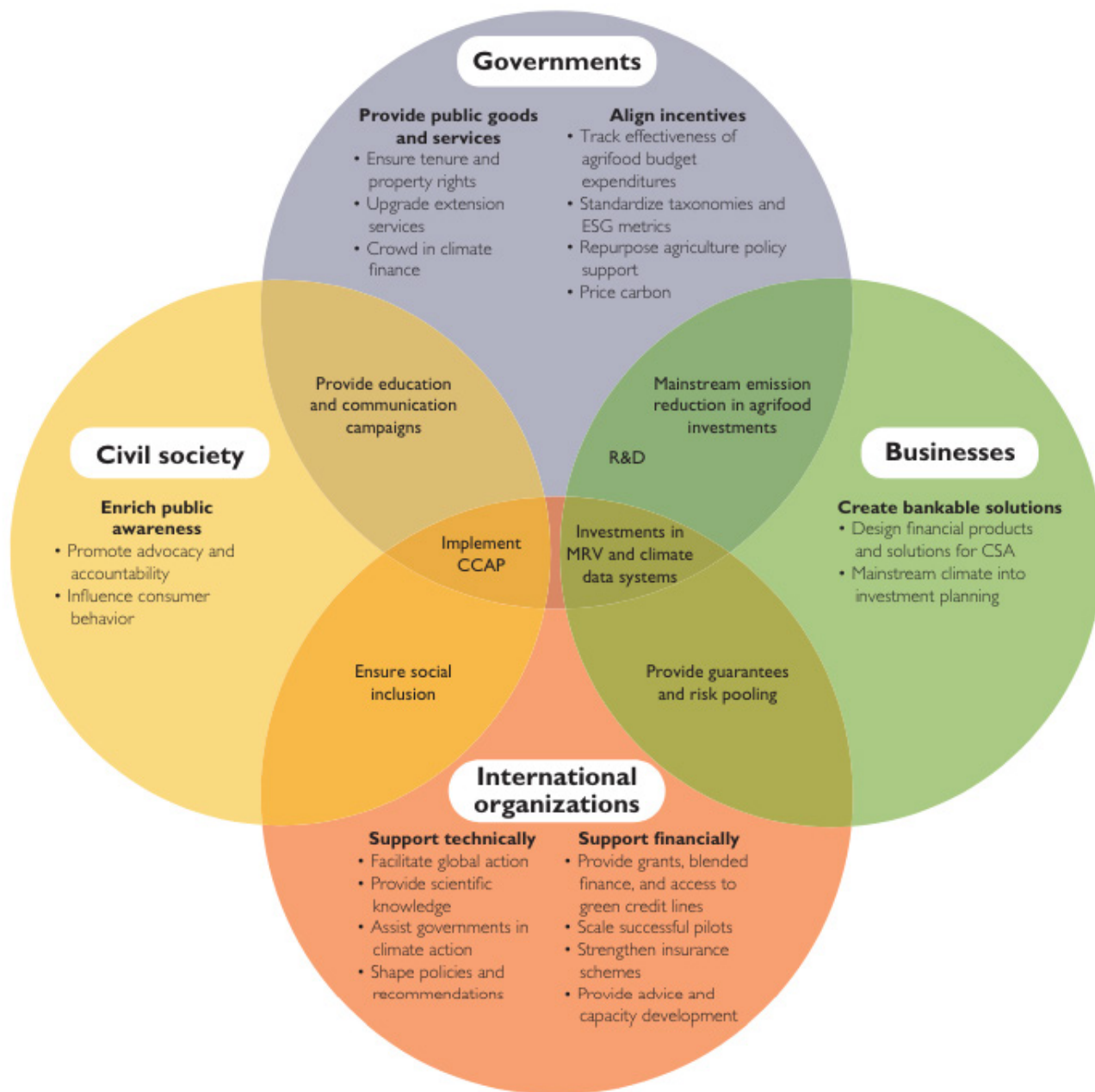
Note:

- India has high rates of food loss and waste. As per **Food Waste Index Report 2021**, Indian households generate **50 kg of food waste per capita per year**.
- Reducing food loss and waste can provides

another high-impact, cost-effective avenue for India.

- **Need for International Support:** India will need international financial and technical support to realise its agrifood mitigation potential.

**FIGURE 0.11 Governments, Businesses, Civil Society Groups, and International Organizations All Have Roles to Play in Scaling Climate Action**



Note:



# UN SPECIALISED AGENCIES

UNSAAs are 15 autonomous international organizations working with the UN

**Part V**  
IMF,  
World Bank  
and  
UNESCO

## INTERNATIONAL MONETARY FUND

- Estd. - 1944 (UN Bretton Woods Conference following Great Depression 1930s)
- Headquarters - Washington, DC, USA
- Functions -
  - » Global financial assistance
  - » Facilitate international trade
  - » Financing for developing countries
  - » Promotion of exchange rate stability
- Member States - 190 (India a founding member)

*India's FM is the ex-officio Governor on the Board of Governors of IMF*

- Special Drawing Rights (SDR) -
  - » IMF's intl. reserve asset to supplement the official reserves of its member countries (not a currency)

*Currencies in SDR Basket - \$, €, £, ¥ (Yen) and CN¥ (Renminbi)*

- IMF Quotas -
  - » Reflects a member country's relative position in world economy (India - 2.75%)
  - » Denominated in SDRs
- Flagship Publications -
  - » World Economic Outlook
  - » Global Financial Stability Report
  - » Fiscal Monitor
  - » External Sector Report

## World Bank Group (WBG)

- Estd. - Same as IMF
- Headquarters - Washington, DC, USA

### 5 Institutions of WBG (estd.)

- International Bank for Reconstruction and Development (IBRD) aka World Bank (1944)
- International Finance Corporation (IFC) (1956)
- International Development Association (IDA) (1960)
- International Centre for the Settlement of Investment Disputes (ICSID) (1966)
- Multilateral Guarantee Agency (MIGA) (1988)

*Membership of IMF is a prerequisite for membership of IBRD*

- Twin Goals of WBG -
  - » Ending extreme poverty by 2030
  - » Boosting shared prosperity of the poorest 40% of the population in all countries

### Functions

- Provide loans, credits, and grants
- Investment, advice, asset management to companies/govts.
- Low/No-interest loans to Low-income countries
- Settle investment-disputes
- Insure lenders/investors against political risks

- Member States - 189 (India a founding member of IBRD, IFC & IDA)
  - » Ending extreme poverty by 2030

*India is not a member of ICSID; claims it biased towards developed countries*

- Major Publications -
  - » Human Capital Index
  - » World Development Report

## UN Educational, Scientific and Cultural Organization (UNESCO)

- Estd. - 1945 [proposed by CAME (Conference of Allied Ministers of Education)]
- Headquarters - Paris, France
- Areas of Specialisation -
  - » Educational development (pre-school to higher education)
  - » Protecting heritage, fostering creativity
  - » Science for a sustainable future

- Global Priorities of UNESCO -
  - » Africa
  - » Gender Equality
- Member States - 193 (incl. India) + 11 Associate

*USA is not a UNESCO member*

- Important Initiatives -
  - » World Heritage Convention and WHS List (India has 40 WHS)
  - » Man and the Biosphere (MAB) Programme
  - » International Geoscience and Global Geoparks Programme (IGGP)
  - » Convention on Intangible Cultural Heritage (ICH)

*India has served twice as a member of ICH Committee*

- Important Reports -
  - » UNESCO Science Report
  - » Global Education Monitoring Report
  - » UNESCO State of the Education Report for India: Children with Disabilities



# Carbon Farming: A Path to Sustainable Agriculture

## Why in News?

Recently, **carbon farming** has emerged as a promising approach to **sustainable agriculture**.

- It **integrates regenerative farming methods** aimed at enhancing soil health and agricultural yield while also **addressing the challenges of climate change**.

## What is Carbon Farming?

### ➤ About:

- Carbon farming is an approach to agriculture that focuses on **managing agricultural and forestry practices** to increase **carbon sequestration** (the capture and storage of atmospheric carbon dioxide) and **reduce greenhouse gas emissions**.
  - It aims to **mitigate climate change** by enhancing carbon storage in soil and vegetation, improving soil health, and reducing the **carbon footprint** of agricultural activities.

### ➤ Need for Carbon Farming:

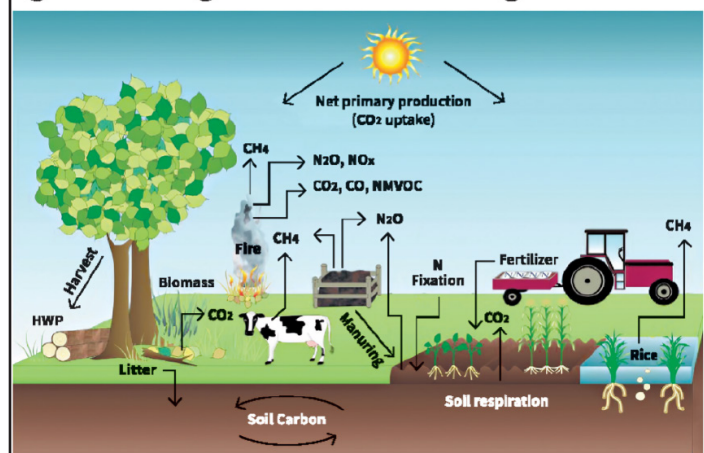
- **Atmospheric CO<sub>2</sub> Buildup:** There is an alarming rise in atmospheric **carbon dioxide levels**, a major driver of climate change.
  - Carbon farming practices can help in drawing CO<sub>2</sub> out of the atmosphere and storing it for long periods.
- **Carbon Sequestration Potential:** Research published in Nature Climate Change emphasises the potential of agricultural soils to act as significant carbon sinks, effectively removing CO<sub>2</sub> from the atmosphere.
  - Carbon farming practices directly enhance this potential by **creating ideal conditions** for increased **carbon sequestration**.
- **Soil Degradation:** There is a critical issue of **soil degradation** due to conventional farming practices. This degradation reduces the ability of soil to store carbon.
  - Carbon farming practices, such as **cover cropping and reduced tillage**, promote

healthy soil biology and organic matter content, which significantly **increases the soil's capacity** to capture and store carbon.

- **Regenerative Practices:** Carbon farming practices like compost application can improve soil health, fertility, and overall agricultural productivity.
  - These practices address soil degradation and create a **natural system** that actively pulls down atmospheric CO<sub>2</sub>, contributing to climate change mitigation.
- **Types of Carbon Farming Practices:** These practice help in improved soil health, increased biodiversity, reduced need for chemicals, reduces methane emissions, increases carbon storage in pastures etc.

Practice	Description
<b>Rotational Grazing</b>	Planned movement of livestock between pastures
<b>Agroforestry</b>	Integrating trees and shrubs into agriculture
<b>Conservation Agriculture</b>	Practices like zero tillage, crop rotation, cover cropping
<b>Integrated Nutrient Management</b>	Focuses on organic fertilizers and compost
<b>Agro-ecology</b>	Integrates ecological principles into agriculture
<b>Livestock Management</b>	Strategies like rotational grazing and improved feed quality
<b>Land Restoration</b>	Practices like reforestation and wetland restoration

The process of emitting and removing greenhouse gas emissions in managed farmland



Note:

### Best Practices Worldwide

- Efforts such as the **Chicago Climate Exchange** and **Australia's Carbon Farming Initiative** incentivize **carbon mitigation** in agriculture through practices like **no-till farming**, reforestation, and pollution reduction.
- **Kenya's Agricultural Carbon Project**, backed by the **World Bank**, showcases how carbon farming can help economically developing nations tackle climate change, enhance food security, and adapt to its impacts.
- The initiation of the '**4 per 1000' initiative** during the **2015 COP21** climate talks in Paris underscores the specific importance of sinks in reducing greenhouse gas emissions.

### What are the Challenges Associated with Carbon Farming?

- **Standardisation and Certification:** A report by the **Food and Agriculture Organization (FAO)** highlights the **lack of standardised methodologies** for measuring carbon sequestration in agricultural soils.
  - This makes it difficult to **verify carbon credits** generated through carbon farming practices.
- **Lack of Awareness and Extension Services:** A report by the Government of India's **NITI Aayog** highlights the **limited awareness** among Indian farmers about carbon farming practices and their benefits.
- **Small Landholdings and Short-Term Focus:** There is the dominance of **small and fragmented landholdings** in India. This can make large-scale implementation of carbon farming practices more challenging.
- **Policy and Regulatory Frameworks:** A report by the **Confederation of Indian Industry (CII)** emphasises the **need for robust policy and regulatory frameworks** to incentivize carbon farming practices in India.
- **Financial Incentives and Market Access:** A research paper published by the Indian Council for Research on International Economic Relations (ICRIER) underlines the importance of **providing financial incentives** like subsidies or carbon credit schemes to encourage farmer adoption of carbon farming practices.
  - Limited access to carbon markets also poses a challenge.
- **Other Challenges:**
  - **Hot and Dry Areas:** Limited water availability **restricts plant growth** and carbon sequestration potential.

- **Water Prioritization:** Water scarcity for drinking and washing needs limits agricultural practices.
- **Challenges with Cover Cropping:** Additional water demand may make practices like **cover cropping** unviable.
- **Plant Selection:** Not all plant species are **equally effective at trapping** and storing carbon, especially in arid environments.

## Failure of Market-Based Approaches to Forest Conservation

### Why in News?

Recently, a major scientific review by the **International Union of Forest Research Organizations (IUFRO)** found that **market-based approaches to forest conservation**, such as carbon offsets and deforestation-free certification schemes, have largely failed to protect trees or alleviate poverty.

### What are the Key Findings of Recent Study?

- The global study, done in 120 countries, concluded that **trade and finance-driven initiatives** had made "**limited**" progress in **halting deforestation** and in some cases worsened economic inequality.
- The report suggests a "**radical rethink**" of **market-based approaches as poverty** and forest loss persist across different regions globally where market mechanisms have been the main policy option for decades.
- It also provides examples from the **Democratic Republic of Congo, Malaysia, and Ghana** where **market-based projects failed to benefit local communities** or halt deforestation.
- There is a **rise in complex and overlapping market-based schemes** "with financial actors and shareholders more often interested in short-term profits than long-term just and sustainable forest governance".
- Study raises **concerns** about **wealthy nations' green trade policies**, arguing they might have **negative consequences for developing countries** without proper implementation.
- The report is planned to be presented at a **high-level UN forum**, emphasising the significance of its findings and recommendations for policymakers and stakeholders in the field of **forest conservation**.

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## What are the Market-Based Approaches to Forest Conservation?

### ➤ About:

- Traditionally, forest conservation relied on regulations and government intervention.
- **Market-based approaches** put a value on the environmental **benefits of forests** and create mechanisms for people to profit from protecting them.
- It aims to **create a market** where **sustainable practices** become more attractive than deforestation.

### ➤ Examples of Market-Based Approaches:

- **Carbon Offsets:** Companies that produce **carbon emissions** can invest in projects that protect forests, which absorb carbon dioxide. This allows them to offset their emissions footprint.
- **Payments for Ecosystem Services (PES):** Landowners who manage their forests in a sustainable way can receive payments from governments, NGOs, or businesses for the environmental services their forests provide, such as clean water or biodiversity habitat.
- **Deforestation-Free Certification:** This involves independent verification that products come from sustainably managed forests, allowing consumers to choose forest-friendly options.

## What are the Impacts of Market-Based Approaches (MBAs) to Forest Conservation?

### ➤ Positives:

- **Incentivise Conservation:** It **creates economic value** for keeping forests standing. This can motivate landowners who might otherwise see profit in logging and forest conservation.
  - **Example: Carbon offsets** provide **income for communities** protecting forests that absorb carbon dioxide, a valuable service in combating climate change.
- **Market Efficiency:** It is **more efficient** than traditional regulations. They allow the market to find the most cost-effective ways to achieve conservation goals.
  - **Example: Payments for Ecosystem Services (PES) programs** can direct resources towards landowners who can demonstrably provide the most significant ecological benefits.

- **Promote Sustainable Practices:** It encourages long-term **forest management** by rewarding sustainable practices over deforestation.

- **Example: Deforestation-free certification schemes** give **consumers the power to choose products** that promote responsible forestry, creating market pressure for sustainable practices.

### ➤ Negatives :

- **Unequal Benefits:** It can **increase existing inequalities**. Wealthy companies or landowners might benefit more readily, while poorer communities struggle to participate effectively.
  - **For example: Complexities in carbon offset markets** can leave some local communities out of the loop, limiting their ability to profit from forest conservation.
- **Monitoring Challenges:** Ensuring projects deliver real conservation benefits **requires robust monitoring**. Weak monitoring can lead to **"greenwashing"** where projects appear beneficial but have little actual impact.
  - **Example: PES programs need clear baselines** to measure improvements in forest health and effective verification to prevent fraudulent claims of conservation efforts.
- **Uncertain Long-Term Impact:** The long-term effectiveness of MBAs is still being evaluated.
  - Recent study by **International Union of Forest Research Organizations (IUFRO)** found that market-based approaches to forest conservation, such as carbon offsets and deforestation-free certification schemes, have largely failed to protect trees or alleviate poverty.

### Greenwashing:

- Greenwashing is a **deceptive practice** where companies or even governments exaggerate their actions and their **impact on mitigating climate change, often providing misleading information** or making unverifiable claims.
- It is an attempt to **capitalise on the growing demand** for environmentally sound products.
- It is fairly widespread, and **entities often label various activities** as climate-friendly without verifiable evidence, undermining genuine efforts against climate change.

Note:

## Constructed Wetlands

### Why in News?

Recently, there has been a **shift towards constructed wetlands**, which are a more comprehensive and nature-based solution for **industrial wastewater treatment**, as compared to traditional methods that have **proven inadequate in addressing the array of pollutants present**.

### What are Constructed Wetlands?

#### ➤ About:

- Constructed wetlands are **engineered systems** designed to replicate the natural processes of wetlands **for wastewater treatment**.
- They consist of carefully selected vegetation, soil, and water that work together to purify wastewater.
- These wetlands are specifically designed to **promote the growth of beneficial microorganisms** and plants that can break down pollutants and improve water quality.

#### ➤ Types of Constructed Wetlands

- **Subsurface Flow (SSF):** SSF wetlands involve passing wastewater through **gravel beds or porous media**, where microbial activity degrades organic matter.
- **Surface Flow (SF):** SF wetlands have **water flowing above the surface**, often creating aesthetically pleasing landscapes with diverse vegetation.

#### ➤ Benefits of Constructed Wetlands:

- **Need:** Traditional treatment methods, such as **physical and chemical treatments**, often struggle to effectively treat the complex mix of pollutants found in industrial wastewater.
  - These methods can be **costly, energy-intensive**, and may not completely remove all contaminants. There comes the role of more comprehensive and sustainable solutions like constructed wetlands.
- **Environmental Benefits:** They can serve as **habitats for a variety of plant and animal species**, contributing to **biodiversity conservation**.
  - Moreover, they can provide ecosystem services such as flood control and carbon sequestration, enhancing their ecological significance and value.

- Constructed wetlands are also a **sustainable solution** for water treatment. They require minimal energy and utilize natural processes for purification.

- **Cost-Effective:** Compared to traditional wastewater treatment plants, constructed wetlands are **less expensive** to build, operate, and maintain.
- **Nutrient Removal:** They are **efficient in removing pollutants** like nitrogen, phosphorus, and organic matter.
- **Land Reclamation:** These systems can be used to **reclaim land degraded** by mining activities by **restoring natural wetland** functions.

#### ➤ Applications of Constructed Wetlands:

- **Municipal Wastewater Treatment:** Constructed wetlands can be a secondary or tertiary treatment stage **for municipal wastewater**, improving water quality before discharge or reuse.
- **Stormwater Management:** These systems can effectively **filter stormwater runoff**, removing pollutants and sediments before they enter natural waterways.
- **Industrial Wastewater Treatment:** Constructed wetlands can be adapted to treat specific types of industrial wastewater, depending on the contaminants present.
- **Agriculture:** They can be used to **treat agricultural runoff**, reduce pollution and improve water quality for irrigation.

#### Example of Constructed Wetlands in India

- The **Asola Bhatti Wildlife Sanctuary in Delhi** uses constructed wetlands to purify sewage from nearby settlements while also providing a sanctuary for flora and fauna.
- Similarly, the **Kolkata East Wetlands in West Bengal** treat wastewater from Kolkata while supporting local fishing and agriculture.
- In Rajasthan, the **Sariska Tiger Reserve** has embarked on an innovative initiative, utilising constructed wetlands for treating wastewater from nearby villages.

Note:



## What is the Difference Between Wetlands and Constructed Wetlands?

Feature	Wetlands	Constructed Wetlands
<b>Origin</b>	Naturally occurring ecosystems	Engineered systems designed by humans
<b>Formation</b>	Develop over time through geological processes, flooding, or changes in water flow.	Deliberately constructed in a specific location.
<b>Water Source</b>	Varied - precipitation, groundwater, surface water runoff.	Controlled source - wastewater, stormwater runoff, or specific water bodies.
<b>Purpose</b>	Provide a variety of ecological functions like flood control, water purification, habitat for diverse species.	Primarily designed for water treatment (wastewater, stormwater) or specific purposes like habitat creation.
<b>Biodiversity</b>	Established communities of plants, animals, and microbes adapted to the specific wetland type.	Plant species are chosen and introduced, while microbial communities develop over time.
<b>Land Area</b>	Can range from small ponds to vast marshes, typically covering large areas.	Designed with a specific footprint based on treatment needs, can be smaller than natural wetlands.
<b>Regulation</b>	Often protected under environmental regulations due to their ecological importance.	May require permits for construction and operation depending on local regulations.
<b>Maintenance</b>	Minimal human intervention required after establishment.	Regular maintenance needed to ensure proper functioning (water flow, plant health, sediment removal).

# RAMSAR CONVENTION

## About

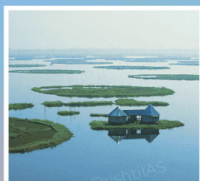
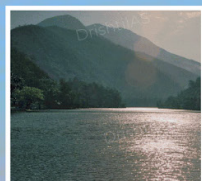
- Also known as the Convention on Wetlands.
- An intergovernmental treaty, adopted in 1971, in Ramsar, Iran.
- Entered into force in 1975.
- Wetlands that are of international importance are declared as Ramsar sites.
- Largest Ramsar Site in World: Pantanal: South America

## Montreux Record

- Adopted in Montreux (Switzerland) in 1990.
- Identifies Ramsar sites that need priority conservation attention at national or international level.

## Wetlands

- A place in which the land is covered by water – salt, fresh, or somewhere in between – either seasonally or permanently.
- Take many forms including rivers, marshes, bogs, mangroves, mudflats, ponds, swamps, billabongs, lagoons, lakes, and floodplains.
- World Wetlands Day: 2<sup>nd</sup> February



## India & Ramsar Convention

- Came into force in India: **1982**
- Total Number of Ramsar Sites: **75**
  - Chilika Lake (Odisha), Keoladeo National Park (Rajasthan), Harike Lake (Punjab), Loktak Lake (Manipur), Wular Lake (Jammu and Kashmir), etc.
- Related Framework in India
  - The Ministry of Environment, Forest and Climate Change (MoEF&CC) has notified Wetlands (Conservation and Management) Rules, 2017 under the provisions of the Environment (Protection) Act, 1986 as regulatory framework for conservation and management of wetlands.
  - The 2017 Rules decentralise wetlands management and provide for the constitution of the State Wetlands Authority or Union Territory Wetlands Authority.

## Key Facts

- Largest Ramsar Site: Sunderbans, West Bengal
- Smallest Ramsar Site: Vembannur Wetland Complex, Tamil Nadu
- State with the maximum number of Ramsar Sites: Tamil Nadu (14)
- Wetlands in Montreux Record:
  - Keoladeo National Park: Rajasthan
  - Loktak Lake: Manipur



Note:

### **What are the Challenges associated with the Constructed Wetlands?**

- **Plant Selection:** Effective plant selection in constructed wetlands is critical for nutrient absorption and pollutant removal, with species like cattails, bulrushes, and sedges proving particularly adept at absorbing nitrogen and phosphorus while providing habitat for beneficial bacteria to degrade pollutants.
- **Land Requirement:** Constructing wetlands requires a **significant amount of land**, which might be a limitation in urban areas.
- **Treatment Efficiency:** While effective, constructed wetlands might **not achieve the same level of purification** as conventional treatment plants for heavily polluted water.
- **Maintenance Needs:** Regular maintenance is required to ensure proper functioning and prevent clogging or mosquito breeding.
- **Other Challenges:** There is a need for **clear policies and regulations** to promote their adoption, raising **awareness and technical expertise** among stakeholders, and continuous monitoring and research to optimize their performance.

## **Climate Migration**

### **Why in News?**

Recently, the issue of **climate migration** has garnered significant attention, yet the world still **lacks a comprehensive legal framework** to protect individuals forced to flee their homes due to increasingly **severe weather disasters**.

- This critical gap leaves a vulnerable population without adequate safeguards in a time of growing displacement.

### **Who are Climate Refugees?**

- **About:**
  - According to the **International Organization for Migration (IOM)**, "climate migration" refers to the movement of a person or groups of **people who are predominantly forced to leave their homes due to sudden or gradual environmental changes caused by climate change**.
    - This movement can be temporary or permanent and can occur within a country or across borders.

- This definition highlights that climate migrants are primarily those who have **little choice** but to leave their homes due to the impacts of climate change.

### ➤ **Causes of Climate Migration:**

#### ○ **Sudden-Onset Disasters and Displacement:**

- **Internal Displacement:** Reports by the **UN Office for the Coordination of Humanitarian Affairs (OCHA)** highlight that sudden-onset disasters like **floods, hurricanes, and earthquakes** often cause significant internal displacement.

- People flee to safer grounds within their countries, but returning home can be difficult due to **destroyed infrastructure** and livelihoods.

- **Disasters and Vulnerability:** The **UN Refugee Agency (UNHCR)** emphasises how disasters often disproportionately affect **vulnerable populations**.

- These populations, lacking resources or living in high-risk areas, are more likely to be displaced and struggle to recover.

#### ○ **Slow-Onset Disasters and Migration:**

- **Environmental Degradation and Livelihoods:** The **IOM** reports that slow-onset disasters like **droughts, desertification, and salinisation** degrade land and water resources.

- This makes it difficult for people to sustain their livelihoods, pushing them to migrate in search of better opportunities.

- **Sea Level Rise and Coastal Communities:** Reports by the **Intergovernmental Panel on Climate Change (IPCC)** warn of **rising sea levels** threatening coastal communities. This can lead to permanent displacement as homes and farmland become submerged.

#### ○ **The Complexities of Climate Migration:**

- **Mixed Drivers:** The **UN Department of Economic and Social Affairs (UNDESA)** acknowledges that migration due to climate change is rarely caused by a single factor.

- **Poverty, political instability, and lack of social safety nets** often combine with disasters to force migration.

- **Data Gaps and Policy Challenges:** **World Bank** highlights the challenges in accurately quantifying climate migration.

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- This makes it difficult to develop effective policies to support displaced people and build resilience in vulnerable communities.

#### Chronological Overview of International Efforts Regarding Climate Refugees

- **1951:** Geneva Convention gives a legal definition of refugees. It does not include climate disasters as a ground for seeking asylum.
  - However, the **UN High Commissioner for Refugees**, in 2019, says the Geneva Convention could be applied to persons affected by climate change.
- **1985:** UN Environment Programme for the first time broadly defines environmental refugees as people who are forced to leave their traditional habitat, temporarily or permanently, due to “environmental disruption”
- **2011:** Nansen Conference on Climate Change and Displacement in Norway formulates 10 principles on climate change and cross-border displacement
- **2013:** European Commission downplays climate-induced migration into Europe
- **2015:** The Paris Agreement calls for a taskforce to recommend approaches to avert, minimise and address climate change-related displacement
- **2018:** The UN Global Compact on Refugees has a reference of climate refugees, but lacks actionable commitments from countries
- **2022:** Kampala Ministerial Declaration on Migration, Environment and Climate Change allows people affected by weather events to move safely across the borders in the Horn and East of Africa regions
- **2023:** Pacific island countries agree on a framework to allow cross-border movement of people due to climate change.

#### What are the Challenges Faced by the Climate Migrants?

- **Precarious Livelihoods:**
  - **Loss of Skills and Assets:** The **International Labour Organization (ILO)** warn that climate migrants often **lose their skills** and assets due to displacement.
    - This makes it difficult for them to find new jobs and rebuild their livelihoods in unfamiliar environments.

- **Informal Work and Exploitation:** The **UN Refugee Agency (UNHCR)** reports that climate migrants often end up in informal work sectors with low wages and poor working conditions.
  - They may also be more vulnerable to exploitation due to their precarious situation.
- **Integration and Social Challenges:**
  - **Lack of Access to Services:** **World Bank** highlight that climate migrants often struggle to access basic services like healthcare, education, and housing in their new locations.
    - This can lead to social exclusion and marginalisation.
  - **Cultural and Linguistic Barriers:** The IOM emphasises the difficulties climate migrants face **adapting to new cultures and languages**.
    - This can hinder their ability to integrate into new communities.
- **Legal Status and Protection:**
  - **Limited Legal Framework:** Reports by the **UN Office of the High Commissioner for Human Rights (OHCHR)** point out that there’s no clear legal framework to protect climate migrants.
    - They don’t qualify for refugee status under current international law.
  - **Increased Risk of Statelessness:** The Journal of Environmental Law claims that climate change-induced displacement can lead to **statelessness**, particularly for those who move across borders.
    - In 2021, the **World Bank**, in its **Groundswell report**, estimated that by 2050, some **216 million people** worldwide would be **internally displaced** due to the impacts of climate change.
- **Psychological and Health Impacts:**
  - **Trauma and Mental Health Issues:** **WHO** highlight the **psychological distress and trauma** climate migrants experience due to displacement and loss.
    - Access to mental health services is often limited, further exacerbating their struggles.
  - **Increased Vulnerability to Health Risks:** Climate migrants may be exposed to **new health risks** in their new locations, such as infectious diseases or extreme weather events. This is especially concerning for **children and the elderly**.

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### What are the Limitations of Policies Taken to Address the Issue of Climate Migration?

- **Global Compact for Migration:** It acknowledges climate change as a factor for human mobility, its silence on climate refugees reflects the **difficulty in reaching consensus** on this issue at the international level.
- **Regional Treaties and Declarations:** Regional agreements, like the **Kampala Declaration**, often lack explicit recognition of climate refugees, highlighting the need for more comprehensive legal frameworks.
- **Identification of Climate Refugees:** One of the key challenges is **identifying and categorising individuals** or communities affected by climate change as refugees, given the complex nature of climate-induced displacement.
- **Collective Displacement:** Climate change often affects entire communities or nations, requiring collective responses and highlighting the **limitations of individual-based refugee status**.

### What are the Steps Taken to Address the Issue of Climate Migration?

- Countries like **Bangladesh** are investing in **coastal embankments and flood-resistant infrastructure** to protect communities from rising sea levels and storm surges.
- Island nations like **Fiji** are exploring **innovative solutions** like raising landmasses to adapt to rising sea levels.
  - **Kiribati** are exploring options for planned relocation of their populations due to rising sea levels.
    - This involves careful considerations of **land acquisition, cultural preservation**, and livelihood opportunities in the new settlements.
- **Early warning systems** for floods, cyclones, and other extreme weather events have been implemented in countries like **India and Vietnam**.
  - These systems allow communities to evacuate vulnerable areas and minimise casualties and displacement.
- The **Kampala Declaration on Protracted Displacement** is a regional framework adopted by African countries to address the needs of people displaced by conflict, natural disasters, and climate change.
  - It provides a model for regional cooperation on climate migration.
- Countries like **Ethiopia** are investing in **drought-resistant crops** and irrigation technologies to help

farmers adapt to changing weather patterns and ensure food security.

- This reduces the risk of displacement due to food scarcity.

#### ➤ Other Examples of Adaptation Measures:

- **Pacific Island Climate Mobility Framework:** This framework facilitates legal movement between Pacific island countries for populations affected by climate change, providing a model for regional cooperation and adaptation.
- **Tuvalu-Australia Pact:** The pact between **Tuvalu and Australia**, granting residency to Tuvaluans facing climate-related dangers, demonstrates a bilateral approach to addressing climate migration challenges.

#### What are India's Climate Change Mitigation Initiatives?

- **National Action Plan on Climate Change (NAPCC)**
- **Nationally Determined Contributions (NDC)**
- **National Adaptation Fund on Climate Change (NAFCC)**
- **State Action Plan on Climate Change (SAPCC)**

## New Collective Quantified Goal on Climate Finance (NCQG)

### Why in News?

Recently, in response to the pressing threat of **climate change**, the **New Collective Quantified Goal on Climate Finance (NCQG)** has emerged as a crucial initiative aimed at mobilizing resources for developing countries to combat climate challenges.

- It is a crucial topic for the upcoming **29th Conference of the Parties (COP29)** to the **United Nations Framework Convention on Climate Change (UNFCCC)**, which will take place later this year in **Baku, Azerbaijan**.

### What is the New Collective Quantified Goal on Climate Finance (NCQG)?

#### ➤ About:

- The NCQG is a **new annual financial target that developed countries must meet from 2025 onward** to provide climate finance to developing countries.

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- It will replace the previous commitment of **USD 100 billion per year** that developed nations had pledged in 2009 but failed to deliver.

➤ **Importance of NCQG:**

- **Empower Developing Countries:** Developing countries are often **disproportionately affected** by climate change despite contributing less to **greenhouse gas emissions**.
  - The NCQG provides them with the financial resources needed to invest in clean energy, adaptation measures, and climate-resilient infrastructure.
- **Accelerate Climate Action:** Climate change mitigation and adaptation require significant investments.
  - The NCQG can **unlock the necessary funds** for developing countries to implement ambitious climate action plans aligned with the Paris Agreement's goals.
- **Promote a Just Transition:** The NCQG can **support a just transition** to a low-carbon and climate-resilient economy, creating new jobs and opportunities while protecting vulnerable communities.
- **Boost Global Cooperation:** Fulfilling the NCQG **necessitates collaboration** between developed and developing countries.
  - This fosters international cooperation and strengthens the global response to climate change.

#### Paris Climate Accord

- **Legal status:** It is a **legally binding** international treaty on climate change.
- **Adoption:** It was adopted by 196 countries at the Conference of the Parties COP 21 in Paris in December 2015.
- **Goal:** To limit **global warming** to well below 2° Celsius, and preferably limit it to 1.5° Celsius, compared to pre-industrial levels.
- **Objective:** To achieve the long-term temperature goal, countries aim to reach global peaking of **greenhouse gas emissions** as soon as possible to achieve a climate-neutral world by mid-century.
- **India** is a **signatory** to the **Paris Agreement**. India reaffirmed its commitment to the agreement in August 2022 by submitting an updated NDC to the UNFCCC. The NDC outlines India's goals for 2021–2030

## 4<sup>th</sup> Session of Intergovernmental Negotiating Committee

### Why in News?

Recently, the fourth session of the **Intergovernmental Negotiating Committee (INC-4)** of the **United Nations Environment Agency (UNEA)** was held in **Ottawa, Canada** attracting participation from over 170 member states.

- This session is part of the ongoing negotiations to **build a legally binding treaty** on **plastics pollution** by the end of 2024 under UNEA.
- The INC-4 for a global plastics **treaty failed to reach an agreement**. Negotiators aim to reach a consensus by the end of 2024 at **INC-5** which is **scheduled for November 2024 in South Korea**.

#### Intergovernmental Negotiating Committee (INC)

- The INC is a committee established by the **United Nations Environment Programme (UNEP)** in March 2022 to **develop an international legally binding agreement on plastic pollution**.
- The INC's mandate is to develop an instrument that addresses the entire life cycle of plastic, including in the marine environment, and could include both voluntary and binding approaches.
- The INC-1 started in November 2022 in **Punta del Este, Uruguay**. The INC-2 occurred in May-June 2023 in Paris, France. The INC-3 convened in Nairobi in December 2023.

### Why is a Global Plastics Treaty Needed?

- **Rapid Expansion of Plastic Production:**
  - Since the 1950s, **plastic production** worldwide has skyrocketed. It increased from **just 2 million tonnes in 1950** to more than **450 million tonnes in 2019**.
    - If left unchecked, the production is slated to double by 2050, and triple by 2060.
- **Plastic Waste and Burden:**
  - Although plastic is a cheap and versatile material, with a wide variety of applications, its widespread use has led to a crisis.
    - As plastic takes anywhere **from 20 to 500 years to decompose**, and less than **10% has been recycled till now**, nearly 6 billion tonnes now

Note:

pollute the planet, according to a 2023 study published by *The Lancet*.

- About **400 million tonnes of plastic waste is generated annually**, a figure expected to jump by 62% between 2024 and 2050.
- Much of this plastic waste leaks into the environment, especially into rivers and oceans, where it breaks down into **smaller particles (microplastic or nanoplastic)**.
  - These contain more than 16,000 chemicals that can **harm ecosystems and living organisms**, including **humans**, the chemicals are known to disturb the body's hormone systems, cause cancer, diabetes, reproductive disorders, etc.

#### ➤ **Climate Change:**

- Plastic production and disposal are also contributing to climate change. According to a report by the **Organisation for Economic Co-operation and Development (OECD)**, in 2019, plastics generated **1.8 billion tonnes of GHG emissions** (3.4% of global emissions).
  - Roughly 90% of these emissions come from plastic production, which uses fossil fuels as raw material. If current trends continue, emissions from production could grow 20% by 2050.

#### **What Can the Global Plastic Treaty Entail?**

- **Global Objectives:** The treaty aims to address marine and other types of environmental pollution caused by plastics.
  - It focuses on establishing global objectives to **combat plastic pollution and assess its impact on ecosystems**.
- **Guidelines for International Cooperation:** The treaty may outline how wealthier **nations can support poorer ones** in achieving their plastic reduction goals.
- **Prohibitions and Targets:** It could include **bans on specific plastics, products, and chemical additives**, along with legally binding targets for recycling and recycled content in consumer goods.
- **Chemical Testing Mandates:** The treaty might require the testing of certain chemicals present in plastics to ensure safety and environmental protection.
- **Consideration for Vulnerable Workers:** Details may be included regarding a just transition for waste pickers and workers in developing countries reliant on the plastic industry for livelihoods.

- **Progress Assessment:** The treaty will include provisions for assessing member states' progress in implementing plastic pollution reduction measures.
  - Regular evaluations will ensure accountability and drive continuous improvement in global efforts to combat plastic pollution.

#### **What are the Challenges in Advancing the Treaty?**

- **Resistance from Oil and Gas Giants:**
  - Some major oil and gas-producing nations, along with fossil fuel and chemical industry groups, aim to **narrow the treaty's focus solely on plastic waste and recycling**.
- **Polarising Negotiations:**
  - Since the inaugural talks in Uruguay in November 2022, **oil-producing countries** like Saudi Arabia, Russia, and Iran have strongly **opposed plastic production caps**, resorting to various delay tactics, such as procedural disputes, to obstruct productive discussions.
  - The decision-making process for the treaty remains contentious, with **countries yet to agree on whether consensus or majority voting should determine its adoption**.
- **High-Ambition Coalition vs. US Stance:**
  - The **"High Ambition Coalition (HAC) to End Plastic Pollution,"** comprising approximately **65 nations including African nations and most of the European Union**, advocates for ambitious goals such as ending plastic pollution by 2040 and phasing out problematic single-use plastics and harmful chemical additives.
    - The US, although expressing a desire to end plastic pollution by 2040, diverges from the coalition's approach by **promoting voluntary measures instead of binding commitments**.
- **Influence of Industry Interests:**
  - Fossil fuel and chemical corporations are actively working to dilute the treaty's effectiveness, as evidenced by the record number of lobbyists.
    - These industries, which profit heavily from plastics derived from fossil fuels, oppose production cuts and falsely assert that the plastics crisis is solely a waste management issue, rather than acknowledging the fundamental problem of plastic production itself.

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### What is India's Stance at INC-4?

- **Preamble and Objective:**
  - India advocated for the preamble to reaffirm **"the sovereign rights of states to sustainable development"**.
    - The proposed objective is **"to safeguard human health and the environment from plastic pollution, including in marine environments, while ensuring sustainable development"**.
  - India emphasised the incorporation of principles such as **equity, sustainable development, and common but differentiated responsibilities**.
  - However, the list does not include fundamental human rights principles, such as the **right to a healthy environment and the right to access information**.
- **Restrictions on Plastic Production:**
  - India opposes any limitations on **primary plastic polymers or virgin plastics**, arguing that production reductions exceed the scope of **UNEA resolution 5/14**.
    - India highlights that some chemicals used in plastic manufacturing are already subject to prohibition or regulation under different conventions.
- **Chemicals and Polymers of Concern:**
  - India advocates for a **transparent and inclusive process** informed by scientific evidence to make decisions regarding chemicals.
    - India disagrees with the inclusion of language about polymers of concern.
- **Midstream Measures:**
  - Stresses the role of sustainable and efficient plastic usage, advocating for improved design to enhance product longevity.
  - Asserts the need for **nationally determined approaches** for downstream measures like **Extended Producer Responsibility (EPR)**, excluding international supply chains.
- **Emissions and Releases:**
  - India emphasises the need to **prioritise the elimination of plastic waste leakage into the environment**, excluding considerations of emissions and effluents during manufacturing and/or recycling.
- **Prioritising Waste Management:**
  - Advocates for prioritising plastic waste management as the primary area of intervention, excluding

considerations of emissions during manufacturing and recycling stages.

- Expresses concerns regarding cross-cutting issues such as trade and financing, insisting on comprehensive financial and technical assistance alongside technology transfer.

### What are the Initiatives Related to Plastic?

- **Global:**
  - **UNEP Plastics Initiative:**
    - It aims to end global plastic pollution by **reducing the flow of virgin plastics** and promoting the transition to a **circular economy**.
    - It focuses on **innovation, reduction, and reuse of plastics**. The strategic goals include reducing the size of the problem, designing for circularity, ensuring circularity in practice, and managing plastic waste.
    - By 2027, the initiative aims to improve plastics policies in 45 countries, engage 500 private sector actors in circular solutions, and involve 50 financial institutions in supporting the transition.
  - **Global Tourism Plastics Initiative:**
    - It aims to unite tourism stakeholders to fight plastic pollution. Led by the **UN Environment and United Nations World Tourism Organization (UNWTO)**, the initiative supports organisations in reducing plastic waste and improving plastic use in their operations.
    - It is developing commitments for the private sector, destinations, and associations to implement by 2025.
  - **Circular Plastic Economy:**
    - In 2015, the EU created a **Circular Economy Action Plan** which later consisted of the European Strategy for Plastics in a Circular Economy.
      - This approach helps limit the amount of plastic waste by creating more of a **"circular" method of reusing products and straying from single-use plastics**.
  - **Ban Plastic:**
    - Several countries have implemented bans on plastic products.
      - In 2002, Bangladesh was the first country to ban thin plastic bags.
      - China implemented a ban on plastic bags in 2020 with phased implementation.

Note:

- In the US, 12 states have banned single-use plastic bags.
- The European Union implemented the **Directive on Single-Use Plastics in July 2021**, which bans certain single-use plastics for which alternatives are available, including plates, cutlery, straws, balloon sticks, cotton buds, expanded polystyrene containers, and oxo-degradable plastic products.

➤ **India:**

- [Plastic Waste Management \(Amendment\) Rules, 2024](#)
- [The Plastics Manufacture and Usage \(Amendment\) Rules \(2003\)](#).
- [UNDP India's Plastic Waste Management Program \(2018-2024\)](#).
- [Prakrit initiative](#).
- [EPR Portal by Central Pollution Control Board \(CPCB\)](#).
- [India Plastics Pact](#)
- [Project REPLAN](#)
- [Swachh Bharat Mission](#)

## Regenerative Blue Economy

### Why in News?

The **International Union for Conservation of Nature (IUCN)** has released a report outlining a roadmap for a **Regenerative Blue Economy (RBE)**.

- This approach goes beyond mere sustainability, aiming to actively restore and revitalize our oceans.

### What are the Key Highlights of the Report?

- **Proposes a Hierarchy:** The report proposes a hierarchical structure to categorize different interpretations and levels of sustainability within the **Blue Economy concept**, they are:
- **Ocean/Brown Economy:** Refers to **all economic activities directly or indirectly related to the ocean**.
    - Synonymous with the traditional “marine economy” or “maritime sectors”.
    - Includes sectors like **shipping, ports, fisheries, offshore oil/gas, etc.**
    - Follows a **business-as-usual approach** focused on economic contribution.
  - **Sustainable Blue Economy:** Incorporates principles of **environmental sustainability and ecosystem**

**protection.** Extends scope beyond just economic activities to include:

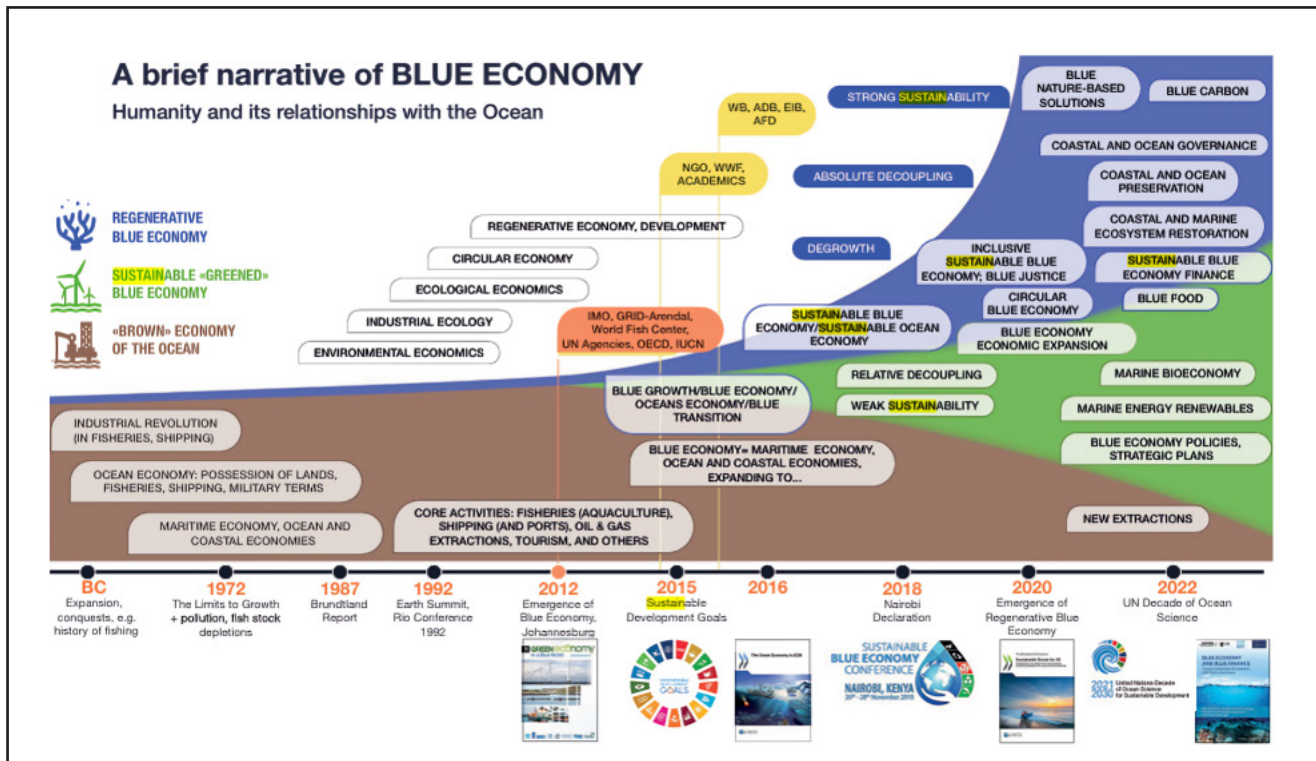
- [Conservation and restoration of marine/coastal ecosystems](#).
- Valuation of ecosystem services like **carbon sequestration**.
- It includes major ocean industries, but with sustainability qualifications.
- Aligns with **UN Sustainable Development Goals**, especially SDG 14 on oceans about conserving and sustainably using the oceans, seas and marine resources.
- **Regenerative Blue Economy:** RBE goes beyond simply maintaining ocean health. It aims to **actively restore and revitalize marine ecosystems**.
  - It is an economic model that combines rigorous and effective regeneration and protection of the Ocean and marine and coastal ecosystems with **sustainable, low, or no carbon economic activities**, and fair prosperity for people and the planet, now and in the future.
- **Founding Principles of RBE:**
  - **Protection and Restoration:** Regenerate and protect marine and coastal ecosystems, resources, and natural capital. Combat **climate change** and biodiversity loss.
  - **Inclusive Economic System:** Ensure inclusion, fairness, and solidarity within the economic system. Guarantee well-being, resilience, and reduced vulnerability to climate change, supported by sustainable funding.
  - **Inclusive and Participatory Governance:** Establish an inclusive and participatory governance system with transparency. Integrate flexible legal and regulatory mechanisms into international agreements on climate and biodiversity.
  - **Low or No Carbon Activities:** Prioritize low or no carbon activities that positively impact the regeneration of marine and coastal ecosystems and enhance the well-being of local populations.
  - **Priority Implementation in Island States:** Implement RBE as a priority in **island states with specific requirements**. Consider the needs of coastal populations, particularly Indigenous peoples, and recognise their traditions in the implementation process.

Note:



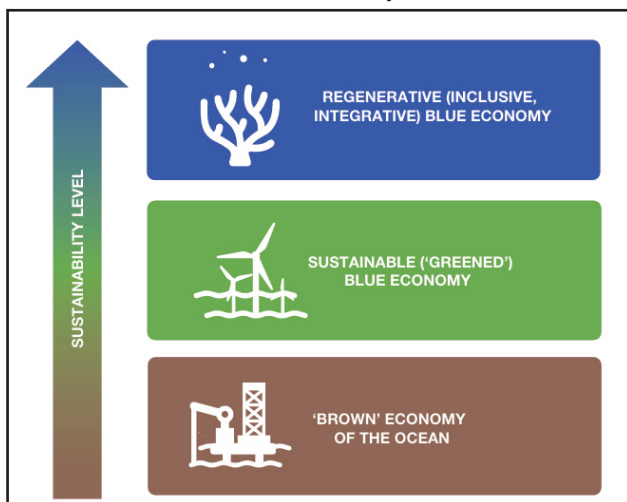
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#### ➤ Spectrum of Sustainability: 11223

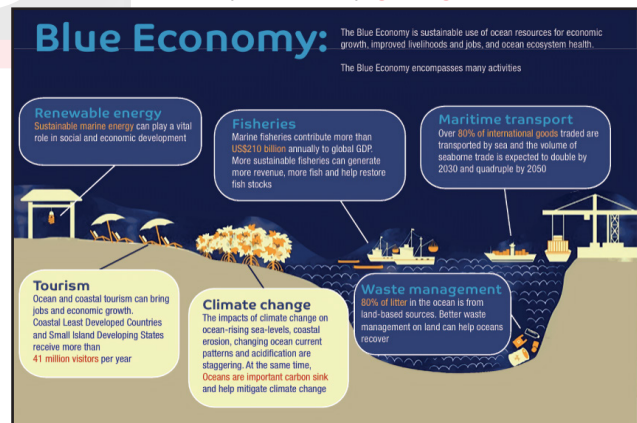
- The IUCN acknowledges various sustainability levels within the blue economy concept.
- RBE represents the most ambitious and restorative approach, moving beyond “business as usual” and “sustainable use” to actively restore ocean health.



#### ➤ Principles of Blue Economy:

- The report states that various sets of principles proposed by different organisations (**World Wildlife Fund**, United Nations Global Compact, etc.)

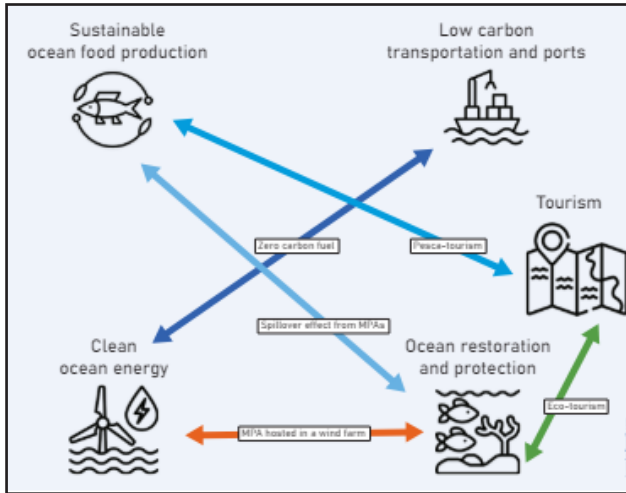
- Common themes include: ecosystem health, sustainability, inclusivity, **good governance**.



#### ➤ Blue Carbon and Nature-based Solutions:

- The report emphasises the importance of valuing coastal/marine ecosystem services like carbon sequestration.
- **Blue Carbon** is highlighted as an emerging market opportunity and component of sustainable economies.
  - Blue Carbon aligns with the broader push for Nature-based Solutions for climate change/biodiversity.

Note:



### ➤ Key Sectors and Considerations:

- **Fishing and aquaculture** must adopt sustainable methods, avoid overfishing and habitat destruction
  - Preference for small-scale fisheries, eco-friendly aquaculture like shellfish/algae
- Maritime transport needs transition to low/zero-carbon fuels and technologies
- Establishment of **Marine Protected Areas (MPAs)** to compensate for extractive activities.

### ➤ Connections to Other Approaches:

- The report strongly emphasises the need to combine the Blue Economy principles with those of the **circular economy**, **Bioeconomy**, and **Social and Solidarity Economy (SSE)**.
  - The bioeconomy is a model for the economy and industry that uses biological resources to produce goods, services, and energy. It's a sustainable and circular model that uses biological resources, processes, and methods across all economic sectors.
  - SSE refers to economic activities and relationships that prioritise **social and environmental objectives over profit**.

### What is Blue Carbon?

- **Definition:** Blue Carbon refers to carbon stored in coastal and marine ecosystems.
- **Significance:** Coastal ecosystems like **mangroves**, **tidal marshes**, and **seagrass meadows** are crucial **carbon sinks**, storing more carbon per unit area than terrestrial forests.

- They play a significant role in **mitigating climate change** and contribute to countries' emissions reduction targets under the **Paris Agreement**.

### ➤ IUCN Involvement: IUCN engages in Blue Carbon initiatives through the **Blue Natural Capital Financing Facility (BNCFF)** and the **Blue Carbon Accelerator Fund (BCAF)**.

- These initiatives support the development of sound investment-based projects with clear ecosystem service benefits, paving the way for private sector funding.

### ➤ **Example:** The study case of extensive shrimp farming and mangrove protection in Indonesia showcases the potential revenue generated through Blue Carbon initiatives.

## What are the Initiatives Promoting Regenerative Blue Economy?

### ➤ Global Initiatives:

- **IUCN Nature 2030:** It is a comprehensive plan for conservation efforts aligning with the **United Nations 2030 Agenda for Sustainable Development** and the post-2020 global biodiversity framework
- **Great Blue Wall Initiative:** This African-led initiative aims to help countries reach the following targets:
  - **protect 30% of the ocean by 2030; achieve net gain of critical blue ecosystems such as mangroves, corals, seagrasses by 2030; develop a regenerative blue economy and create millions of jobs** by supporting local communities through funding, training and technical assistance.
- **Clean Seas Campaign:** Led by the **UN Environment Programme (UNEP)**, this campaign tackles plastic pollution in the ocean by encouraging governments and businesses to reduce single-use plastics.
- **Moroni Declaration and Cape Town Manifesto:** These recent declarations from African nations highlight the importance of a RBE for the continent's development and call for international support.

### ➤ India:

- **Maritime India Vision 2030.**
- **Deep Ocean Mission.**
- **Pradhan Mantri Matsya Sampada Yojana.**
- **Integrated Coastal Zone Management (ICZM).**
- **Blue Economy 2.0**

Note:

## Unclassed Forests in India

### Why in News?

Recently, in compliance with the [Supreme Court](#) order, the Ministry of Environment, Forests and Climate Change (MoEFCC) uploaded the various **State Expert Committee (SEC) reports on its website**.

- This interim order was in response to a public interest litigation challenging the **constitutionality of the Forest (Conservation) Act Amendment (FCAA) 2023**.
- A key concern in the petition was that the **status of unclassified forests**, which were to be identified by the state SEC reports, wasn't known or if they had been identified at all.

### What Did the SEC Reports Reveal?

- **Highlights:**
  - No state provided verifiable data on the identification, status, and location of unclassified forests.
    - Seven states and Union Territories (Goa, Haryana, Jammu & Kashmir, Ladakh, Lakshadweep, Tamil Nadu, and West Bengal) **did not even constitute the SEC**.
  - Only 17 out of 23 states submitted reports in line with the Supreme Court's directives.
  - **Most states relied on existing data** from forest and revenue departments, without undertaking ground-truthing or physical surveys and demarcation of unclassified forest lands have not been conducted in most states.
    - There is a lack of clarity on the geographic location and classification of these forests.
  - Many states' reports showed significant discrepancies with the data from the [Forest Survey of India \(FSI\)](#).
    - For example, **Gujarat's SEC report** stated unclassified forests of 192.24 sq. km, while the FSI reported 4,577 sq. km.
    - Similarly, Assam, where the SEC report states the extent of unclassified forest area to be 5,893.99 sq. km whereas the FSI has reported 8,532 sq. km.
  - **Only nine states provided the extent of unclassified forests**, while others shared data on different types of forest areas without clarity.
    - Some states detailed the extent of degraded, cleared, or encroached forests, but this information varies across reports.

- There is a lack of clarity regarding the extraction of data from available records and the geographical location of forests, with no available **topo sheet identification maps** (a map showing a region's natural and manmade features).

### ➤ Consequences:

- The hasty and incomplete nature of the SEC reports is likely to have resulted in the **large-scale destruction of unclassified forests**.
  - For example, Kerala's SEC **did not include the Pallivasal unreserve**, an ecologically fragile area in Munnar, which was also devastated during the **2018 floods**.
  - The report also failed to mention the **Chinnakanal unreserve**, an important [elephant corridor in Munnar](#) that is now overrun by intensive commercial tourism, leading to many instances of [human-elephant conflicts](#).
- The failure to comprehensively identify and protect these forests undermines the **1996 Godavarman judgement** and the **Indian Forest Policy's goal of achieving 33.3% forest cover in the plains and 66.6% in the hills**.
  - The **Forest Survey of India's 2021 report** shows an overall 21% forest cover (which experts have disputed) in the country and 40% in hills. Approximately 900 sq. km has been lost in the last cycle of the Survey's review.

### What are Unclassed Forests?

#### ➤ Legal Protection:

- Unclassed forests, also known as **deemed forests**, enjoy legal protection under the landmark case **T.N. Godavarman Thirumulkpad vs Union Of India & Ors(1996)**.

#### ➤ Definition:

- They encompass various types of land, including those belonging to forests, revenue, railways, government entities, community forests, or private ownership.
- Despite their diverse ownership, these **forests are not officially notified under the Indian Forest Act**, though the area has forest type vegetation.

#### ➤ Identification Process:

- State Expert Committees (SECs) were tasked with identifying unclassified forests across the country.

Note:

- Identification involved examining available records such as Forest Working Plans and Revenue land records, as well as physically identifying land patches with forest characteristics.

➤ **Implications of FCAA:**

- The **Forest (Conservation) Amendment Act, 2023**, which came into force in December 2023, introduced significant changes to the Forest (Conservation) Act, 1980 (FCA).
- The amendment **narrowed the coverage of the FCA to two types of lands:**
  - Areas officially declared or notified as forests under the Indian Forest Act, 1927, or other relevant legislation.
  - Lands recorded as forests in government records since 25<sup>th</sup> October 1980.
- **FCAA, 2023** raised concerns about the **loss of legal protection for unclassified forests**, potentially leading to their diversion for non-forest use.
- Under the FCAA, **unclassified forests would require Central government approval for any diversion**, even if not officially notified.

➤ **Challenges:**

- **Legal Protection:**
  - With the enactment of the Forest (Conservation) Amendment Act, unclassified forests risk losing their legal protection, leading to their diversion for **non-forest use**.

○ **Impact on Forest-Dwelling Communities:**

- The Amendment Act's failure to recognise **'deemed forests' as subject to the provisions of the Forest (Conservation) Act, 1980** undermines the **rights of forest-dwelling communities**.
  - Forest land classified as 'deemed forests' can be diverted without the consent of **Gram Sabhas**, violating their rights recognised under the **Forest Rights Act of 2006**.

○ **Environmental and Ecological Concerns:**

- The Act's narrow definition of forests based on legal status overlooks ecological considerations, leading to potential degradation and loss of biodiversity in unclassified forest areas.

**T.N. Godavarman Thirumulpad vs Union Of India & Ors Case, 1996**

- In 1995, T.N. Godavarman Thirumulpad filed a **writ petition** with the **Supreme Court of India** to protect the **Nilgiris forest land** from illegal deforestation.
- The Court issued detailed directions for the **sustainable use of forests** and the Court emphasised that **any area defined as a forest, regardless of ownership, would be subject to the Forest Conservation Act, of 1980**.
  - This new interpretation prevented **states from de-reserving protected forests for non-forestry use without permission**.
- One of the key directions was that all forest activities throughout the country must cease without specific approval from the Central Government.



Note:



# Security

## Highlights

- Significance of Carrier Aviation

## Significance of Carrier Aviation

### Why in News?

Recently, the Indian Navy's two aircraft carriers, **INS Vikramaditya** and **INS Vikrant**, demonstrated "twin carrier operations," featuring simultaneous take-offs of MiG-29K fighter jets from both carriers, followed by cross-deck landings, underscoring a capability possessed by only a select few nations.

### What are the Key Features of Indian Aircraft Carriers?

- India boasts **two operational aircraft carriers**, each with a rich history and unique capabilities.
- **Origin:**
  - **INS Vikrant** is the **first domestically built** aircraft carrier boasting **76% indigenous content**. It was constructed at **Cochin Shipyard Limited**, it's a symbol of India's growing shipbuilding prowess.
  - On the other hand, **INS Vikramaditya** is a **modified Kiev-class carrier**, originally built for the Soviet Navy. After extensive refitting and modernisation, it was inducted into the Indian Navy in 2013.
- **Size and Speed:**
  - **INS Vikrant** weighs around **43,000 tonnes** and **262 meters long**. Its design **prioritises manoeuvrability** with a **top speed of 28 knots**.
  - Whereas, **INS Vikramaditya** is slightly larger, weighs around **44,500 tonnes** and a **length of 284 meters**. It can reach speeds of up to **30 knots**.
- **Firepower and Flexibility:**
  - **Both carry a similar arsenal of aircraft**, including **MiG-29K fighter jets** for air defense and ground attack, **Kamov-31 helicopters** for airborne early warning, **MH-60R helicopters** for multi-role operations, and indigenously built **Advanced Light Helicopters (ALH)** for utility tasks.
- **Modernity and Innovation:**
  - **INS Vikrant** incorporates the **latest advancements in design, sensors, and electronics**. It boasts a new combat management system, potentially offering superior situational awareness and operational efficiency.
  - **INS Vikrant** ensures precision operations even in adverse conditions by utilising the **STOBAR (Short Take-Off but Arrested Recovery) method**.
  - Whereas modernised, **INS Vikramaditya** still uses older technology.
- **India's Future Plans:**
  - India is planning to have **four aircraft carrier battle groups (CBGs)** instead of three to strengthen its naval presence.
  - The **Indian Navy's 15-year plan** includes four fleet carriers and two light fleet carriers.
  - The new indigenous aircraft carrier **INS Vishal**, also known as **Indigenous Aircraft Carrier 3 (IAC-3)**, will be built at the **Cochin Shipyard**, similar to **INS Vikrant**.

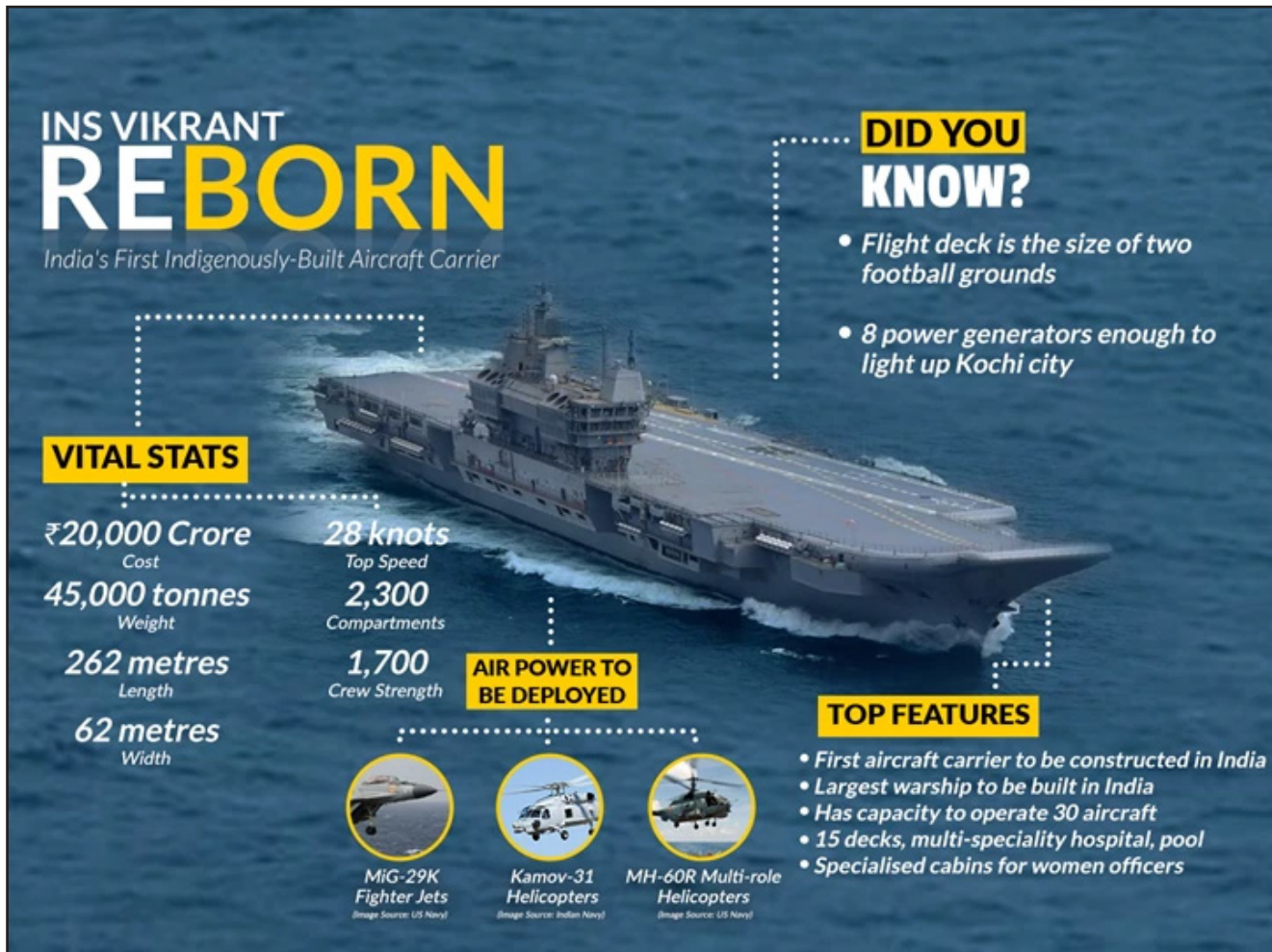
Naval forces in the Indo-Pacific Carriers and Submarines by Country

Country	Aircraft Carriers	Helicopter Carrier	Submarines
United States	11	9	68
China	3	3	72
India	2	0	16
South Korea	0	2	18
Japan	0	4	22
Australia	0	2	6
Taiwan	0	0	4

Note:

### Debate on Aircraft Carriers vs Submarines

- A debate has emerged among navies on whether to focus on submarines or aircraft carriers due to technological developments.
- **Technological developments** such as anti-ship missiles, hypersonic missiles, and new anti-aircraft systems have raised concerns about the **vulnerability of aircraft carriers**.
- The **economic costs of aircraft carriers** are **huge**, limiting the ability of many countries to operate both submarines and carriers.
- Submarines are seen as a better alternative due to their **stealth advantage** and **relatively cheaper cost** compared to aircraft carriers.



### What are the Challenges Associated with Indigenisation of Aircraft Carriers?

- **Technological Complexity:**
  - Building an aircraft carrier involves integrating numerous advanced technologies from propulsion systems to combat management and aviation facilities.
  - India initially planned for a **catapult launch system (CATOBAR)** but later switched to a **ski-jump launch with arrested recovery (STOBAR)** due to technological limitations.

### jump launch with arrested recovery (STOBAR)

due to technological limitations. While STOBAR is a proven system, it limits the operational capabilities of heavier, more advanced aircraft.

- **Time-Consuming Process and High Cost Burden:**
  - Designing, procuring materials, and constructing a complex warship like an aircraft carrier is a time-consuming process. Delays can **impact overall costs** and **strategic planning**.

Note:



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- The design work for INS Vikrant began in 1999, but the carrier wasn't commissioned until 2023 – a delay of over two decades.
- This **extended timeline** can also lead to technological advancements rendering some aspects of the carrier obsolete even before its completion.
- Building an aircraft carrier is an **expensive** undertaking, requiring significant investment in materials, labour, and specialised technologies.
- **Skilled Manpower and Industrial Base:**
  - Constructing an aircraft carrier necessitates a large pool of skilled workers with expertise in various disciplines.
  - India had to rely on **foreign expertise and technology** transfer for certain aspects of **INS Vikrant's** construction, highlighting the need for further development of its domestic shipbuilding industry.
- **Material Dependence:**
  - Even with an indigenous design, some critical materials and components might still need to be imported, creating a **reliance on foreign suppliers**.
  - Although **INS Vikrant** boasts a high percentage of indigenous content, some key elements like high-tensile steel and specialised electronics might have been sourced internationally. This can create vulnerabilities in times of geopolitical tensions.

### ***What is the Significance of Carrier Aviation for India in Modern Strategic Terms?***

- **Supporting Land and Air Operations:**
  - In the context of the ongoing disputes along **India's land boundaries**, the potential for border conflicts persists, emphasising the strategic advantage robust aircraft carriers would provide in future conflicts.
  - During the **1971 operations** for the liberation of Bangladesh, INS Vikrant's aircraft played a crucial role in striking deep into East Pakistan, highlighting its strategic significance in supporting land battles.
- **Maintaining Security of Sea-Lines of Communication:**
  - In times of military conflict, an **aircraft carrier serves as the primary naval asset** capable of comprehensively protecting merchant shipping routes vital for carrying strategic commodities to India.
  - Concerns have been raised regarding the **vulnerability of energy imports through the Strait of Hormuz** due to **China's strategic presence** in Pakistan's Gwadar port, underscoring the importance of carriers in safeguarding sea-lines of communication.
- **Ensuring Presence in the Indian Ocean Region (IOR):**
  - India's security interests are intricately linked to the **Indian Ocean** and its surrounding littoral region, where the presence of Chinese strategic assets poses challenges to India's influence.
  - An aircraft carrier enables India to assert its influence in these waters and deter potential threats from extra-regional powers, thereby safeguarding its interests in the IOR.
- **Protection of Important Overseas Interests:**
  - Carrier aviation provides India with the capability to safeguard its strategic interests overseas, particularly in **Afro-Asian states facing political, socio-economic, and ethnic instabilities**.
  - India's economic and strategic stakes are increasing in these regions, necessitating the ability to respond effectively to emerging threats and protect its citizens and assets abroad.
- **Securing Island Territories:**
  - Integral naval aviation is essential for defending **India's remote island territories**, such as the Andaman and Nicobar Islands, which are **vulnerable due to their geographical spread** and limited infrastructure.
  - The presence of an **aircraft carrier** serves as a **deterrent** against potential foreign military occupation or claims, ensuring the security of these strategically important territories.

Note:

➤ **Other Non-Military Missions:**

- Beyond its military role, an aircraft carrier significantly expands India's operational capabilities to **respond to natural disasters in regional seas** or littoral areas.
- With its capacity akin to a floating city, a carrier can provide essential services and logistical support, **complementing existing sealift platforms** and enhancing India's disaster response capabilities.
- Efforts to incorporate modular concepts further enhance the carrier's versatility for non-military missions, enabling rapid deployment of specialised resources for **specific humanitarian missions**.

**What are the Related Initiatives Towards Expanding India's Defence Infrastructure?**

- [Development cum Production Partner Initiative](#)
- [Defence India Startup Challenge](#)
- [SRIJAN Portal](#)
- **Increased the [Foreign Direct Investment \(FDI\)](#) limit** in defence sector from **49% to 74%**
- [Innovations for Defence Excellence \(iDEX\)](#)
- [Positive Indigenisation List \(Defence Procurement Policy\)](#)
- [Project 75i](#)

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Note:



# History

## Highlights

- Racial Bias in Jallianwala Bagh Massacre Compensation

- Hoysala's Sri Madhava Perumal Temple Reveals Trade Route

## Racial Bias in Jallianwala Bagh Massacre Compensation

### Why in News?

The **Jallianwala Bagh massacre on 13<sup>th</sup> April 1919**, remains one of the darkest chapters in India's colonial history. New research sheds light on the grossly racialised legal structure employed by the **British government in compensating those affected by the tragedy**.

### What are the Key Highlights of the Research?

- **Racial Bias in Compensation:**
  - The British government's compensation favoured Europeans over Indians.
  - Europeans received payments valued at **600 times more than Indians**.
    - The British government placed a significantly higher value on European claims, allocating over **Rs. 523,000 in compensation to Europeans**, with individual payments ranging from Rs. 300,000 to Rs. 30,000.
  - Discriminatory compensation reflects **racial prejudice and lack of value for Indian lives**.
- **Legal Proceedings:**
  - **Punjab Disturbances Committee** divided along racial lines, justifying violence by British officers.
    - The committee's European members justified the violent tactics used by British officers in Punjab, while the Indian members disagreed.
  - Indian legislators demanded equal compensation and faced resistance from British officials.
- **Unfairness of Colonialism:**
  - Research strengthens demands for a formal apology from the British government. Calls for decolonisation of historical wrongs and recognition of imperial legacies.

### What is the Jallianwala Bagh Massacre?

- **Prelude to the Massacre:**
  - The **Indian National Congress** expected self-governance after **World War I** but faced resistance from the Imperial bureaucracy.
  - The **Rowlatt Act, passed in 1919**, authorised the government to arrest individuals associated with **sedition activities without trial**, leading to nationwide unrest.
  - Arrests of nationalist leaders **Saifuddin Kitchlew and Dr. Satyapal** on 9<sup>th</sup> April 1919, sparked widespread protests in Punjab.
- **The Massacre:** The Jallianwala Bagh massacre unfolded amid heightened tensions caused by the **oppressive Rowlatt Act** and widespread protests in Punjab.
  - Fearing a rebellion similar to the **1857 revolt**, the British administration responded with severe repression.
  - **Brigadier-General Dyer's** actions (troops opened fire indiscriminately, killing innocent people and injuring many) on 13<sup>th</sup> April 1919, escalated the situation, resulting in the massacre during a peaceful protest against the **Rowlatt Act, 1919** resulting in the deaths of hundreds of innocent protestors.
    - Dyer, however, issued a proclamation on 13<sup>th</sup> April (which was also Baisakhi), forbidding people from leaving the city without a pass and from organising demonstrations.
- **Hunter Commission:** The Hunter Commission, officially known as the **"Punjab Disturbances Inquiry Committee,"** was appointed by the British government in response to the Jallianwala Bagh massacre.
  - The commission's report criticised Dyer's decision to open fire on unarmed civilians and highlighted the disproportionate use of force.
  - The findings of the Hunter Commission contributed to the condemnation of **Dyer's actions in India**.

Note:

- Before the Committee began its proceedings, the government had passed an **Indemnity Act for the protection of its officers**.
- The commission's report led to **Dyer's removal from his command** and his subsequent retirement from the military.
- **Aftermath and Significance:** The Jallianwala Bagh massacre became a pivotal moment in India's struggle for independence, catalysing **Mahatma Gandhi's Non-Cooperation Movement (1920-22)**.
- **Rabindranath Tagore** renounced his **knighthood** in protest against the incident.
- In 1940, at Caxton Hall in London, Indian freedom fighter **Udham Singh** assassinated **Michael O'Dwyer**, who had approved of Dyer's actions.

## Hoysala's Sri Madhava Perumal Temple Reveals Trade Route

### Why in News?

Recently, Inscriptions found at **Sri Madhava Perumal Temple** indicate the existence of a major trade route over 1,000 years ago, connecting the **Kongu region** in western Tamil Nadu with southern Karnataka and Kerala.

### What are the Key Facts About the Madhava Perumal Temple?

- **About:**
  - It is dedicated to the **Hindu deity Vishnu**, who is worshipped as **Madhava Perumal**. It is located in **Mylapore, Chennai, Tamil Nadu**.
  - The Mylapore region came under the rule of the **Hoysala dynasty**, particularly **King Veera Ballala III**.
  - The general of the Hoysala army, constructed **Dhandanayaka Fort**, 680 years ago. The **temple** in the **Dravidian style** of architecture was constructed inside the fort.
    - The area was later ruled by the **Vijayanagara Empire** and **Tipu Sultan**.
    - The Battle of Sathyamangalam (1790), during the **Third Anglo-Mysore War** (1790-1792), also took place near the fort.

- The temple is believed to be the **birthplace of Peyalvar**, one of the first three of the **twelve Alvar saints** of the **6<sup>th</sup>-9<sup>th</sup> century CE**.
- The temple, largely **submerged in the water-spread area** of the **Bhavanisagar dam in Erode district**, became visible as the water level in the dam dipped.
- **Temple Inscription:**
  - The inscriptions revealed the existence of a **village named Thuravalur**.
  - The area served as a **trunk road**, and **traders crossed River Bhavani and River Moyar** to reach Wayanad in Kerala and various places in Karnataka.
  - **Construction of the Bhavanisagar dam** in 1948 resulted in the relocation of nearby residents and the shifting of temple idols to new locations in 1953.

#### Bhavanisagar Dam

- It is located in **Erode district**, Tamil Nadu, India.
- The dam is constructed on the **Bhavani River**. It is one of the world's largest earthen dams.
- **Bhavani River originates from the Nilgiri hills** of the Western Ghats, enters the **Silent Valley National Park in Kerala** and flows back towards Tamil Nadu. The Bhavani River is one of the main tributaries of the **Cauvery River**.

### What are the Key Facts about Hoysala Dynasty?

- **Origin and Rise:**
  - The Hoysalas were **feudatories of the Chalukyas of Kalyana**, or the Western Chalukya Empire.
    - The first kings came from the hills **northwest of Dorasamudra (present-day Halebid)**, which became their capital in 1060 AD.
  - The most notable rulers of the Hoysala dynasty were **Vishnuvardhana, Veera Ballala II, and Veera Ballala III**.
    - **Vishnuvardhana** (also known as Bittideva) was the **greatest king** of the Hoysala dynasty.
  - They governed areas spanning **Karnataka and Tamil Nadu** in the **Kaveri (Cauvery) river valley** between the **11<sup>th</sup>- 14<sup>th</sup> century**.

Note:



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- Later, the **Vijayanagar dynasty** succeeded the Hoysalas.

➤ **Religion and Culture:**

- The dynasty patronised various religions, such as **Hinduism, Jainism, and Buddhism**.
- **King Vishnuvardhana** was initially a Jain but later converted to Vaishnavism under the influence of the **Saint Ramanuja**.

➤ **Temple Architecture:**

- The Hoysala Temples were built **during the 12<sup>th</sup> and 13<sup>th</sup> centuries CE**, showcasing the **unique architectural and artistic brilliance of Vesara style**.
- Among Hoysala temples, **Chennakeshava Temple in Belur**, **Hoysaleswara Temple in Halebidu**, **Keshava**

**Temple of Somanathapur** are **UNESCO World Heritage Sites** and protected by **Archaeological Survey of India (ASI)**.

- Hoysala architecture is known for its **distinctive blend of Bhumija style** prevalent in Central India, the **Nagara traditions** of northern and western India, and the **Karnataka Dravida** modes favoured by the Kalyani Chalukyas.
  - These contain **multiple shrines** grouped around a **central pillared hall** and laid out in the shape of an intricately designed star.
- They are **made out of soapstone** which is a relatively soft stone, the artists were able to carve their sculptures intricately.



Note:

# Geography

## Highlights

- Aurora Borealis in India
- Heat-Waves Threatens Litchi Farmers
- Land Subsidence in Chenab Valley
- Interplay of Heat Waves, Anticyclones and Global Warming
- Eta Aquariid Meteor Shower
- Expanding Glacial Lakes in the Himalayas
- INCOIS Study on Indian Ocean Floor Mapping
- Indian Ocean Warming Accelerates

## Aurora Borealis in India

### Why in News?

Recently, **Auroras** which are typically visible in **high-latitude regions** such as the **North and South Poles**, were observed worldwide, including in areas where they are uncommon.

- In India, they were observed through all-sky cameras positioned around the **Indian Astronomical Observatory (IAO)** in **Hanle, Ladakh**.

### What is the Aurora Phenomenon?



#### ➤ About:

- **Auroras** are **bright and colourful lights**, formed due to an active interaction in space between charged **solar winds** and the **Earth's magnetosphere**.
- They occur when **violent solar events** eject charged particles into space, which become trapped in **Earth's magnetic field** and interact with atmospheric atoms, ultimately resulting in **geomagnetic storms** and the **creation of aurora**.

- The constantly changing inputs from the sun, the varying responses from the Earth's upper atmosphere, and the motion of the planet and particles in near-Earth space all **work together to create different auroral motions and shapes**.

- In the Northern Hemisphere, the phenomenon is called the northern lights (**aurora borealis**), while in the Southern Hemisphere, it's called the southern lights (**aurora australis**).

#### ➤ Composition and Colors:

- Auroras **consist of gases and particles**, including oxygen and nitrogen.
- The collisions of these particles with the atmosphere release energy in the form of light.
- The colors observed in auroras depend on the **type of gas and altitude** of the collisions.

#### ➤ Impact:

- They can trigger **blackouts on the Earth**, knock out **satellites in space**, endanger the lives of astronauts, and affect **space weather** throughout the Solar System.

**Note:** STEVE is an **aurora-like phenomenon** that appears as a distinct, purple-colored arc with a moving green "picket-fence" structure. It can be observed from **lower latitudes** than the typical northern and southern lights.

### Geomagnetic Storm

- A geomagnetic storm is a major disturbance of Earth's magnetosphere that occurs when there is a very **efficient exchange of energy** from the solar wind into the space environment surrounding Earth.
- **Violent geomagnetic storms are rare**, occurring around once every few decades.
  - The last time charged particles from the Sun blew into the Earth with similar energy and intensity was in 2003.

Note:



## Heat-Waves Threatens Litchi Farmers

### Why in News?

Recently, high temperatures and scorching westerly winds have created an unsuitable climate for the growing litchi fruits in Bihar's Muzaffarpur district.

- This has spelt doom for hundreds of litchi farmers, who were already worried about low flowering this year due to erratic weather.

### What are the Challenges Associated with the Recent Heat Waves in Bihar?

- **Impact of Heatwaves on Litchi Orchards:**
  - Scorching temperatures and strong westerly winds has caused a **significant drop in immature litchi fruits**.
  - The **National Research Centre on Litchi (NRCL)** advises **increased irrigation** in orchards to combat rising temperatures and maintain moisture levels, but small farmers struggle with costs.
- **Effect of Climate Change on Litchi Production:**
  - Litchi thrives under **specific microclimatic conditions**, with an ideal temperature range of **30-35°C** during the critical second half of April for optimal fruit development.
    - **Deviations from this range** disrupt natural growth processes, leading to smaller, less sweet litchi.
- **Expected Reduced Harvest:**
  - The anticipated litchi harvest is expected to be **delayed and potentially halved** compared to previous years.
  - Farmers face **significant crop losses** and are planning to **request government support to offset these losses**.
  - Muzaffarpur and surrounding areas contributing nearly **40% of India's litchi production**, a poor harvest here has a significant national impact.

### What are Heat Waves?

- **About:**
  - Heat waves are **prolonged periods of excessively hot weather**.

- **India Meteorological Department (IMD)** considered heatwave if the **maximum temperature of a station** reaches **at least 40°C** or more for **Plains** and at least 30°C or more for Hilly regions.

- Based on Departure from Normal:

- **Heat Wave:** Departure from normal is 4.5°C to 6.4°C.
- **Severe Heat Wave:** Departure from normal is >6.4°C.

- Based on Actual Maximum Temperature:

- **Heat Wave:** When actual maximum temperature  $\geq 45^\circ\text{C}$ .
- **Severe Heat Wave:** When actual maximum temperature  $\geq 47^\circ\text{C}$ .

### ➤ IMD's Initiatives and Tools to Combat Heat Waves:

#### ○ Early Warning Systems:

- **Timely Forecasts:** IMD issues timely forecasts and heatwave warnings, often several days in advance.
- **Colour-coded Alerts:** They utilise a colour-coded system (yellow, orange, red) to categorise the severity of heat waves.

#### ○ Collaboration and Action Plans:

- IMD works closely with the **National Disaster Management Authority (NDMA)** to develop and implement heat action plans.
- IMD conducts awareness campaigns to educate the public on heatwave risks, precautionary measures, and how to stay cool during extreme heat.
- IMD has introduced the Heat Index that considers both temperature and humidity for a more accurate assessment of heat stress.

#### ○ Leveraging Technology:

- **Mobile Apps:** IMD provides mobile apps like "Mausam" that disseminate weather updates, including heatwave warnings, directly to users' smartphones.
- **Website and Social Media:** They maintain a user-friendly website and actively utilize social media platforms to share weather information and heatwave alerts.

Note:



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## Land Subsidence in Chenab Valley

### Why in News?

Recently, there were reports of **Land subsidence** in different parts of the **Chenab Valley**, especially in the Ramban, Kishtwar, and Doda districts, which led to destruction of several houses.

- Earlier, **landslides** were common during rain and snowfall in the region. However, there has been frequent occurrence of **land subsidence** in the last 10 to 15 years.

### What is Land Subsidence?

- **About:**
- According to the **National Oceanic and Atmospheric Administration (NOAA)**, **Land subsidence** is sinking off the ground because of underground material movement.
  - It can happen for many reasons, man-made or natural, such as the removal of water, oil, or natural resources, along with mining activities. **Earthquakes, soil erosion,** and soil compaction are also some of the well-known causes of subsidence.
  - It can happen over very large areas like whole states or provinces, or very small areas.
- **Causes:**
  - **Overexploitation of Underground Resources:** Extraction of resources like Water, Natural gas and Oil leads to **decreased pore pressure** and increased effective stress, causing ground subsidence.
    - Over 80% of the world's extracted water is used for irrigation and agricultural purposes, contributing to ground subsidence.
  - **Extraction of Solid Minerals:** Exploitation of **underground solid mineral** resources leads to **formation** of large empty space **underground (goaf)**, which can lead to the ground sinking or subsiding.
    - Mining activities, such as coal mining, can lead to the formation of goaf areas, which contribute to ground subsidence.
  - **Load Exerted on Ground:**
    - The construction of tall buildings and heavy infrastructure can exert significant pressure

on the ground, leading to soil deformation and subsidence over time.

- **Soil creep** is the **slow, gradual movement** of soil downhill due to gravity and can contribute to ground subsidence over time.

- **Soil Creeps:** Continuous **low load and soil creep** can cause **slow deformation** of the foundation, contributing to ground subsidence.

### ➤ Examples:

- **Jakarta, Indonesia:** It is experiencing severe land subsidence (25 cm/year) due to excessive groundwater extraction.
- **Netherlands:** Land subsidence has been a major problem due to the extraction of natural gas from underground reservoirs.

### What are the Reasons for Land Subsidence in the Chenab Region?

- **Geological Factors:** Region has the presence of **soft sedimentary deposits** and **alluvial soils**, which contributes to land subsidence.
  - These materials are **prone to compaction** under the weight of overlying structures and the influence of external forces such as groundwater extraction.
- **Unplanned Constructions and Urbanization:**
  - **Urbanisation** and **unplanned construction** in hilly regions put immense pressure on the land.
  - The **Himalayan foothills** have witnessed rapid development, leading to land subsidence.
- **Hydroelectric Projects:**
  - Construction of **hydroelectric stations** can alter the natural flow of water and impact the stability of the land.
    - **Eg: Joshimath**, a popular town for tourists, faces subsidence due to its proximity to a hydroelectric station.
- **Poor Drainage Systems:**
  - Inadequate drainage systems in the **Chenab region** can worsen land subsidence through waterlogging, increased groundwater levels, **soil erosion**, saltwater intrusion, and infrastructure damage.
- **Geological Vulnerability:**
  - Scattered **rocks** in the area are covered with old landslide debris comprising boulders, gneissic rocks, and loose soil, with a low bearing capacity.

Note:



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- These gneissic rocks are highly weathered and have a low cohesive value with a tendency of high pore pressure when saturated with water, especially during **monsoons**.

#### Joshimath Land Subsidence

- Earlier, Joshimath in Chamoli district in Uttarakhand faced a series of landslides and floods.
- Certain areas of Joshimath were **gradually “sinking” due to a combination** of human activities and natural causes.
- The experts propose the **cause of the land subsidence** to unregulated construction, high population density, disruption of natural water flow, and activities related to hydropower.

#### Mishra Committee Report of 1976 Regarding Joshimath Crisis

- In 1976, a committee was established to investigate the causes of the sinking phenomenon in Joshimath. The committee put forth several recommendations.
- **Imposition of Restrictions on Heavy Construction:**
  - Construction should only be allowed after examining the load-bearing capacity of the soil and the stability of the site, and restrictions should also be imposed on the excavation of slopes.
- **Keeping the Boulders:**
  - In the landslide areas, stones and boulders should not be removed from the bottom of the hill as it would remove toe support, increasing the possibility of landslides.
- **Conserving of Trees:**
  - It has also advised against cutting trees in the landslide zone. Extensive plantation work should be undertaken in the area to conserve soil and water resources.
- **Preventing Water Seepage:**
  - To prevent any more landslides in the future, the seepage of open rainwater must be stopped by the construction of a pucca drainage system.
- **River Training:**
  - The construction of structures to guide the river's flow should be carried out. Hanging boulders on the foothills should be provided with appropriate support.



Note:

# Interplay of Heat Waves, Anticyclones and Global Warming

## Why in News?

As the world grapples with the waning phase of the strong **El Niño of 2023**, the **India Meteorological Department** has warned of severe **heatwave conditions** affecting extensive areas of eastern India and the **Gangetic Plain**.

- This highlights the challenge of understanding how **global warming** affects local weather. Additionally, the presence of **anticyclones** further complicates the situation, exacerbating the severity of heat waves in affected areas.


## What Role Do Heat Waves Play in Global Warming?

- Heat waves result from **climate change**, caused by the burning of **fossil fuels** that add **Greenhouse Gases (GHG)** to the atmosphere.
  - These **gasses trap more heat energy**, increasing average and extreme temperatures.
- GHG emissions from human activities have **heated the planet by about 1.2 degrees Celsius** since pre-industrial times.
  - That warmer baseline means higher temperatures can be reached during extreme heat events.
- Global warming causes **uneven temperature changes across regions**, leading to **local variations in heat waves**.
  - Despite some areas experiencing cooler temperatures, **global warming can create conditions that intensify heat waves locally**, influenced by land use and geography.

- Understanding these local effects is important for accurate forecasting and effective heat wave mitigation.

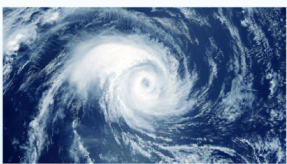
## What is an Anticyclone?

- **High-Pressure Systems:** Anticyclones are areas of high atmospheric pressure, the opposite of cyclones (low pressure).
- **Wind Circulation:** Winds blow **clockwise** around an anticyclone in the Northern Hemisphere and **counterclockwise** in the Southern Hemisphere due to Earth's rotation (**Coriolis Effect**).
- **Clear Skies and Calm Weather:** Anticyclones bring stable, calm conditions with little wind and clear skies.
- **Dry Air:** Sinking air in anticyclones warms up and dries out, leading to less rain and humidity.
- **Summer vs. Winter Effects:** Summer anticyclones can be hot and sunny, while winter anticyclones can be cold and clear with morning frost.



## CYCLONE

Cyclones are rapid **inward** air circulation around a **low-pressure** area.

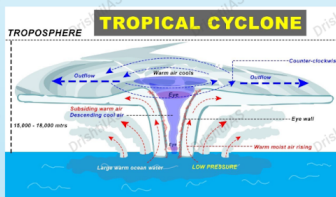


### Cyclone v/s Anticyclone

Pressure System	Pressure Condition at the Center	Pattern of Wind Direction	
		Northern Hemisphere	Southern Hemisphere
Cyclone	Low	Anticlockwise	Clockwise
Anticyclone	High	Clockwise	Anticlockwise

### Classification

- **Tropical Cyclones;** originate between the Tropics of Capricorn and Cancer
- **Extra Tropical/ Temperate Cyclones;** originate in the Polar Regions



#### Conditions for Formation

- Large sea surface with temperature >27° C.
- Presence of the **Coriolis force**
- Small **variations in the vertical wind speed**
- A **pre-existing weak low- pressure area**
- **Upper divergence** above the sea level system

#### Different Names for Tropical Cyclones

- **Typhoons** - Southeast Asia and China
- **Hurricanes** - North Atlantic and eastern Pacific
- **Tornados** - West Africa and southern USA
- **Willy-willies** - Northwest Australia
- **Tropical Cyclones** - Southwest Pacific and Indian Ocean

#### Nomenclature

- Nodal Authority - **World Meteorological Organization (WMO)**
- Indian Ocean Region - **Bangladesh, India, Maldives, Myanmar, Oman, Pakistan, Sri Lanka and Thailand** contribute to naming cyclones that occur in this region.

#### Cyclones in India

- **Bi-annual Cyclone Season** - March to May and October to December
- Recent Cyclones - **Tauktae, Vayu, Nisarga and Mekanu** (in Arabian Sea) and **Asani, Amphan, Fani, Nivara, Bulbul, Titli, Yaas and Sitrang** (in Bay of Bengal)

Note:



### What Links Anticyclones to Heat?

#### ➤ Anticyclones and Heat:

- Anticyclones are linked to heat through their **persistence and strength**.
- During the pre-monsoon season, the **Indian Easterly Jet (IEJ)** and a **strong westerly jet** can generate an anticyclonic pattern over the Indian Ocean and the Indian subcontinent.
  - A strong anticyclone can bring dry and hot weather over many parts of India, while a **weak anticyclone produces milder weather**.
  - IEJ is a narrow belt of strong easterly winds in the mid-troposphere that blows over peninsular India and the adjoining south Indian Ocean during the **pre-monsoon season (March-May)**.
    - It is weaker and smaller than the well-known **African Easterly Jet (AEJ)**.
    - AEJ occurs in the **lower troposphere over West Africa**. It is characterized by easterly winds and is most prominent during the summer months.
    - It is formed due to the temperature contrast between the hot **Sahara Desert** and the cooler **Gulf of Guinea**.

#### ➤ Impact of Anticyclones on Weather Patterns:

- Strong IEJ years lead to **higher near-surface temperatures** and drier conditions in India, while weak IEJ years result in cooler and wetter conditions.
- The strength of the anticyclone in a particular year is a key factor in determining whether it is related to heat waves and global warming.
  - The impact of El Niño on the Indian subcontinent tends to **produce stronger and more persistent anticyclones**, leading to longer-lasting and more intense heat waves.
- Understanding the background state of cool seasonal temperatures and strong, persistent anticyclones is essential for **accurate weather predictions and early warnings**.

#### ➤ Recent Impact of Anticyclones:

- The recent **anticyclonic circulations over the North Indian Ocean** were responsible for **abnormal rainfall in Odisha in March 2024**. Anticyclones, characterized by clockwise winds and sinking air, can create **high-pressure heat domes**.
  - This phenomenon may have also contributed to **floods in Dubai** in April 2024.

### Early Warning Systems

- Accurate early-warning systems for global warming use a **three-step approach** called the **'ready-set-go' system**.
- The approach is part of the **'Subseasonal-to-Seasonal Predictions (S2S)' project** of the **World Climate Research Program** under the **World Meteorological Organisation**.
  - India is part of this project and has invested heavily in S2S predictions.
- The three-step approach is important for guiding the **National Disaster Management Agency (NDMA)** to function efficiently and effectively.
  - The 'ready' step provides a **seasonal outlook based on external factors** such as global warming and El Niño.
  - The 'set' step involves sub seasonal **predictions for weeks two to four**, contributing to resource allocations and identifying potential hotspots.
  - The 'go' step is based on **short- and medium-range forecasts** and involves managing disaster response efforts.
- However, the challenge lies in **enhancing local-level weather predictions**. Efforts are underway to forecast weather trajectories over a 10-year span.
  - Coordination and early warning mechanisms are being developed at different levels, requiring training and engagement of governments, departments, and the public.
- The success of these systems is crucial for India's sustained economic development.

## Eta Aquariid Meteor Shower

### Why in News?

The **Eta Aquariid meteor shower**, associated with **Halley's Comet**, occurred on the 5<sup>th</sup> and 6<sup>th</sup> of May 2024, offering a celestial spectacle for skywatchers worldwide.

### What is the Eta Aquariid Meteor Shower?

- The Eta Aquariid meteor shower occurs annually during early May. This event is characterised by its rapid meteors, **originating from the debris left behind by Comet Halley**, resulting in long-lasting, glowing tails.
- Approximately 30 to 40 Eta Aquariid meteors can be seen per hour during the peak, particularly visible from the **Southern Hemisphere**.

Note:

- The Southern Hemisphere offers a more favourable viewing experience due to the **higher position of the constellation Aquarius**, the radiant of the meteor shower.
  - In the Northern Hemisphere, observers may witness **"Earthgrazers,"** long meteors skimming the horizon.
- The radiant of the Eta Aquarids is in the **constellation Aquarius**, and the meteors appear to come from the area around the **star Eta Aquarii**.
  - This star and the constellation give the shower its name: **Eta Aquarids**.

#### The Comet 1P/Halley

- Comet Halley (1P/Halley), discovered by **Edmund Halley in 1705**, orbits the Sun approximately every 76 years. The **only naked-eye comet** that can appear twice in a human lifetime.
  - Its dusty trail produces the **Eta Aquariids** in May and the **Orionids in October** when Earth passes through these debris fields.
- Notably, Halley's last appearance visible to casual observers was in 1986, and it won't return until 2061.
- Comet Halley's is one of the **least reflective, objects** in the solar system, with an albedo of 0.03.

#### What are Comets?

- **About:**
  - Comets are frozen remnants from the early days of the solar system, composed of dust, rock, and ice. They orbit the Sun in highly elliptical paths.
  - Comets emit gas and dust when heated by the Sun, forming a glowing head and a tail.
  - According to NASA, a billions of comets orbiting the Sun beyond Neptune, in the **Kuiper Belt** and distant **Oort cloud**.
- **Meteor Showers Relation to Comets:**
  - **Meteors originate from remnants of comets** and broken asteroids. They are tiny grains of dust or rock that burn up as they enter Earth's atmosphere, creating brief tails of light.

#### Key Terms

- **Meteoroid and Meteorite:**
  - Meteoroids are space rocks that range in size from dust grains to small asteroids.
    - This term only applies when these rocks are still in space.

- When **meteoroids enter Earth's atmosphere** at high speed and burn up, they're called **meteors**.
- If a **meteoroid doesn't burn up completely in Earth's atmosphere** and reaches the ground, it is called a **meteorite**.

#### ➤ Constellation:

- It is a group of stars that form a **recognizable pattern** in the night sky.
  - It have been used for centuries by different cultures for navigation, storytelling, and keeping track of time.

#### ➤ Kuiper Belt:

- It is a region of the **solar system beyond Neptune's orbit**. It is a vast, icy realm that is home to thousands of icy objects, including dwarf planets like Pluto, comets, and **Kuiper Belt Objects (KBOs)**.

#### ➤ Oort Cloud:

- It is a giant, spherical cloud of icy objects that surrounds the **solar system at a much greater distance than the Kuiper Belt**.
  - The Oort Cloud is thought to be the source of long-period comets, which are comets that take thousands or even millions of years to orbit the Sun.

## Expanding Glacial Lakes in the Himalayas

### Why in News?

Recently, satellite monitoring data by the **Indian Space Research Organisation (ISRO)** has shown a large expansion in glacial lakes between 1984 and 2023 in the **Himalayan region**, which has posed an alarming situation for the downstream areas.

### What are ISRO's Observation on Expansion of Himalayan Glaciers?

#### ➤ Key Findings:

- Of the 2,431 lakes larger than 10 hectares identified during 2016-17, **676** glacial lakes have notably expanded since 1984.
  - 130 of these lakes are situated within India, with 65, 7, and 58 lakes located in the **Indus, Ganga, and Brahmaputra** River basins, respectively.

Note:

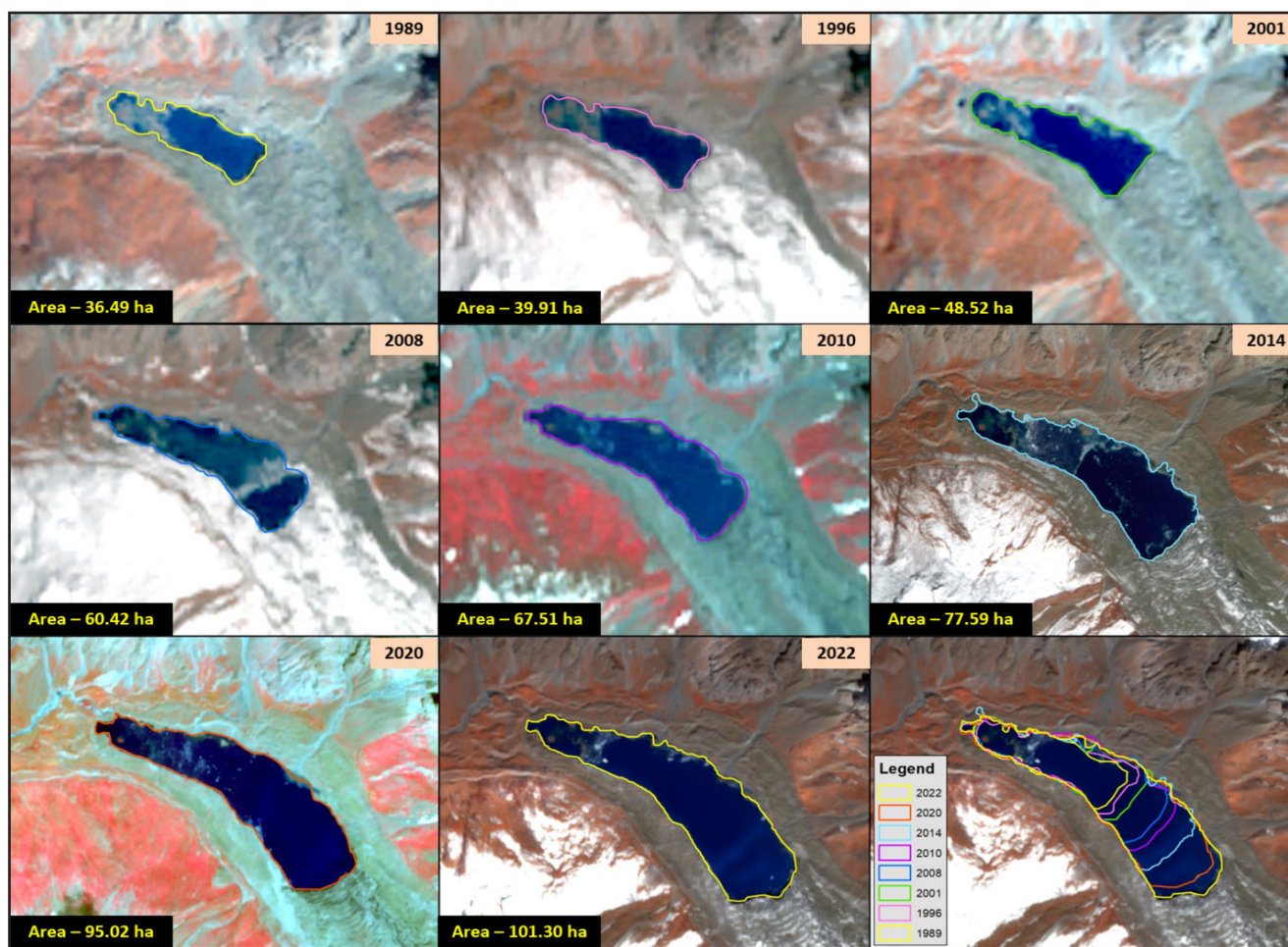


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- Of these lakes 601 lakes (89%) have expanded more than twice, 10 lakes have grown between 1.5 to 2 times and 65 lakes at 1.5 times.
- **Elevation-based analysis reveals** that 314 lakes are located in the 4,000 to 5,000 m range and 296 lakes are above 5,000 m elevation.
- Long-term changes in the **Ghepang Ghat glacial lake (Indus River Basin)** at an elevation of 4,068 m in Himachal Pradesh, India, show a **178% increase** in size from 36.49 to 101.30 hectares between 1989 and 2022.

#### ➤ Types and Number of Glacial Lakes in Himalayas:

- **Moraine-dammed (307):** They are formed when piles of rocks and debris (moraines) left behind by retreating glaciers block valleys, creating natural dams that hold back meltwater.
- **Ice-dammed (8):** They are formed when a glacier itself acts as a dam, blocking the flow of meltwater.
- **Erosion (265):** These lakes occupy depressions carved directly into bedrock by glaciers.
- **Other Glacial lakes (96)**



#### What are the Causes of Expanding Glacial Lakes in Himalayas?

- **Global Warming:** It is causing temperatures to rise in the Himalayas, leading to increased **melting of glaciers**. This meltwater feeds into existing glacial lakes, causing them to expand in size.
- **Retreating Glaciers:** As glaciers melt, they not only contribute water to the lakes but also expose new

land surfaces. This allows for the formation of new glacial lakes.

- **Weakening Moraines:** Glaciers are often dammed by natural walls of rock and debris called **moraines**.
  - As glaciers shrink, these moraines become weaker and more susceptible to collapse. A sudden collapse can trigger a **Glacial Lake Outburst Flood (GLOF)**, a catastrophic event where a large volume of water is released downstream.

Note:



- **Increased Precipitation:** Changes in precipitation patterns, including increased rainfall and snowfall in the region, can contribute to the expansion of glacial lakes by providing more water to fill them.
- **Permafrost Thaw:** Permafrost, which is soil that remains frozen year-round, acts as a natural barrier to water drainage.
  - As permafrost thaws due to warming temperatures,

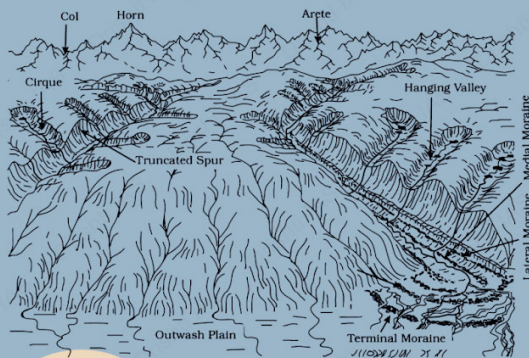
it can create depressions that collect water, contributing to the expansion of glacial lakes.

- **Human Activities:** Infrastructure development, such as roads and hydropower projects, can alter the natural drainage patterns of glacial lakes, leading to their expansion.
  - Additionally, activities such as mining and deforestation can indirectly contribute to glacial lake expansion by accelerating climate change.

# GLACIAL LANDFORMS

“Glacier is any large mass of perennial ice that originates on land by the recrystallisation of snow or other forms of solid precipitation”

## EROSIONAL LANDFORMS



**Cirque/  
Cirque/ Cwm**

- Small glaciers and are characteristically bowl-shaped
- Found at the heads of glacial valleys

**Horns and Serrated Ridges**

- Form through headward erosion of the cirque walls
- Present in areas where multiple glaciers flow in multiple directions

**Glacial Valleys /Troughs**

- Trough-like and U-shaped with broad floors and relatively smooth, and steep sides
- Fjords are deep glacial troughs filled with seawater, forming shorelines

**Bergschrund**

- A crevasse/crack or series of crevasses often found near the head of a mountain glacier

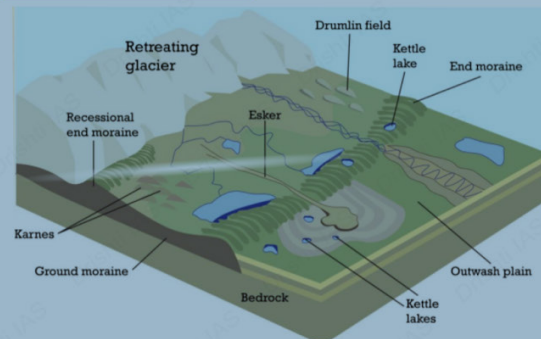
**Hanging Valley**

- Form when glacier ice deeply erodes a main or trunk valley, leaving tributary valleys hanging far above the main valley floor.

**Crag and Tail**

- **Crag:** Mass of hard rock with a precipitous slope.
- **Tail:** Formed by the deposition of glacial debris or till as the glacier retreats.

## DEPOSITIONAL LANDFORMS



**Moraines**

- **Lateral Moraines:** Form on the sides of glaciers
- **Ground Moraines:** Deposits varying greatly in thickness and in surface topography
- **Medial Moraines:** Form where two tributary glaciers come together

**Eskers**

- Winding ridges of sand and gravel formed by streams flowing within or beneath glaciers

**Outwash Plains**

- Deposit of sand and gravel carried by running water from the melting ice of a glacier

**Drumlins**

- Hills of sediment that have been streamlined by glacier flow.
- Up to 1 km in length and 30 m or so in height
- So commonly described as having a *basket of eggs* topography



Note:



### Recent Cases of GLOF in India

- In June 2013, **Uttarakhand** had received an **unusual amount of rainfall** leading to the melting of the Chorabari glacier and the eruption of the Mandakini river.
- In August 2014, a glacial lake outburst flood hit the village of Gya in **Ladakh**.
- In February 2021, **Chamoli district in Uttarakhand** witnessed **flash floods** which are suspected to have been caused by GLOFs.
- In October 2023, the South Lhonak Lake, a glacial lake located at an altitude of 17,000 feet in the state's northwest, **experienced a rupture as a result of continuous rainfall**.

## INCOIS Study on Indian Ocean Floor Mapping

### Why in News?

Recently, scientists at the **Indian National Centre for Ocean Information Services (INCOIS)** conducted a study on the mapping of the **Indian Ocean floor** to delve deeper into **ocean currents** and dynamics.

#### Note:

- ESSO-INCOIS was established as an **autonomous body in 1999 under the Ministry of Earth Sciences (MoES)** and is a unit of the Earth System Science Organisation (ESSO). It is located in Hyderabad.
- ESSO- INCOIS is mandated to provide the best possible ocean information and advisory services to society, industry, government agencies and the scientific community through sustained ocean observations and constant improvements through systematic and focused research.

### What are the Key Highlights of the Study?

- **Influence of Islands on Currents:**
  - The study reveals that the **Andaman and Nicobar Islands**, along with the **Maldives**, significantly influence the direction and speed of Indian Ocean currents, creating **deep-swirling patterns opposite to surface currents**.

### ➤ Improved Modelling with Accurate Bathymetry:

- Previous ocean modelling systems underestimated observed coastal currents around India.
- Incorporating accurate **bathymetry** data led to:
  - Better predictions of upper ocean salinity, temperature, and currents near the coast.
  - More realistic estimation of the **East India Coastal Current (EICC)** flow at deeper depths (1,000 and 2,000 metres), which flows opposite to the surface currents.
    - The EICC is the western boundary current of the **Bay of Bengal**. It's a powerful current that **reverses its direction twice a year**, playing a crucial role in the ocean circulation of the region.
    - The surface flow of the EICC from February to September, it flows **northeastward along the Indian coast**. From October to January, the flow reverses **southward along both the Indian and Sri Lankan coasts**.
- Identification of a boundary current along the Andaman and Nicobar Islands coast at a depth of 2,000 metres.
- Understanding the Maldives Islands' influence on the **Equatorial Under Current (EUC)**.
  - EUC is a permanent **eastward-flowing current in the Atlantic and Pacific Oceans** and is present in the Indian Ocean during the northeast monsoon in spring and winter.
- The presence of the Maldives Islands affects the westward extent of the EUC, with variations in depth and definition between seasons.

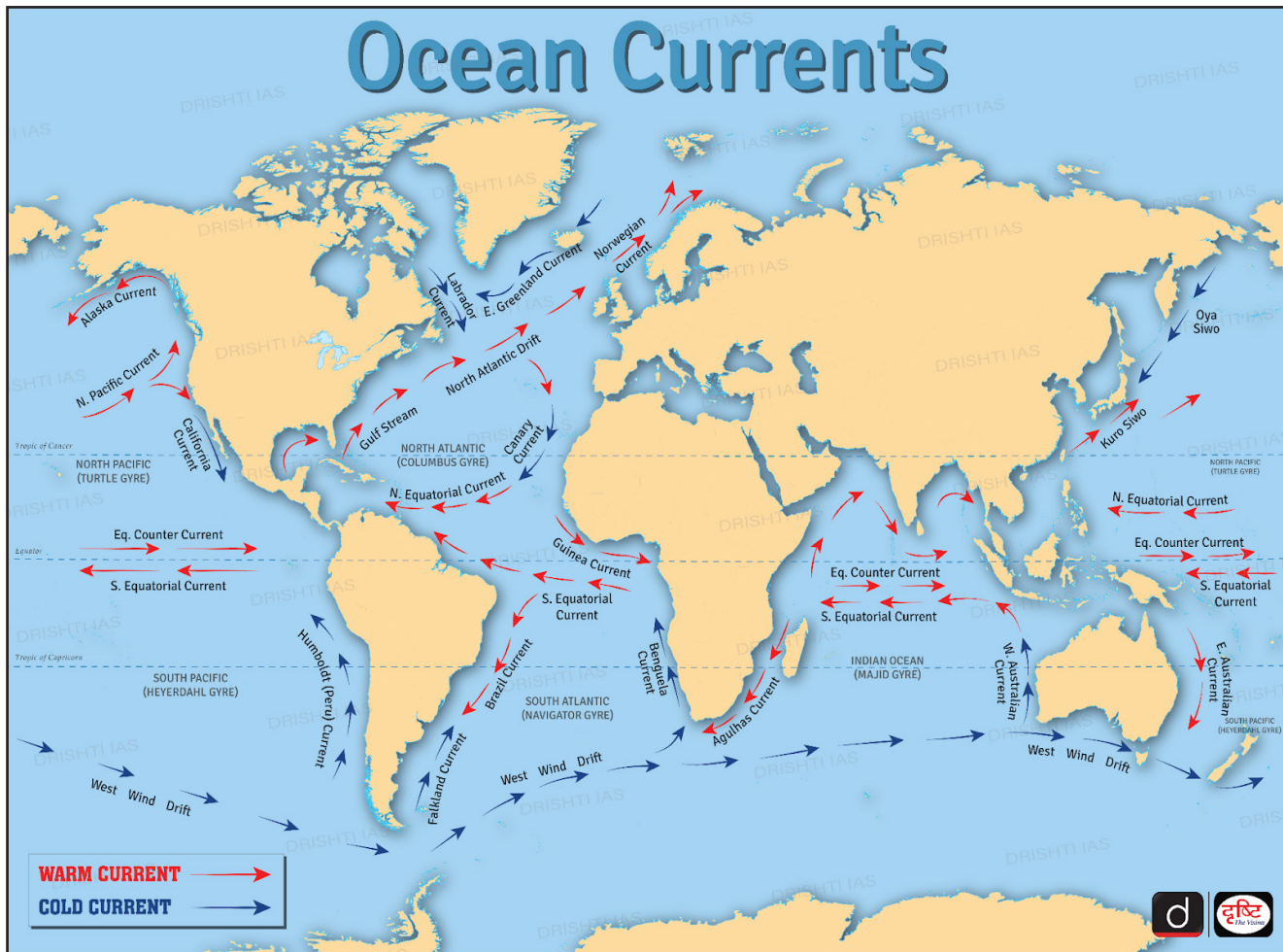
### ➤ Importance for Forecasting:

- Accurate oceanographic forecasting is essential for the maritime industry and has significant economic benefits.
- Accurate ocean forecasts vital for weather, climate, and maritime industry. Improved observations and models are key for precision predictions.

### ➤ Advancing Ocean Dynamics Understanding:

- The study highlights the importance of incorporating accurate bathymetry data into ocean circulation models. Aids in forecasting for Indian subcontinent and nearby regions.

Note:



### What is Bathymetry?

- Bathymetry is the study and mapping of the underwater topography of water bodies, such as oceans, rivers, lakes, and streams.
  - It involves measuring the depth of the water and is similar to mapping the topography of land.
  - Bathymetric maps use contour lines to show the shape and elevation of underwater terrain.
- Bathymetry is the foundation of the science of hydrography, which measures the physical features of a water body.
  - Hydrography includes not only bathymetry, but also the shape and features of the shoreline; the characteristics of tides, currents, and waves; and the physical and chemical properties of the water itself.

## Indian Ocean Warming Accelerates

### Why in News?

Recently, an Indian Institute of Tropical Meteorology (IITM), Pune indicates a tenfold increase in **marine heatwaves**, potentially intensifying **cyclones**, with a rise from 20 days to 220–250 days per year.

### What are the Key Findings of the Report?

- **Increase in Ocean Temperature:**
  - **Rapid Warming:** The **Indian Ocean's** temperature has risen by 1.2°C from 1950 to 2020 and is projected to increase further by 1.7°C to 3.8°C from 2020 to 2100.
  - **Marine Heatwaves:** Predictions indicate an increase in **marine heatwave** days from an average of 20 days per year to 220–250 days per year.

Note:

- These heatwaves are linked to **quicker cyclone formation** and can lead to a nearly **permanent heatwave state** in the **tropical Indian Ocean**.
  - The frequent and intense heat waves are likely to accelerate **coral bleaching**, destruction of **seagrass**, and loss of **kelp forests**, which are crucial to the **fisheries sector**.
- **Changes in Heat Content of the Ocean:**
- **Deep Ocean Warming:** The increase in temperature extends beyond the surface down to depths of 2,000 meters, escalating the overall heat content of the ocean.
    - The heat content of the Indian Ocean is currently **increasing at a rate of 4.5 zetta-joules per decade** and is expected to grow at a rate of 16–22 zetta-joules per decade in the future.
  - **Energy Comparison:** The projected increase in **heat content** is likened to the energy released by **one Hiroshima atomic bomb detonation every second, continuously for ten years**.
- **Sea-Level Rise and Thermal Expansion:**
- Increasing heat content leads to sea-level rise primarily through **thermal expansion**, which accounts for over **half of the sea-level rise** in the Indian Ocean, surpassing the **effects of glacier** and sea-ice melting.
- **Changes in Indian Ocean Dipole (IOD) and Monsoon Patterns:**
- **IOD Alterations:** Due to the rise in the ocean's heat content **Indian Ocean Dipole**, a significant factor in determining monsoon strength, is likely to experience a 66% increase in **extreme events** and a 52% decrease in moderate events by the end of the 21<sup>st</sup> century.
  - **Implications for Monsoons:** These changes are critical as positive phases of the dipole, characterized by warmer temperatures in the western half, are favourable for the **summer monsoon**.
- **Future Outlook:**
- Despite ongoing heatwaves, an "above-normal" monsoon is expected for June-September 2024 partially due to a positive phase of the IOD.

Difference Between Land Heatwave and Marine Heatwave

Feature	Land Heatwave	Marine Heatwave
Medium	Air temperature	Ocean surface water
Duration	Days or weeks	Weeks or months
Identification	Exceeds high-temperature threshold	Abnormally high sea surface temperatures
Impacts	Heat stress, dehydration, wildfires, power outages	Disrupted marine ecosystems, harm to marine life, influences weather patterns (potentially intensifying cyclones)

### How do Rising Sea Levels Impact India?

- **Rate of Sea Level Rise:**
- According to the **Ministry of Earth Sciences**, on average, the sea level along the Indian coast was observed to be **rising at a rate of about 1.7 mm/year** during the last century (1900-2000).
  - **A 3 cm sea level rise could cause** the sea to intrude inland by about 17 meters.
- **India is more Susceptible:**
- India is most vulnerable to the compounding impacts of sea level rise.
  - In the Indian Ocean half of the sea level rise is due to the volume of water expanding since the ocean is warming up rapidly. The contribution from **glacier melt** is not as high.
  - The Indian Ocean is the **fastest-warming ocean** in terms of surface warming.
- **Implications:**
- India is facing compound **extreme events** along our coastline. **Cyclones** are **intensifying** rapidly due to **more moisture** and heat from **ocean warming**.
  - The amount of flooding also increases because storm surges are compounding sea level rise decade by decade.
  - Cyclones are bringing more rain than earlier.
    - **Super Cyclone Amphan (2020)** caused large-scale flooding and inundated tens of km inland with saline water intruding.
  - Over time, the **Indus, Ganga**, and **Brahmaputra** rivers may shrink, and rising sea levels combined with a deep intrusion of saltwater will make large parts of their huge deltas simply uninhabitable.

Note:

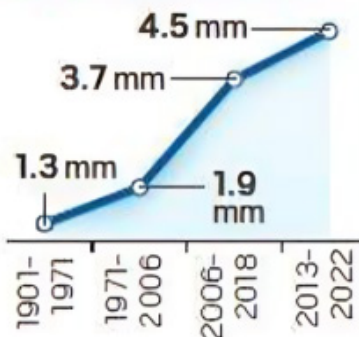


## RISE IN SEA-LEVEL OVER THE YEARS

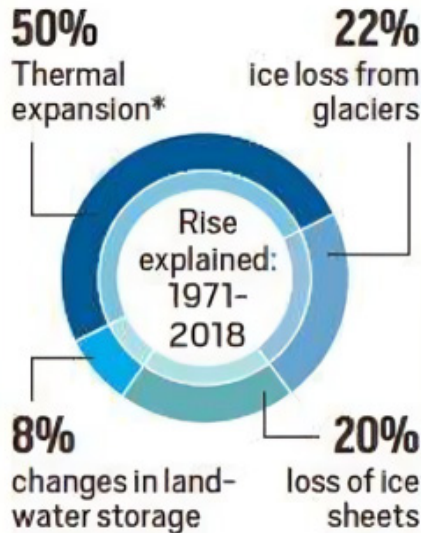
### WHAT

**0.20 METRES** Global mean sea-level rise from 1901 to 2018

### AVERAGE RATE OF RISE ANNUALLY



### WHY



\*when water gets warmer, it causes volume of water to increase

### HOW

"There is a risk of a much higher sea-level rise due to potential intrusion of sea water under the Antarctic glaciers, as NASA has demonstrated in its recent published scientific studies.... Human influence was very likely the main driver of these increases (in sea level) since at least 1971."

### NOW

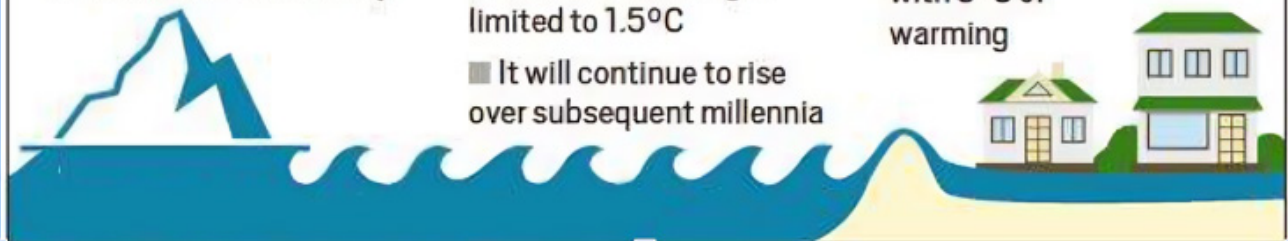
■ WMO finds it is virtually certain that global mean sea-level will continue to rise over the 21st century

■ Over the next 2,000 years, global mean sea-level will rise by about 2 to 3 metres if warming is limited to 1.5°C

■ It will continue to rise over subsequent millennia

■ Will rise 2 to 6 metres if limited to 2°C

■ Rise 19 to 22 metres with 5°C of warming



### Steps Taken by India

- **Monitoring and Research:**
  - [Indian National Centre for Ocean Information Services \(INCOIS\)](#)
- **Cyclone Preparedness:**
  - [National Disaster Management Authority \(NDMA\)](#)
  - [IMD Cyclone Warnings](#)

### Additional Measures:

- [National Missions on Climate Changer](#)
- [Coalition for Disaster Resilient Infrastructure](#)
- [Renewable Energy Target](#)
- [National Hydrogen Mission](#)
- [Amrit Dharohar Scheme](#)

Note:



## What are the Ways to Tackle the Threat of Marine Heatwaves and Intensifying Cyclones?

### ➤ Mitigation Strategies:

- **Emission Reduction Strategies:** Adopt and advocate for policies similar to the **European Union's Emissions Trading System (ETS)**.
  - The ETS is a **cap-and-trade scheme** that incentivises industries to reduce **greenhouse gas emissions**, combating the root cause of marine heat waves.
- **Renewable Energy Integration:** Invest in and promote renewable energy sources like Germany's transition towards solar and wind power.
  - This reduces dependence on fossil fuels and lessens the long-term impact on ocean temperatures.

### ➤ Early Warning Systems and Preparedness:

- **Advanced Monitoring:** Emulate programs like Australia's **Integrated Marine Observing System (IMOS)**.
  - IMOS utilises a **network of buoys, ships, and satellites** to collect real-time oceanographic data, providing crucial insights into marine heat waves and cyclone development.
- **Predictive Modeling:** Leverage advancements like the **National Oceanic and Atmospheric Administration's (NOAA)** hurricane seasonal outlooks.
  - By **statistically analysing** atmospheric and

oceanic data, NOAA provides forecasts for cyclone activity, allowing for better preparedness.

### ➤ Coastal Resilience Measures:

- **Mangrove Restoration:** Implement initiatives like **Bangladesh's efforts** to restore mangrove forests.
  - Mangroves act as **natural barriers**, mitigating storm surges and protecting coastal communities from cyclones.
- **Infrastructure Improvements:** Strive for advancements akin to the Netherlands' **robust seawall network**.
  - Well-maintained seawalls and levees can significantly **reduce cyclone damage** to coastal infrastructure and settlements.

### ➤ International Collaboration:

- **Data Sharing and Research:** Foster open exchange of scientific data, similar to the **Global Ocean Observing System (GOOS)**.
  - GOOS facilitates international collaboration in ocean observations, leading to a better understanding of marine heatwaves and cyclone development.
- **Capacity Building:** Provide **technical and financial assistance** to developing countries, akin to the **World Meteorological Organization's (WMO)** Tropical Cyclone Programme.
  - This program equips vulnerable nations with resources and expertise to prepare for and respond to cyclones.



Note:

# Ethics

## Highlights

- Criminalisation of Politics

## Criminalisation of Politics

### Why in News?

Recent cases of alleged sexual harassment of women on the various MP, MLA and government employees, sheds light on a concerning aspect of criminalisation of politics and the ethical issues involved like moral responsibility, failure to uphold professional ethics etc.

### What does the Criminalisation of Politics Mean?

- **About:**
  - **Criminalisation of politics** is when **people with criminal charges or backgrounds** become politicians and are elected to office.
  - It can affect the basic principles of democracy, such as fairness in elections, accountability, and following the law.
  - This growing menace has become a big problem for our society, affecting the basic principles of democracy, such as fairness in elections, following the law, and being accountable.
- **Statistics:**
  - According to data from the **Association for Democratic Reforms (ADR)**, the number of candidates with **criminal charges** being elected to Parliament in India has been on the rise since 2004.
  - In the **2009 Lok Sabha**, **30%** of parliamentarians had pending criminal cases, which rose to **34%** in the 2014 Lok Sabha.
  - In the **2019 Lok Sabha**, **233 (43%)** of 543 Lok Sabha members faced criminal charges.
    - In the 2019 Lok Sabha elections, **112 MPs (21%)** faced **serious criminal cases** against them, including those of **rape, murder**, attempt to murder, kidnapping, crimes against women.

### What are the Causes of Increasing Criminalisation of Politics?

- **Nexus between Politicians and Criminals:**
  - Many politicians in India have established close ties with criminal elements, often using their money and muscle power to win elections.
- **Weak Law Enforcement and Judicial System:**
  - The Indian criminal justice system is often characterised by slow, inefficient, and corrupt processes, making it difficult to effectively prosecute and convict politicians with criminal backgrounds.
    - A report by the **National Crime Records Bureau** revealed that the **conviction rate for crimes** committed by Members of Parliament and State Legislatures was **only 6% in 2019**.
- **Lack of Internal Party Democracy:**
  - Many political parties in India have **weak internal democratic structures**, allowing party leaders to handpick candidates, including those with **criminal backgrounds**, based on their **ability to win elections rather than their integrity**.
  - This lack of internal party democracy **undermines the ability of citizens** to hold their **representatives accountable**.
- **Voter Apathy and Lack of Political Awareness:**
  - Some voters, particularly in rural and impoverished areas, may prioritise immediate **tangible benefits** provided by criminal-backed candidates over long-term considerations of good governance and the rule of law.

### What are the Ethical Issues Associated with Criminalisation of Politics?

- **Absence of Non-partisanship and Accountability:**
  - The **failure to address misconduct** within the political class, underscores a lack of accountability and ethical standards.

Note:

- Examples of MPs facing serious criminal charges reveal a pattern of defending individuals accused of serious offences relating to women, indicating the **separation from ethical norms** across party lines.
- This separation often originates from **intense partisanship** and prioritisation of power over ethical conduct.
- **Lack of Democratic Accountability through Public Outrage:**
  - **Public outrage often serves as the catalyst** for action within political parties, as seen in the case of Prajwal Revanna.
    - However, the reactive nature of political responses to scandals highlights a broader **issue of accountability** within democratic systems.
  - Despite knowledge of misconduct, parties often remain inactive until forced to address public outcry, emphasising the need for more robust mechanisms of accountability beyond public pressure.
- **Culture of Impunity and Individual Accountability:**
  - A culture of impunity diffuses through the political sphere, where norms and rules are **inconsistently enforced**, placing the burden of accountability on individual women.
  - Despite systemic failures, **courageous women** like the complainant against Revanna or the **Unnao rape survivor** have played pivotal roles in holding perpetrators accountable.
  - However, the **high personal costs of pursuing justice** highlight the **need for systemic reforms** to address impunity and ensure genuine accountability within the political sphere.
- **Women's Empowerment as a Fallacy:**
  - Despite widespread agendas on women's empowerment, substantive progress on **women's issues** such as **respect, equality, and security** remains unaddressed.
    - While **women are mobilized as voters and beneficiaries of welfare schemes**, their **collective concerns** often remain on the periphery of political agendas.
  - The gap between promises made and action undermines the potential for meaningful progress on women's issues within the political sphere.
- **Representation vs Empowerment:**
  - **Equitable representation alone is insufficient** for true political empowerment of women. True

empowerment requires the ability to set and enforce **normative ethical and moral standards**.

- The disconnect between representation and empowerment is evident in the limited impact of bodies like the **National Women's Commission**, **National Human Rights Commission (NHRC)** etc

➤ **Nonpartisanship** refers to the state of not being affiliated with or biased toward any particular political party or ideology. It is the idea of being neutral and unbiased in political matters, and not taking sides with one party or another.

### ***What are the Ethical Implications of Criminalisation of Politics?***

#### ➤ **Societal Perspective:**

- **Erosion of Moral Fabric:** When people with criminal backgrounds hold power, it sends a message that lawbreaking is acceptable, potentially leading to a **decline in societal ethics** and respect for the law.
- **Reduced Civic Participation:** There is a **high chance of erosion of trust in the democratic process**. Citizens will be less likely to vote or participate in civic life if they believe the system is corrupt and unresponsive.
- **Inequality and Exclusion:** Criminalization can **disproportionately affect marginalised communities**, limiting their representation and hindering progress on issues relevant to them.
- **Focus on Short-Term Gains:** Politicians with criminal backgrounds can **prioritise personal gain or quick fixes** over long-term societal development.

#### ➤ **Democratic Perspective:**

- **Undermines Democratic Principles:** A core principle of democracy is electing representatives who can uphold the law. Politicians with criminal backgrounds **lack essential ethical qualities of integrity and honesty** which may lead to favouritism and unfair law-making.
- **Free and Fair Elections:** Criminalization can distort electoral processes through **money laundering, muscle power**, and intimidation, hindering a fair chance for honest candidates.
- **Accountability and Transparency:** When criminals hold office, they are less likely to face scrutiny or be held accountable for their actions, **reducing transparency in governance**.

Note:

- **Challenges to India's Development:** Criminalization can hinder India's development by **diverting resources towards personal gain** or stalling crucial reforms due to vested interests.

#### What are the Constitutional and Legal Aspects of Disqualification of Criminal Candidates?

##### ➤ **About:**

- In this regard, **Indian Constitution does not specify** as to what disqualifies a person from contesting elections for the Parliament, Legislative assembly or any other legislature.
- The **Representation of Peoples Act 1951** mentions the criteria for disqualifying a person for contesting an election of the legislature.
  - **Section 8 of the act** provides for disqualification on conviction for certain offences, according to which an individual punished with a jail term of more than two years cannot stand in an election for six years after the jail term has ended.
  - However, the **law does not bar individuals** who have criminal cases pending against them from contesting elections therefore the disqualification of candidates with criminal cases depends on their conviction in these cases.

##### ➤ **Recommendations Against Criminalisation of Politics:**

- In **1983**, the **Vohra Committee on Criminalisation of Politics** was constituted with an objective to identify the extent of the political-criminal nexus and to recommend ways in which the criminalisation of politics can be effectively dealt with.
- The **Law Commission** submitted its 244<sup>th</sup> report in 2014 which dealt with the need to curb the trend of criminal politicians in the legislature posing serious consequences to democracy and secularism.
  - The Law Commission recommended disqualification of people against whom charges have been framed at least one year before the date of scrutiny of nominations for an offence punishable with a sentence of five years or more.
- In 2017, the Union government started a scheme to establish **12 special courts for a year to fast-track the trial of criminal cases against MPs and MLAs.**

##### ➤ **SC Judgements Regarding Criminalization of Politics:**

- **Association for Democratic Reforms v. Union of India (2002):**
  - In 2002, the SC ruled that every candidate contesting an election has to declare his criminal and financial records along with educational qualifications.
- **PUCL v Union of India (2004):**
  - The SC ruled that a law nullifying the requirement for election candidates to disclose their criminal records was unconstitutional. The Court said voters have a right to know about candidates' backgrounds for fair elections.
- **Ramesh Dalal vs. Union of India (2005):**
  - In 2005, the SC had ruled that a sitting MP or MLA will be disqualified from contesting the election if convicted and sentenced for imprisonment for two years or more by a court of law.
- **Lily Thomas v. Union of India (2013):**
  - The SC has declared that any member of parliament or state legislative assembly who is convicted of a crime and sentenced to a prison term of two years or more would be disqualified from holding office.
- **Manoj Narula v. Union of India (2014):**
  - The five-judge bench of the Supreme Court held that a person cannot be disqualified from contesting elections merely because they have been charged with a criminal offence.
  - However, the court also held that political parties must not field candidates who have a criminal background.
- **Public Interest Foundation v. Union of India (2018):**
  - The SC has ordered political parties to publish the criminal records of their candidates on their websites, social media handles, and newspapers.

Note:



drashti



# Miscellaneous

## Highlights

- Booker Prize's Link to Slavery

- World Press Freedom Day 2024

## Booker Prize's Link to Slavery

### Why in News?

The **Booker Prize**, one of the most prestigious awards in the literary world, has recently come under criticism for the historical links to **slavery** of its original sponsor, Booker Group.

- It's claimed that during the **early 1800s**, **George and Josias Booker**, the founders of the company, reportedly **enslaved close to 200 individuals**.

### What are the Key Facts About the Booker Prize?

- The prize was established in **1969** by **Tom Maschler** and **Graham C. Greene**.
- The Booker Prize is **awarded annually** to the author of the best eligible work of long-form fiction, written **originally in English** by an author of **any nationality**, and **published in the UK and/or Ireland**.
  - **The International Booker Prize** is a separate award for **translated works** into English.
- The winner of the Booker Prize receives a cash award of **50,000 Pounds**. Additionally, each of the shortlisted authors is awarded 2,500 Pounds.
  - Irish author **Paul Lynch** has won the **2023 Booker Prize for his novel 'Prophet Song'**.

### How Booker is Linked to Slavery and Indentured Labour?

- **Britain** gained control of **Guyana** through the **Treaty of Paris in 1815**.
  - **Guyana** is a country in **South America** bordered by Suriname to the east, Brazil to the south, and Venezuela to the west.
  - Its economy was driven by the **sugar and cotton**

**industries**, with **African slaves** providing labour in plantations.

- The use of **African slaves** in British Guyana reflects the history of slavery in the region during the 19<sup>th</sup> century.
- The **Booker Brothers Josias & George** were involved in the exploitative slave-based economy of British Guyana. In a cotton plantation, **they enslaved nearly 200 people**.
- After **slavery was abolished** in Guyana in **1834** and African slaves were emancipated, the **Booker brothers received compensation for 52 emancipated slaves, totalling 2,884 Pounds** (equivalent to 378,000 Pounds in 2020).
  - Bookers convinced the British government to finance voyages to collect replacement sugar workers from India.
  - This led to the **exploitation of Indian workers who faced debt and unemployment** due to the East India Company's policies and were sent to Guyana by the East India Company.
- The **indentured labour system** lasted till about the 1920s, leading to a significant migration of labourers from India to Guyana.
  - **People of Indian origin** are now the **single largest ethnic group in Guyana** due to the scale of migration.



Note:

## World Press Freedom Day 2024

### Why in News?

On the occasion of the **World Press Freedom Day Conference** on 3<sup>rd</sup> May 2024, the **United Nations Educational, Scientific and Cultural Organization (UNESCO)** released a new report indicating a rise in violence against environmental journalists worldwide.

- It highlighted increasing **violence against environmental journalists** worldwide with 44 journalists killed in 15 years.
- It shows the highest number of killings in **Asia and the Pacific region**.

### What is the World Press Freedom Index?

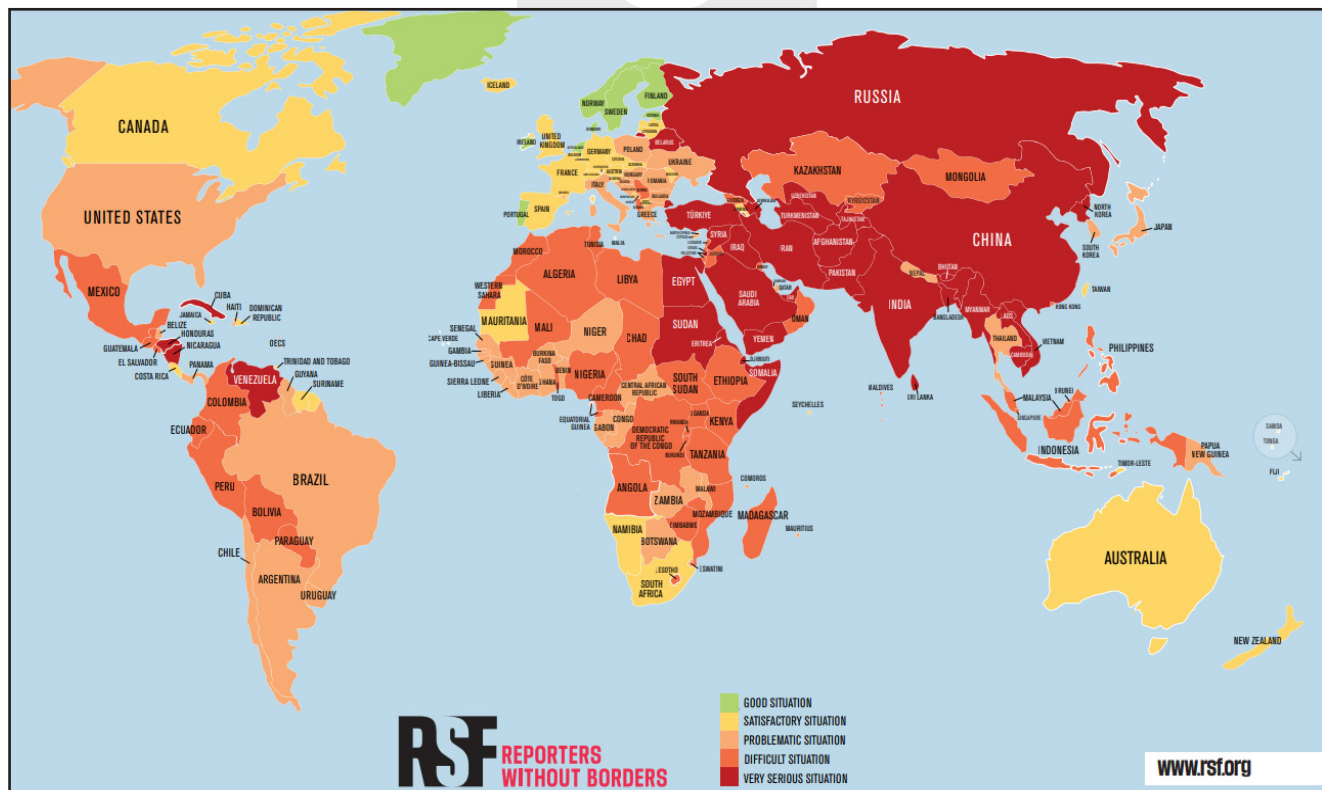
- **About:**
  - It is an annual report released by the global media watchdog **Reporters Without Borders (RSF)**.
- **India's score in 2024:**
  - India's position has seen a slight improvement

moving from **161 in 2023 to 159 among 180 countries** in 2024.

- Despite this upward shift in ranking, India's score witnessed a decline, dropping from **36.62 to 31.28** and scores decreased across all categories **except the security indicator**.
- According to RSF, press freedom is under threat in the world's largest democracy.
  - Since January 2024, 9 journalists and 1 media worker have been detained in India.
- Several laws such as the **Telecommunications Act 2023, the Draft Broadcasting Services (Regulation) Bill 2023, and the Digital Personal Data Protection Act 2023** extensively regulate media and censor news.
- This report highlighted that economic and political pressures limit the independence of the media.

### Global Score:

- In the 2024 report **Norway, Denmark and Sweden** maintain **1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup>** spots respectively. **Eritrea** was at the bottom of the list, with **Syria** just ahead of it.



Note:

**World Press Freedom Index (WPFI)**

- The **World Press Freedom Index (WPFI)** is an **annual ranking** of countries compiled and published by **RSF**, an international NGO based in **France, since 2002**.
- It exclusively **focuses on press freedom** and **does not evaluate the quality** of journalism or broader human rights violations within the countries it assesses.
- The press freedom questionnaire encompasses five key categories: **political context, legal framework, economic context, sociocultural context, and security**.



Note:

# Rapid Fire Current Affairs

## Highlights

- UNGA Resolution for Palestine's UN Membership Bid
- UN Body Defers NHRC Accreditation
- Silk Cotton Tree Under Threat
- UNESCO's Memory of the World Asia-Pacific Regional Register
- SBI Becomes First TCM Member at IIBX
- Superplasticizers in Concrete
- International Nurses Day 2024
- India's KABIL Eyes Lithium Acquisition in Australia
- China's Third Aircraft Carrier Completes Maiden Sea Trials
- Prerna Programme
- 5<sup>th</sup> Customs Meeting Between India and Bhutan
- Oleander Flowers
- International Thalassaemia Day
- Catatumbo Lightning
- Indian Naval Ships Strengthen Maritime Partnerships
- Heatwaves Causing Major Wildfires in Russia
- Green Milestone
- Batillipes Chandrayaani
- Atmosphere of a 55 Cancr i Exoplanet
- Kalesar Wildlife Sanctuary
- Kavach System
- India Emerges as Third-Largest Solar Power Producer in 2023
- Widal Test in Diagnosing Typhoid in India
- Elected Women Representatives of PRI Participated in CPD57
- Approval for Phase 2 Trials of MTBVAC
- EC Stops Release of Aid Under Rythu Bharosa Scheme
- Jiadhal River Assam
- Border Roads Organisation 65<sup>th</sup> Raising Day
- Israeli Military Seizes Rafah Border Crossing
- SPACE for Indian Navy
- Dry Aral Sea
- Amendment to Mutual Fund Rules
- International Sun Day
- SMART System
- Boeing Starliner's First Crewed Test Flight
- Vallabhacharya Jayanti
- Tirthahalli Areca Nut Variety
- 7<sup>th</sup> India-Indonesia Joint Defence Cooperation Committee
- Cyclone Hidaya
- Discovery of Peucetia Chhparajinvin
- NPCI International Partners with the Bank of Namibia
- Critical Minerals Summit
- Growth in Mineral Production
- PlayTrue Campaign of NADA
- World's Deepest Blue Hole
- Orangutan Treats Wound With Medicinal Plant
- Chinese Road Construction in Shaksgam Valley
- Study Advocates Removal of Exotic Plant Species
- 6<sup>th</sup> Conference of the ICDRI
- CPGRAMS
- Microsoft Unveils Phi-3-Mini
- 65<sup>th</sup> Foundation Day of CSIR-Indian Institute of Petroleum (IIP)
- Options Writing
- GST Revenue Collection for April 2024
- Shompen Cast their First Vote
- Bhimtal Lake
- Simultaneous Eruption of Solar Flares
- IREDA Gets Navratna Status
- Hangor Class Submarine
- Plato and the Avars
- AI-powered Election Outreach
- Goldman Environmental Prize 2024

Note:



## UNGA Resolution for Palestine's UN Membership Bid

The [United Nations General Assembly \(UNGA\)](#) voted in favour of the resolution granting new “**rights and privileges**” to Palestine and called on the [Security Council](#) to reconsider its request to become the **194<sup>th</sup> member of the United Nations**.

- The resolution “determines” that the state of Palestine is **qualified for membership** and recommends the Security Council reconsider its request “**favourably**.”
  - The resolution grants Palestine the **right to speak on all issues, propose agenda items, and participate in UN and international conferences**, but explicitly states that Palestine does not have the **right to vote in the General Assembly**.

- **India voted in favour of the UN resolution recommending Palestine for full UN membership.**
  - Despite **opposition from the US**, the resolution received **143 votes in favour**, signalling a global push for Palestine’s status upgrade within the UN.
- Palestinian first delivered the application for UN membership in 2011, which failed to garner the required support in the Security Council.
  - Subsequently, the General Assembly upgraded **Palestine’s status to a non-member observer state in 2012**, allowing participation in international organisations like the [International Criminal Court](#).
  - The renewed push for full Palestinian membership in the UN comes as the **war in Gaza** has put the more than 75-year-old [Israeli-Palestinian conflict](#) at centre stage.

### How a State becomes a member of United Nations

#### Country submits application to UN Secretary-General

The UN “is open to all other peace-loving States which accept the obligations contained in the present UN Charter and, in the judgment of the Organization, are able and willing to carry out these obligations.”

#### If application passes through Security Council, it goes to the General Assembly

Required: Resolution for membership must get two-thirds votes

#### Security Council considers application

Required: Nine affirmative votes from SC and no veto or negative vote from any of five permanent members

#### Membership becomes effective

On the date the resolution for admission is adopted

Read more: [UNSC Reforms](#)

Note:

## UN Body Defers NHRC Accreditation

The [Global Alliance of National Human Rights Institutions \(GANHRI\)](#), which is based in **Geneva** and affiliated with the [United Nations \(UN\)](#), has postponed granting accreditation to the **National Human Rights Commission of India (NHRC)** for the second consecutive year.

- The decision could impact India's voting rights at the [Human Rights Council](#) and certain **UNGA** bodies.
- **GANHRI** gives **A-status** to institutions that meet certain criteria for independence and effectiveness in protecting human rights.
  - The **NHRC** has been accredited 'A' Status since the beginning of the accreditation process for NHRIs in 1999, which it retained in 2006, 2011 and in 2017 also after the deferment.
    - However, in 2023 and 2024, India's NHRC had its A-status suspended for two consecutive years.
- The GANHRI latest report is still awaited. However, its previous report (2023 report) had cited a number of reasons for recommending the deferral. These included:
  - **Composition:** Lack of transparency in appointing members to the NHRC,
  - **Appointment of police officers** to oversee human rights investigations
  - **Lack of gender and minority representation** on the member panel.
  - NHRC has also failed to create conditions required to be "able to operate independent of government interference".

Read More: [National Human Rights Commission \(NHRC\)](#)

## Silk Cotton Tree Under Threat



**Silk Cotton trees** (*Bombax ceiba L.*) are under threat in Rajasthan due to overuse in tribal religious traditions, particularly in **Holika-dahan rituals**.

- It is also called **Semal**, or the **Indian Kapok tree**, or **Shalmali** in Sanskrit.
  - Tribals see the act of burning as a virtuous ritual by mythological Holika and Prahlad.
  - In 2009, around 1,500-2,000 trees were cut, debarked, and ignited during Holi in the Udaipur district in that year.
- It is mainly found in **moist deciduous** and **semi-evergreen forests**, also in the plains.
  - In India, this species is commonly found in Andaman & Nicobar Island, Assam, Bihar, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, and Uttar Pradesh.
- This tree is of high medicinal value; its roots and flowers are used for their **stimulating, astringent** and **hemostatic properties**, as an **aphrodisiac**, to **stop diarrhoea, strengthen the heart, induce vomiting, soothe inflammation, treat dysentery, and lower fever**.
  - It also has **antibacterial and antiviral properties**, provides **pain relief, protects the liver, acts as antioxidants, and lowers blood sugar levels**.
  - It is also used in **agroforestry** for livestock feed. The wood is strong, elastic and durable for **ship building**.
- The **Kathodi tribe** of Rajasthan uses **wood for musical instruments** such as the Dholak and Tambura and the **Bhils** use it to make kitchen spoons.

Read More: [Bhil Tribe](#)

## UNESCO's Memory of the World Asia-Pacific Regional Register

Recently, the **Ramcharitmanas**, **Panchatantra**, and **Sahṛdayāloka-Locana** have been included in '**UNESCO's Memory of the World Asia-Pacific Regional Register**'.

- '**Sahṛdayaloka-Locana**', '**Panchatantra**', and '**Ramcharitmanas**' were authored by **Acharya Anandvardhan**, **Pt. Vishnu Sharma**, and **Goswami Tulsidas**, respectively.
- The **Indira Gandhi National Centre for the Arts (IGNCA)** played a vital role in securing the historic moment

Note:



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during the 10<sup>th</sup> meeting of the Memory of the World Committee for Asia and the Pacific (MOWCAP).

- This marks the first time IGNCA has submitted nominations to the Regional Register since its inception in 2008.
- The **Memory of the World (MoW) Program** is a **global initiative** launched by **UNESCO in 1992** to safeguard important documentary heritage.
- In the **Asia Pacific region**, a specific branch called the Memory of the World Committee for Asia and the Pacific (**MOWCAP**) was established in **1998**.
  - MOWCAP covers **43 countries**, representing one of UNESCO's five regional programs.

Read more: [Indira Gandhi National Centre for the Arts \(IGNCA\)](#)

## SBI Becomes First TCM Member at IIBX

[State Bank of India \(SBI\)](#) announced that it has become the **first bank to become a Trading cum Clearing (TCM) Member at [India International Bullion Exchange \(IIBX\)](#)**.

- It enables SBI's IFSC Banking Unit (IBU) to trade on the IIBX platform as the **RBI allowed IBUs to act as trading members and clearing members at IIBX as Special Category Clients (SCCs)** for importing **gold** through the bullion exchange.
  - This move is expected to **increase trading volumes for gold and silver** at the IIBX, bringing transparency and efficiency to India's Bullion Market.
- IIBX regulated by the **[International Financial Services Centers Authority \(IFSCA\)](#)** is India's first bullion exchange established in **[GIFT -City IFSC](#)**.
  - A **bullion market is where traders trade in precious metals** like gold and silver, with exchanges taking place directly between buyers and sellers and in the futures market (auction market).
    - The versatile uses of silver and gold, especially in industrial applications, influence their prices. Bullions are considered a **safe bet against inflation and a haven for investment**.
- TCM is a member who **can trade on their own account and on behalf of their clients, and also clear and settle trades executed** by themselves and other trading members who opt to use their clearing services.

Read more: [GIFT City and Bullion Exchange](#)

## Superplasticizers in Concrete

**Superplasticizers** are often added to **dry-pressed concrete** to make it easier to work with and to improve its density and surface finish.

- Superplasticizers are **sulfonated melamine formaldehyde condensates** or **sulfonated naphthalene formaldehyde condensates**.
- It is a **water-reducing admixture** used in making concrete.
- The **water-cement ratio** is an important factor in deciding the durability of concrete because concrete's impermeability, strength and durability are directly proportional to the water-cement ratio.
- In regular cement pastes, when cement particles get close, they tend to stick together in big **clumps** because of the attraction between them. This means more water has to be added than necessary.
  - These can be overcome by adding superplasticisers at the appropriate stage of mixing the ingredients of concrete which reduces the inter-particle attraction of cement particles.
- It helps to reduce inter-particle attraction between cement particles and to disperse the cement particles with less water.
- Superplasticizers are used to produce "flowing" concrete for placement in inaccessible locations, and also to produce high-strength concrete with normal workability but very low water/cement ratio to reduce the heat of hydration in mass concrete.

## International Nurses Day 2024

**[International Nurses Day](#)** was celebrated on 12<sup>th</sup> May 2024, at the Ayurvigyan Auditorium, Army Hospital (R & R), New Delhi.

- International Nurses Day is celebrated annually on the **birth anniversary of [Florence Nightingale](#)** to recognize the contributions of nurses to society.
- The International Council of Nurses has declared the theme for this year as '**Our Nurses Our Future, The Economic Power of Care**'.
- Florence Nightingale was a British nurse, statistician, and social reformer known as the **foundational philosopher of modern nursing**.

Note:

- She became famous for her work in nursing British and allied soldiers during the **Crimean War**, where she earned the nickname “**Lady with the Lamp**.”

Read more: [International Nurses Day](#)

## India's KABIL Eyes Lithium Acquisition in Australia

**Khanij Bidesh India Ltd (KABIL)**, a joint venture of three public sector undertakings, is working to acquire a lithium block in Australia.

- KABIL is a joint venture of **National Aluminium Company Ltd (Nalco)**, **Hindustan Copper Ltd (HCL)**, and **Mineral Exploration and Consultancy Ltd (MECL)** the **Central Public Sector Enterprises (CPSEs)** under the **Ministry of Mines**.
  - It aims to identify, acquire, develop, process, and commercialise **strategic minerals** from overseas locations for supply in India, with a focus on battery minerals like **Lithium** and **Cobalt**.
- Lithium is a crucial mineral for the **energy transition**, as it is a fundamental component of **lithium-ion batteries** that power **electric vehicles** and **battery energy storage systems**.

Read more: [KABIL & CSIR-IMMT Sign Critical Minerals](#)

[MoU](#)

## China's Third Aircraft Carrier Completes Maiden Sea Trials

China's **third aircraft carrier**, **Fujian** has successfully completed its eight-day maiden sea trials.

- **Fujian** is an 80,000-tonne **supercarrier** with **electromagnetic catapults** for launching aircraft.
  - Trials focused on propulsion, electrical systems, and other equipment, achieving expected results.
- China is the **second country after the US** to field a supercarrier with this technology.
- China's **first** aircraft carrier **Liaoning** was commissioned in **2012** and the **second** carrier **Shandong** was launched in **2017**.
- China announced that it is building its **fourth aircraft carrier**, likely a **nuclear-powered** supercarrier.
- **Indian Navy's carriers**:
  - The Indian Navy operates two aircraft carriers namely the **INS Vikramaditya**, a **refurbished**

**Russian carrier** commissioned in 2013, and the **INS Vikrant**, an **indigenously designed** and built carrier commissioned in September 2022.

Read more: [Indigenous Aircraft Carrier](#)

## Prerna Programme

Recently, the Secretary, Department of School Education and Literacy virtually addressed the first alumni meeting of the **Prerana Program**.

- Prerana is an ‘**Experiential Learning program**’ that aims to offer a meaningful, unique, and inspiring experience to all participants, thereby empowering them with leadership qualities.
- It is driven by a strong commitment to integrate principles of the Indian education system and the philosophy of **value-based education**.
- It was launched by the Department of School Education & Literacy, Ministry of Education, Government of India.
- A batch of 20 selected students (10 boys and 10 girls) attend the program every week from various parts of the country.
- The curriculum is built around nine core values like Dignity and Humility, Valor and Courage, Hard Work and Dedication, Compassion and Service, Diversity and Unity, Integrity and Purity, Innovation and Curiosity, Faith and Trust, and Freedom and Responsibility.

Read more: [Rajasthan to Start Prerana Schools](#)

## 5<sup>th</sup> Customs Meeting Between India and Bhutan

The 5<sup>th</sup> **Joint Group of Customs (JGC)** meeting between India and Bhutan took place on 6- 7<sup>th</sup> May 2024 in **Leh, Ladakh**.

- Meeting discussed bilateral issues such as opening new **Land Customs Stations** and **notifying new trade routes**, development of infrastructure, automation and digitisation of transit processes, **prevention of smuggling**, **coordinated cross-border management**, and pre-arrival exchange of Customs data.
- These meetings enhance connectivity and trade infrastructure for smooth customs clearance at **10 Land Customs Stations** along the **India-Bhutan border** (6 in West Bengal and 4 in Assam).

Note:



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- Bhutan is a **top trade partner of India** for both imports and exports.
  - It has more than tripled from USD 484 million in 2014-15 to **USD 1,615 million in 2022-23**.
  - This accounts for about **80% of Bhutan's overall trade**.
- Bhutan thanked the **Central Board of Indirect Taxes and Customs** for supporting its capacity building, training, and skill development through workshops, seminars, and various training programmes.
- Enhancing connectivity with Bhutan is important for India's '**Neighbourhood First**' and '**Act East**' Policy.



Read more: [India Bhutan Relations](#)

## Oleander Flowers

Kerala has banned the use of **Oleander flowers** (*Nerium Oleander*) (locally known as **Arali**) in temple offerings after a woman died from accidentally chewing poisonous oleander leaves.

- Oleander, also called **rosebay**, is a widely cultivated plant found in **tropical**, **subtropical**, and **temperate** regions around the world.
  - It is popular for its ability to **withstand drought** and is commonly used for **landscaping** and **ornamental purposes**.
- **Oleander as a Traditional Medicine:**
  - **Ayurveda** prescribes this for treating **chronic and obstinate skin diseases**, including **leprosy**.
  - The **Bhavaprakasha** (a renowned treatise on **Ayurveda**) has mentioned it as a **poisonous plant** and recommended its use in the treatment of infected wounds, skin diseases, microbes and **parasites**, and itching.
- The plant contains **cardiac glycosides** (a type of chemical), including **oleandrin**, **folinerin**, and

**digitoxigenin**, which can have **pharmacological effects** on the heart.

- **Symptoms of oleander toxicity** include nausea, diarrhea, vomiting, rashes, confusion, dizziness, irregular heartbeat, slow heartbeat, and in extreme cases, death.



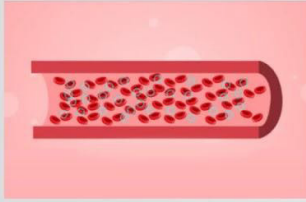
Read More: [Types of Forests in India](#)

## International Thalassaemia Day

Recently, **International Thalassaemia Day** was celebrated on **8<sup>th</sup> May**, to unite stakeholders to fight thalassaemia through prevention, awareness, early diagnosis, and ensuring quality care for patients.

- The 2024 theme, "**Empowering Lives, Embracing Progress: Equitable and Accessible Thalassaemia Treatment for All**," emphasizes on equality in access to comprehensive care.
- The need for **integration of compulsory Thalassaemia testing** into the **Reproductive and Child Health (RCH) program** as a means to significantly alleviate the burden of Thalassaemia was promoted during the celebration.
  - **RCH programme** is a **comprehensive flagship programme** launched in 2005, under the umbrella of the **National Health Mission (NHM)** to deliver the RCH targets for the **reduction of maternal and infant mortality** and **total fertility rates**.
- The event emphasized that there are nearly **1 lakh Thalassaemia patients** in India, with around **10,000 new cases being reported annually**. It is crucial to raise widespread awareness about Thalassaemia among the general population.

Note:



## World Thalassemia Day



### Definition

Thalassemia (thal-uh-SEE-me-uh) is an inherited blood disorder. It affects your body's ability to produce normal hemoglobin. If you have thalassemia, your body produces fewer healthy hemoglobin proteins, and your bone marrow produces fewer healthy red blood cells.

### Statistics Around Thalassemia

Thalassemia affects approximately **4.4** out of every **10,000** live births throughout the world.

### Types

→ **Alpha Thalassemia:** Four genes are inherited, two from each parent, that make alpha globin protein chains. When one or more genes are defective, alpha thalassemia is developed.

→ **Beta Thalassemia:** Two beta-globin genes, one from each parent are inherited. Your anemia symptoms and how severe your condition is depends on how many genes are defective and which part of the beta globin protein chain contains the defect.

### Symptoms of Thalassemia

#### Asymptomatic

- (no symptoms)

#### Mild to Moderate Symptoms

- Growth problems
- Delayed puberty
- Bone abnormalities, such as osteoporosis
- An enlarged spleen

#### Severe Symptoms

- Poor appetite.
- Pale or yellowish skin (jaundice).
- Urine that's dark or tea-colored.
- Irregular bone structure in your face.



Read more: [Casgevy Therapy for Sickle Cell Disease and Thalassemia](#)

## Catatumbo Lightning

**Catatumbo lightning** is a natural phenomenon that occurs over the **Catatumbo River** in **Venezuela**, where **lightning strikes** almost continuously.

- The strikes occur for up to **160 nights in a year**, with an average of **28 lightning strikes per minute** at its peak.
- This phenomenon primarily happens at the **mouth of**

the **Catatumbo River**, where it meets **Lake Maracaibo**, the **largest lake** in **Latin America**. It is also among the oldest water bodies on the planet.

- **Warm, moist air** from the **Caribbean Sea** is pushed towards the **Andes mountains**, where it collides with cooler air descending from the peaks.
- This collision creates a **perfect storm of sorts**, as the **warmer air** is forced to rise rapidly by the shape of the **local landscape**.

Note:

- It cools and condenses, forming towering **cumulonimbus clouds**. The combination of **strong winds** and **temperature differentials** generates electrical charges within these clouds.
- The cumulonimbus clouds **sometimes reach heights of more than 5 km** loaded up on static electricity. When the electrical potential within the clouds becomes too great, it **discharges in the form of lightning**.



Read more: [Report on Lightning Strikes](#)

## Indian Naval Ships Strengthen Maritime Partnerships

Indian Naval Ships **Delhi, Shakti, and Kiltan** recently visited Singapore as part of the **Indian Navy's Eastern Fleet's Operational Deployment** to the **South China Sea**.

- The visit aimed at bilateral engagements and discussions on mutual interests and cooperation, emphasizing the commitment to enhancing maritime security and stability in the region.
- INS Delhi, built by **Mazagon Dock Shipbuilders**, is the **Indian Navy's first indigenously designed and built guided missile destroyer**.
  - Commissioned in 1997, it is capable of undertaking all facets of maritime operations - on surface, air, and underwater domains.
- INS Shakti is the second and final ship of her class, along with her **predecessor INS Deepak fleet tanker** built by **Fincantieri, an Italian shipbuilding company**.
  - It is capable of replenishing other naval ships at sea with fuel, ammunition, and provisions.

- INS Kiltan is an **indigenous anti-submarine warfare stealth corvette** commissioned into the Indian Navy.
  - It is the **third of the four Kamorta-class corvettes** built under Project 28. Designed by the Indian Navy's Directorate of Naval Design and built by Garden Reach Shipbuilders & Engineers (GRSE) in Kolkata.
  - It is named after an **island in the Lakshadweep and Minicoy group**. Continues the legacy of the erstwhile **Petya Class ship of the same name 'Kiltan (P79)'**, which played a significant role in **'Operation Trident'** during the **1971 Indo-Pak war**.

Read more: [Indian Navy Day 2023](#)

## Heatwaves Causing Major Wildfires in Russia

Russia's **wildfire** season, spanning **eight regions** since early March 2024 is expected to bring prolonged periods of **"high" and "extreme" wildfire danger** across most of the country this year, continuing a trend seen in previous years, such as the **heatwaves** in Siberia in 2019 and 2022 that led to **devastating wildfires**.

- **Verkhoyansk**, a town in the **Sakha Republic or Yakutia**, known as the **'coldest inhabited place in the world,'** recorded a temperature of 38 degrees Celsius in June 2020, likely the highest ever in the **Arctic Circle region**.
- Multiple regions in Russia, including the **Jewish Autonomous Region** and Khabarovsk Territory are **currently under a state of emergency due to widespread wildfires**.
- The Russian Hydrometeorological Centre has predicted that much of **Russia will face extended periods of "high" and "extreme" wildfire risk** this year.

Read more: [Forest Fire](#)

## Green Milestone

Recently, the **Council on Energy, Environment and Water and Centre for Energy Finance (CEEW-CEF)** market handbook found that the **share of coal** in India's overall **installed electricity capacity** dropped **below 50%** for the first time in history during the 2023-24 period.

- The report cited that renewable energy sources made up **71%** of the 26 gigawatts (GW) of **power generation capacity** added in India.

Note:



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- India's **total installed electricity capacity** rose to **442GW**, with **renewables** contributing **144GW** (33%) and **hydro 47 GW** (11%).
- **Solar power** accounts for **81%** of renewables, with **wind** capacity reaching nearly **3.3 GW** and nuclear capacity adding **1.4 GW**.
- Renewable energy auctions reached a record **41 GW** in the fiscal year 2024, with innovative formats like **wind-solar hybrids** and **RE-plus-storage** gaining prominence.
  - **RE-plus-storage** refers to renewable energy systems, such as solar or wind power, **combined with energy storage** solutions, typically in the form of **batteries**.
- India updated its **climate change commitments** in 2022, aiming to reduce **GDP emissions** intensity by **45%** from **2005** levels by 2030 and have **50%** of its power capacity from **non-fossil** sources by the same year.

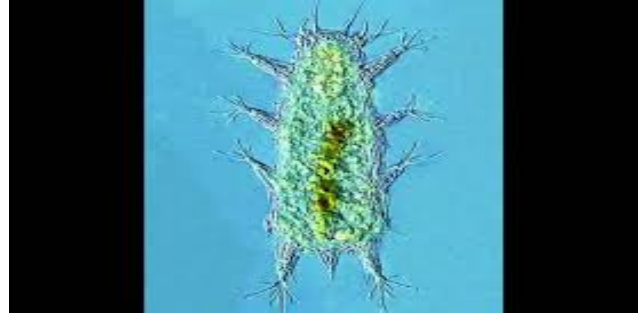
Read more: [Perspective: India's Green Energy Transition](#)

## Batillipes Chandrayaani

Researchers at **Cochin University of Science and Technology** have named a newly discovered marine tardigrade species from the **southeast coast** of Tamil Nadu as **Batillipes Chandrayaani**, in honour of the Chandrayaan-3 moon mission.

- It was found in the sandy area between the **high and low tide** marks at **Mandapam in Tamil Nadu**.
- This tardigrade is the **39<sup>th</sup>** type of tardigrade classified under the name **Batillipes**.
- It has a head that looks like a **trapezoid** and **four pairs of legs** with pointy spines for sensing things.
- **Tardigrades:**
  - These tiny creatures, often called "**water bears**," are **microscopic wonders**.
  - Marine tardigrades make up 17% of all tardigrade species known to us, and they inhabit every ocean.
    - Tardigrades have adapted to environmental stress by undergoing a process known as **cryptobiosis**.
    - **Cryptobiosis** is defined as a state in which **metabolic activities come to a reversible standstill**.
  - Despite their small size, these **micro-metazoans** are incredibly resilient, surviving **mass extinctions**

and earning recognition for their remarkable survival abilities.



Read more: [Chandrayaan-3 Propulsion Module Returns to Earth's Orbit](#)

## Atmosphere of a 55 Cancri e Exoplanet

Scientists have recently detected a **dense atmosphere** enveloping **55 Cancri e**, a **super-Earth** twice the size of our planet, shedding light on its unique characteristics and potential implications for exoplanetary research.

- The atmosphere of 55 Cancri e is composed of **carbon dioxide and carbon monoxide**, although exact amounts remain unclear.
  - Unlike **Earth's atmosphere**, which is a blend of nitrogen, oxygen, argon, and other gases, the atmosphere of 55 Cancri e is markedly different.
- The **boiling temperatures on 55 Cancri e, reaching up to 2,300°C**, make it inhospitable for life as we know it.
  - Despite its **uninhabitable conditions**, the discovery offers hope for finding other rocky planets with thick atmospheres that may be more conducive to life.
- The **55 Cancri e is an exoplanet**, located 41 light years away, has a mass eight times that of Earth and is characterised by permanent day and night sides.
  - It is a super-Earth, which is a unique class of planets that are **larger than Earth but lighter than ice giants like Neptune and Uranus**.
  - They can be composed of gas, rock, or a combination of both, and are typically between two to ten times the mass of Earth.
- The findings suggest that gases from **magma oceans on the planet's surface may contribute to maintaining its atmosphere**.
- Exploring **55 Cancri e could provide insights into the evolutionary processes** of Earth and Mars.

Read more: [New Super-Earth Planet](#)

Note:



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## Kalesar Wildlife Sanctuary

Recently, the Supreme Court **stayed the construction of four proposed dams inside Kalesar Wildlife Sanctuary** in Haryana's Yamunanagar district as the construction will not only negatively impact the **wildlife and local community but also harm the ecosystem.**

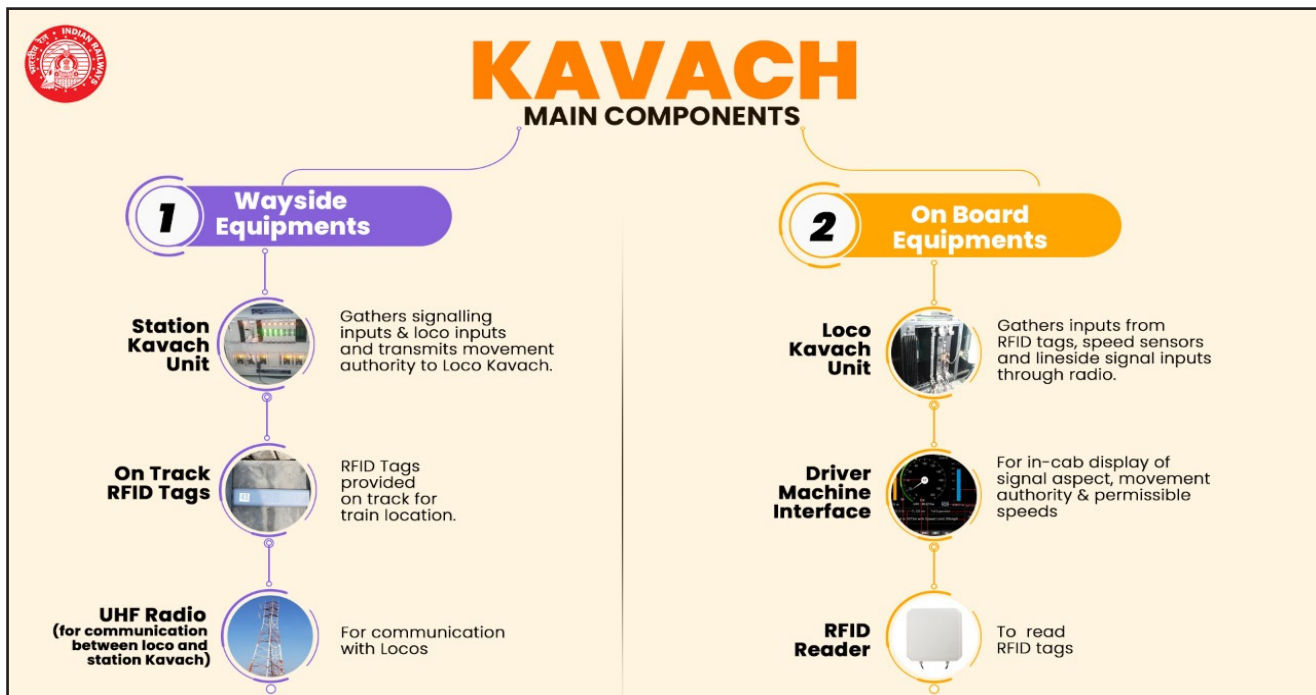
- It was established in 1988 to protect the local wildlife and biodiversity and was declared a National Park on 8th December 2003.
- It is situated in the foothills of the **Shiwalik ranges** of the Himalayas and is contiguous to **Rajaji National Park (Uttarakhand)** and **Simbalbara National Park (Himachal Pradesh).**
- It is spread across **13,209 acres** and is rich in biodiversity, featuring dense **sal and khair forests** and grassland patches supporting diverse plant and animal life.
- It is home to many species of animals, including **leopards, sambar deer, barking deer, hyenas, jackals, Indian porcupines, Indian pangolins, and langurs** and several species of birds, such as the red junglefowl, grey partridge, Indian peafowl, and white-throated kingfisher

Read More: [Kalesar Wildlife Sanctuary](#)

## Kavach System

Recently, **Indian Railways** has finalised an agreement with **RailTel Corporation of India Limited** and **Quadrant Future Tek Limited** to expedite the rollout of the KAVACH train collision avoidance system, both domestically and internationally.

- **Kavach** was developed by the **Research Design and Standards Organisation (RDSO)** in association with three Indian vendors and serves as a cab signalling train control system with anti-collision capabilities
- It has been designated as India's **National Automatic Train Protection (ATP)** System and meets Safety Integrity Level-4 (SIL-4) standards.
  - ATP systems are safety mechanisms that monitor a train's speed to ensure it aligns with permitted speeds set by signals. If the train exceeds these limits, **ATP triggers emergency brakes** to halt the train.
- Additionally, the system transmits **emergency SoS messages** and offers centralised live monitoring of train movements through the Network Monitor System.
- **The Indian Railways Institute of Signal Engineering & Telecommunications (IRISET)** in Secunderabad, Telangana, serves as the '**Centre of Excellence**' for Kavach.



Read more: [Derailments in Indian Railways](#)

Note:

## India Emerges as Third-Largest Solar Power Producer in 2023

India's remarkable ascent as the **world's third-largest producer of solar power in 2023** underscores a significant shift towards **renewable energy sources** in the global energy landscape.

- **India surpassed Japan** in solar power production in 2023, generating 113 billion units (BU) compared to Japan's 110 BU.
- **China remains the leading producer** of solar power globally, generating 584 BU in 2024, more than the **next four countries combined** (the United States, Japan, Germany and India).
- **India ranks fifth globally in installed power capacity**, with 73 gigawatts (GW) of solar power capacity.
- **Global solar generation in 2023 was more than six times larger than in 2015, while in India it was 17 times higher.**
  - The share of solar generation increased from 0.5% of India's electricity in 2015 to 5.8% in 2023.
- Solar power constitutes **18% of India's total installed electricity but only 6.66% of the power produced**, highlighting a gap between capacity and actual output.
- Renewables, including solar and **wind power**, accounted for **30% of global electricity production in 2023**, with **China being the main contributor**.

Read more: [India's Solar Power Dream](#)

## Widal Test in Diagnosing Typhoid in India

The widespread use of the **Widal test for diagnosing typhoid in India** has raised concerns about its accuracy and implications for public health management.

- The **Widal test, a rapid blood test**, is extensively used in India for diagnosing typhoid fever, despite its limitations and propensity for erroneous results.
- Typhoid, caused by **Salmonella typhi bacteria**, spreads through **contaminated food and water**, presenting as enteric fever with symptoms like **high fever, stomach pain, weakness, nausea, vomiting, and rash**.

- Some carriers **may remain asymptomatic**, shedding bacteria for months. Untreated, it can be life-threatening, mimicking other diseases like **malaria** and **influenza**.
- The gold standard for diagnosing typhoid involves **isolating the bacteria from a patient's blood or bone marrow and growing them in the lab**, which is resource-intensive and time-consuming.
- The **Widal test detects antibodies against the bacteria but can yield false positives and negatives** due to various factors such as **prior antibiotic treatment and cross-reactivity** with antibodies from other infections or vaccinations.
  - Misdiagnosis of typhoid can lead to delayed treatment and complications, contributing to the obscured **burden of the disease in India**.
- Overuse of antibiotics driven by the Widal test contributes to **antimicrobial resistance (AMR)**, posing a significant public health threat.
- Improved access to diagnostics and AMR surveillance is vital for addressing typhoid challenges.

Read more: [Typhoid Vaccine](#)

## Elected Women Representatives of PRI Participated in CPD57

Elected Women Representatives (EWRs) from India's **Panchayati Raj Institutions** participated in the **United Nations Commission on Population and Development (CPD) Event** titled "**Localising the SDGs: Women in Local Governance in India Lead the Way**".

- The event was part of the 57<sup>th</sup> session of the **United Nations Commission on Population and Development (CPD57)**.
  - It was organised by the Permanent Mission of India to the **United Nations** and the **Ministry of Panchayati Raj** in collaboration with the **United Nations Population Fund (UNFPA)** at the **UN Headquarters Secretariat Building** in New York.
- India's Panchayati Raj system **comprises more than 1.4 million EWRs**, showcasing a narrative of empowerment, inclusion, and progress in women's leadership.

Note:



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➤ **About UN Commission of Population and Development (CPD):**

- A Population Commission was established by the **Economic and Social Council (ECOSOC)** in 1946, which was renamed as the **Commission on Population and Development** by the **UN General Assembly** in 1994.
- The Commission is composed of **47** Member countries.
- Member countries are elected by the **ECOSOC** for a **period of 4 years** on the basis of geographic distribution.

**Read More:** [Panchayati Raj Institution \(PRI\)](#)

## Approval for Phase 2 Trials of MTBVAC

Recently, The **Central Drug Standard Control Organisation's (CDSCO)** has approved the proposal to conduct the **phase II** clinical trial of the **Mycobacterium Tuberculosis** (Live Attenuated) Vaccine.

- The **MTBVAC** is the first vaccine against TB derived from a human source to begin clinical trials in adults in India.
- **Bharat Biotech International Limited** in collaboration with **Spanish biotechnology company Biofabri** have started a series of clinical trials to evaluate the safety, immunogenicity, and efficacy of **MTBVAC** in India.
- MTBVAC is being developed for two purposes as a more effective and potentially long-lasting vaccine than **BCG (Bacillus Calmette and Guérin)** for newborn children, and for the **prevention of TB in adults and adolescents**, for whom there is currently no effective vaccine.
- MTBVAC is the only vaccine against tuberculosis in clinical trials based on a **genetically modified** form of the pathogen isolated from **humans Mycobacterium tuberculosis**.
- **BCG** is an only attenuated variant of the bovine TB pathogen which is older than a hundred years old and has a very limited effect on pulmonary tuberculosis.

**Read more:** [Tuberculosis](#)

## EC Stops Release of Aid Under Rythu Bharosa Scheme

Recently, the **Election Commission of India (ECI)** has put on hold the disbursement of amounts under **Rythu Bharosa** (previously known as Rythu Bandhu) till the completion of polling for the **Lok Sabha** election in the State.

- The Chief Minister of Telangana violated the **Model Code of Conduct (MCC)** by publicly speaking about ensuing disbursement under the **Rythu Bharosa**.
- The **MCC** is a set of guidelines issued by the ECI to regulate the conduct of political parties and candidates during elections.
- **Article 324** of the Constitution grants the ECI the authority to oversee and ensure the **conduct of impartial elections** for both the **Parliament** and **State Legislatures**.
- The scheme '**RYTHU BHAROSA**' is one of the **nine navratna welfare schemes** launched by Telangana Govt in **June 2019**.
- The scheme provides financial assistance of **Rs. 13,500** per farmer family every year including tenant farmers also across the state.

**Read more:** [Model Code of Conduct](#)

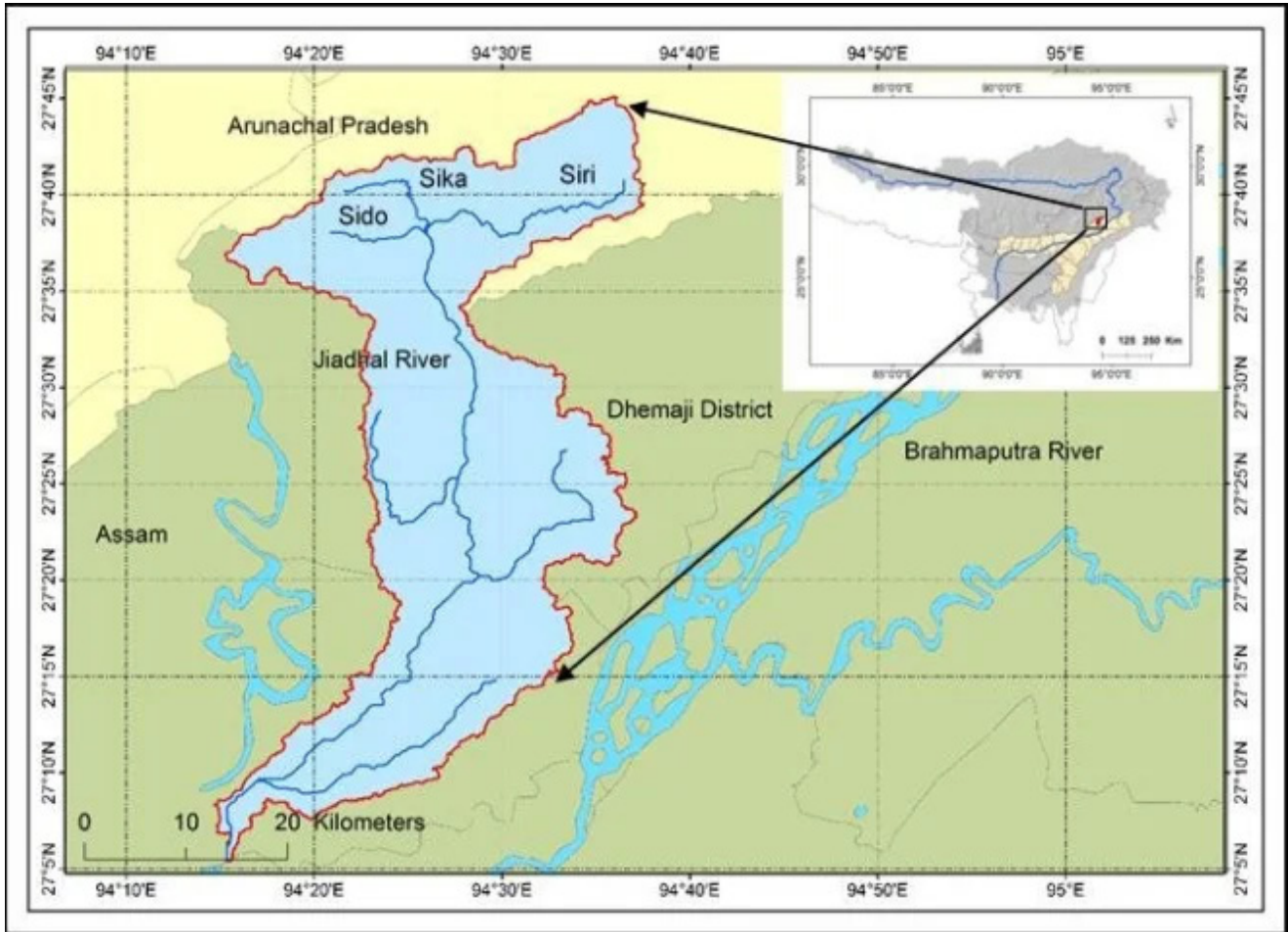
## Jiadhal River Assam

**Heavy precipitation** in Assam is actively reshaping the path of the **Jiadhal River**, leading to **soil erosion** and **posing a significant threat to agriculture**.

- It originates from the **sub-Himalayan mountains of Arunachal Pradesh** at an altitude of **1247 meters**, this river serves as a northern tributary to the **Brahmaputra River**.
- It flows through a **narrow gorge in Arunachal Pradesh**, and the river emerges into the plains of Assam, specifically in the Dhemaji district, known as the "**Sorrow of Dhemaji**" due to its annual **floods and erosion**,
- It travels **downstream from Gogamukh**, which is renamed the **Kumotiya River**.
- As a **northern sub-tributary of the Brahmaputra River**, it merges with the **Subansiri River** near its endpoint, augmenting the Brahmaputra's water volume and force.

Note:





Read more: [Subansiri Dam Project](#)

## Border Roads Organisation 65<sup>th</sup> Raising Day

Recently, the [Border Roads Organisation \(BRO\)](#) celebrated its 65<sup>th</sup> Raising Day on 7th May 2024.

- Established in 1960 with only two projects, **Project Tusker (now Vartak) in the East** and **Project Beacon in North India**, the BRO has grown to become a vibrant organisation with 18 projects operating in 11 States and three Union Territories.
  - It is now recognised as the leading infrastructure construction agency in high-altitude and difficult snow-bound areas.
- In 2023-24, the BRO completed 125 infrastructure projects, including the construction of the [Sela Tunnel](#)

[in Arunachal Pradesh](#) on Balipara-Chardwar-Tawang Road.

- The BRO will soon start construction on the **4.10-km long Shinkun La Tunnel**, which will become the **world's highest tunnel at 15,800 ft** once completed, bypassing **China's Mila Tunnel at 15,590 ft**.
- The BRO is an Indian executive force under the **Ministry of Defence**, to secure India's borders and develop infrastructure in remote areas of the north and north-eastern states.
- It operates under the **Border Roads Development Board (BRDB)** and is responsible for road networks in border areas and neighbouring countries.
  - The motto of BRO is "*Shramena Sarvam Sadhyam*", which translates to "Everything is achievable through hard work."

Read more: [BRO Celebrates 64<sup>th</sup> Raising Day](#)

Note:



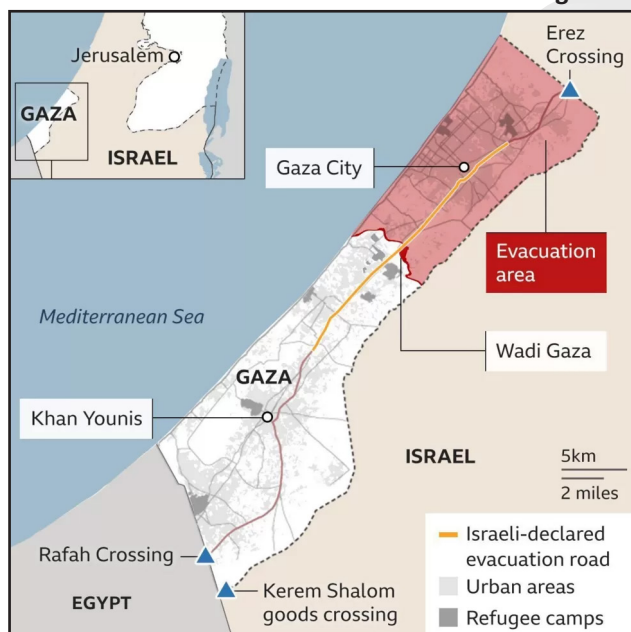
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## Israeli Military Seizes Rafah Border Crossing

The Israeli military seized control of the **Rafah border crossing between the Gaza Strip and Egypt** and its tanks pushed into the southern Gazan town of Rafah after a night of air strikes on the Palestinian enclave.

- The closure of the Rafah crossing hindered aid delivery to the **Gaza Strip**, exacerbating the humanitarian crisis.
- The **Rafah crossing is the southernmost exit point** from the Gaza Strip, and it shares a border with **Egypt's Sinai Peninsula**.
  - The crossing is controlled by Egypt. It is the only exit that does not lead to Israeli territory.
- There are two other border crossings in and out of Gaza are **Erez in the north for people in Israel**, and **Kerem Shalom in the south for commercial goods**.



Read more: [Rafah Crossing](#)

## SPACE for Indian Navy

Recently, **Defence Research and Development Organisation (DRDO)** has set up a premier testing & evaluation hub for SONAR Systems named **"SPACE"** in Kerala which is dedicated to the Indian Navy.

- It stands for **Submersible Platform for Acoustic Characterisation and Evaluation (SPACE)**.
- It will mainly be utilised for evaluation of complete Sonar Systems. It consists of two distinct assemblages.

- **Floating Part** is a platform which floats on the water surface, and
- **Submerged Part** is a submersible platform which can be lowered to any depth upto 100 m **using winch systems**.

- Upon completion of operations, the submersible platform can be winched up and docked with the floating platform.
- It will allow quick deployment and easy recovery of scientific packages such as **sensors and transducers**.
- It will be suitable for **survey, sampling, and data collection** of air, surface, mid-water, and reservoir floor parameters using modern scientific instrumentation.
  - It will bring a new era of **Anti-Submarine Warfare** research capabilities.
- **SONAR (SOund Navigation And Ranging)** is a device used for measuring distance using ultrasonic waves.
  - The sonar technique is used to determine the depth of the sea and to locate underwater hills, valleys, submarines, icebergs, sunken ships etc.

Read More: [Three Anti-Submarine Warfare Ships for Indian Navy](#)

## Dry Aral Sea

A recent study reveals that the **drying up of the Aral Sea** has resulted in the emergence of the **Aralkum Desert**, making Central Asia dustier **by 7%**.

- The **Aral Sea**, once the **world's fourth-largest lake**, dried up in **Soviet Central Asia** in the **1960s**, leading to severe environmental consequences like **increasing dust** and consequently **affecting air quality** and could change the overall weather patterns, **and increase the air pressure** on the ground in the Aral region.
  - It can **intensify** the Siberian high in winter and a **weakening** of the Central Asian warm low in summer.
  - The dust can accelerate the **melting of glaciers**, **exacerbating the water crisis** in the region.
- The Aral Sea was fed by the two great rivers of Central Asia — **the Amu Darya** (from the **Pamir Mountains**) and the **Syr Darya** (Tien Shan mountain ranges).
- **Other similar examples:**
  - **Lake Urmia in Iran and Lake Hamoun** on the Iran-Afghanistan border have also dramatically shrunk and become strong local sources of dust.

Note:



Read more: [Aral Sea](#)

## Amendment to Mutual Fund Rules

Recently, the [Securities & Exchange Board of India \(SEBI\)](#) approved amendments to [SEBI \(Mutual Funds\) Regulations, 1996](#) and it has mandated amendments to enhance [regulatory oversight](#) within [Asset Management Companies \(AMCs\)](#), some other recent proposed amendments are:

### ➤ Institutional Mechanism:

- AMCs are required to implement **enhanced surveillance systems**, internal controls, and escalation processes to identify and address specific types of misconduct.
- It aims at preventing **front-running, insider trading**, and misuse of sensitive information within the industry.

- **Front running** refers to the **unethical practice of a broker** or trader, executing orders on a security based on advance knowledge of pending trades from their clients, which can impact the market price.
- **Insider trading**, on the other hand, involves buying or selling a security **based on material, non-public information about the security**.

### ➤ Recording of Communication:

- SEBI has exempted **face-to-face interactions** during market hours from the requirement of recording all communication by dealers and fund managers.

### ➤ Prudential Norms for Passive Schemes:

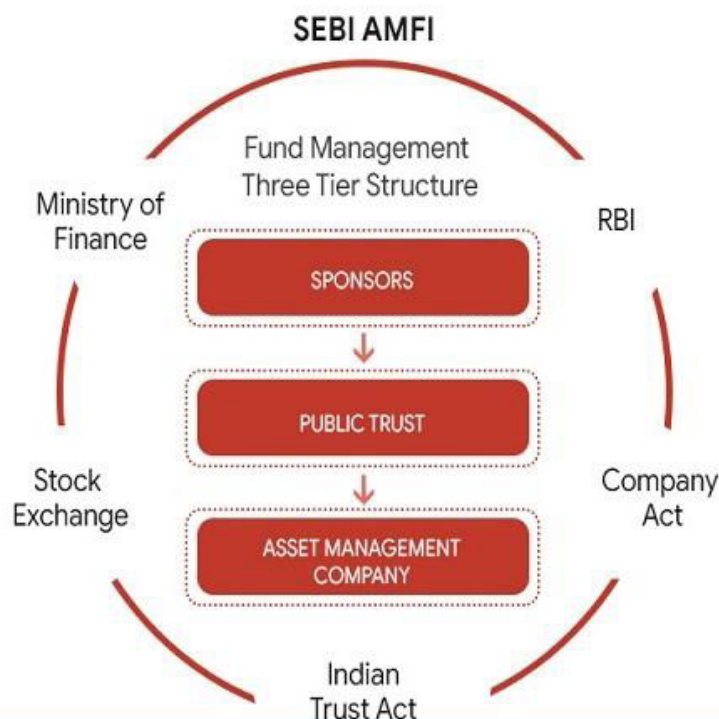
- SEBI has streamlined **prudential norms for passive schemes**, allowing equity passive schemes to invest up to the weightage of constituents in the underlying index, with a **35% cap** on investment in sponsor group companies.

Note:



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## Regulatory mechanism for Mutual Funds



Read more: [Asset Reconstruction Company](#)

## International Sun Day

The Government of India marked **International Sun Day** on 3<sup>rd</sup> May 2024, reaffirming its commitment to sustainable energy practices with a **special focus on solar power**.

- The **Ministry of New & Renewable Energy** organised a 'Run for Sun' Marathon at Jawaharlal Nehru Stadium, New Delhi, to raise awareness about the pivotal role of solar power in **mitigating climate change**.
  - The Ministry announced Solar Art, an **All-India Intra-School Solar Art Competition**, aiming to promote awareness of solar energy among school students through artistic expression.
- Solar Stops were set up in six Indian cities to **educate citizens about the significance of solar energy** through captivating installations and displays.
- International Sun Day is recognised globally as an opportunity to acknowledge the **importance of the**

Sun and to promote solar energy as a sustainable and environmentally friendly energy source.

Read more: [India's Solar Power Dream](#)

## SMART System

Recently, the **Defence Research and Development Organisation (DRDO)** successfully conducted a flight test of the **Supersonic Missile-Assisted Release of Torpedo (SMART) system** from Dr APJ Abdul Kalam Island off the coast of Odisha.

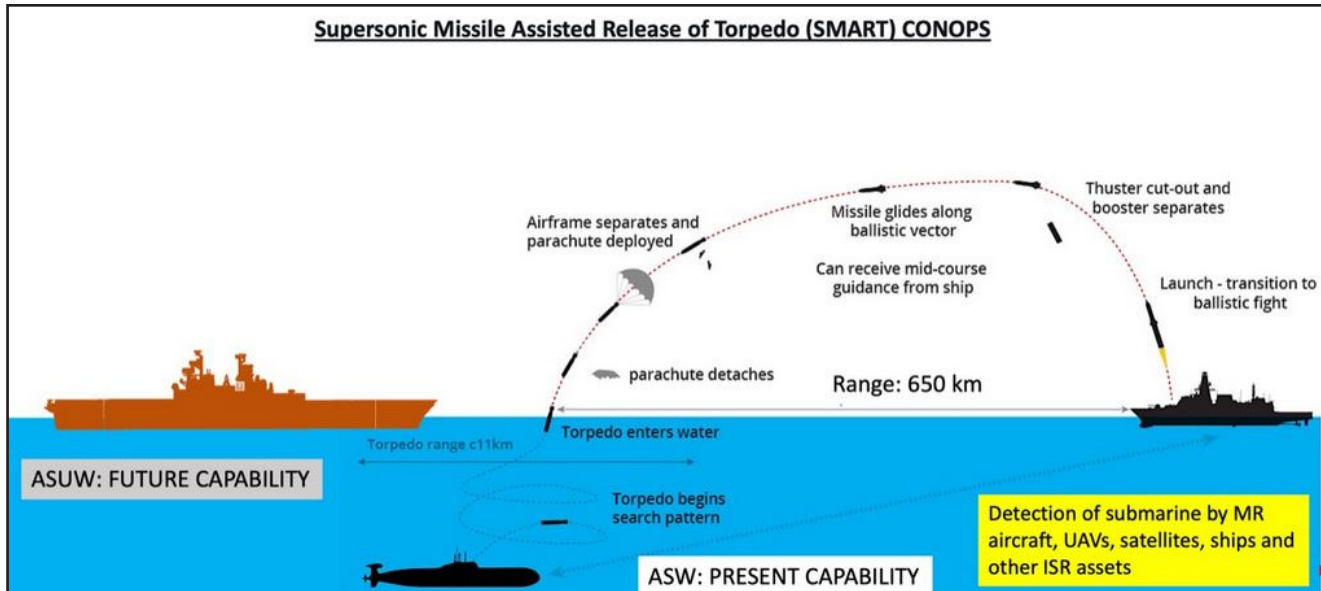
### ➤ SMART System:

- It represents a next-generation missile-based **lightweight torpedo delivery system**.
- Its primary aim is to significantly augment the **anti-submarine warfare** capabilities of the **Indian Navy** extending beyond the conventional range of lightweight torpedoes.
  - The missile is launched from a **ground mobile launcher**.

Note:

- This canister-based missile system incorporates various advanced sub-systems,
  - It includes a two-stage solid propulsion system, electromechanical **actuator system** and **precision inertial navigation system**.
- When it approaches close enough to the submerged submarine, the missile will **eject the torpedo system into the water** and the autonomous torpedo will start moving towards its target to take out the submarine.

- A **torpedo** is an underwater weapon with a **cigar-shaped design**, propelled by its power.
  - It can be launched from various platforms such as submarines, surface vessels, or aeroplanes.
- **Varunastra** stands as the inaugural indigenous heavyweight ship-launched anti-submarine electric torpedo.



Read more: [Supersonic Missile Assisted Torpedo](#)

## Boeing Starliner's First Crewed Test Flight

Recently, an **Atlas V rocket** is poised to launch with two seasoned astronauts, **Barry Wilmore** and **Sunita Williams**, aboard the Boeing-built crew capsule called **Starliner**.

- This marks the capsule's **third test flight** and the **first with astronauts on board**, aiming to transport them to the **International Space Station (ISS)** in **low-earth orbit**.
  - If successful, the US will achieve a historic milestone by having **two spacecraft capable** of launching astronauts into space.
  - Currently, the **Dragon spacecraft of SpaceX** is the only spacecraft that can return significant cargo to Earth and the **first private spacecraft to transport humans to the space station**.

- **Starliner** is a spacecraft that carried astronauts to space, launched by a rocket, featuring a **crew capsule** for astronaut accommodation, designed for reentry, and a **non-reusable service module** providing life support and propulsion systems.

Read more: [NASA's Boeing Starliner Spacecraft](#)

## Vallabhacharya Jayanti

**Vallabhacharya Jayanti**, celebrated on 4<sup>th</sup> May 2024, commemorates the birth anniversary of the renowned Hind scholar and an ardent devotee of Lord Krishna, **Shri Vallabhacharya (1479-1531 CE)**.

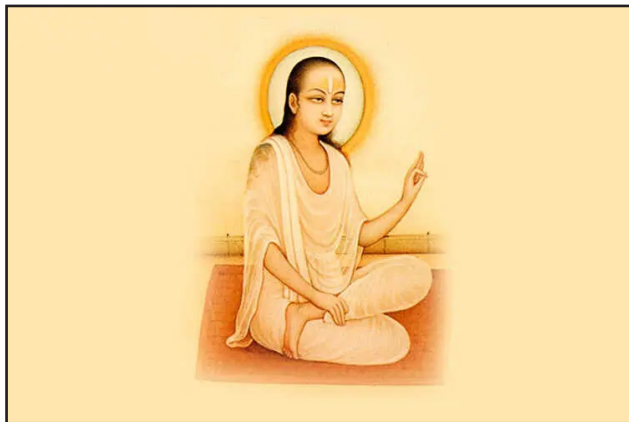
- Vallabhacharya was a revered figure who had a deep command over the **Vedas and Upanishads**. He was known by the titles **Vallabha** and **Mahaprabhu Vallabhacharya**.
  - Vallabhacharya founded the **philosophy of Shuddha Advaita** or pure non-dualism. He also founded the

Note:



**Pushti sect of Vaishnavism**, a Krishna-centric cult in the Braj region of India.

- Vallabhacharya was born in a Telugu Brahmin family in 1479 AD and is a prolific writer, he composed many literary works in his lifetime, including sixteen independent granthas called “**Shodash Granth.**”



Read more: [Schools of Indian Philosophy](#)

## Tirthahalli Areca Nut Variety

The **Tirthahalli variety** of Karnataka has long been recognised for its exceptional **areca nut production**, as confirmed by a recent analysis conducted by the Areca Research Centre at Keladi Shivappa Nayaka University of Agricultural and Horticultural Sciences in Shivamogga, Karnataka.

- The Tirthahalli areca is **highly sought-after for its suitability in producing high-grade nuts**, with growers of this variety able to cultivate the **coveted Nuli and Hasa grades**.
- The areca nut palm is the source of the popular chewing nut known as **betel nut or Supari**. India is both the **largest producer and consumer of areca nut**, with major cultivation in states like **Karnataka, Kerala, Assam, Tamil Nadu, Meghalaya, and West Bengal**.
  - Arecanut kernels are boiled, and areca precipitates are added after removing the husk. The nuts are later dried and graded as **Nuli, Hasa, Rashi, Bette, and Gorabalu based on their market value**.
  - Nuli and Hasa nuts fetch a higher price than Rashi, Bette, and Gorabalu.
- Earlier ‘**Sirsi Supari**’ grown in Uttara Kannada district of Karnataka has received the **Geographic Indication (GI) tag**.

Read more: [“Sirsi Supari” Gets GI Tag](#)

## 7<sup>th</sup> India-Indonesia Joint Defence Cooperation Committee

The recent **7<sup>th</sup> India-Indonesia Joint Defence Cooperation Committee (JDCC)** meeting highlights the ongoing efforts of both nations to **bolster their defence collaboration**.

- Progress on various bilateral defence cooperation initiatives was reviewed, including those deliberated in meetings of **Working Groups on Defence Cooperation and Defence Industries Cooperation**.
  - Means to enhance existing collaboration, particularly in defence industry ties, maritime security, and multilateral cooperation, were identified.
- JDCC is an **annual meeting** between the Indian and Indonesian Defence Ministries, discussing a wide range of bilateral cooperation.
- India and Indonesia upgraded their **strategic partnership to a “Comprehensive Strategic Partnership” in 2018**, and also signed a **Defence Cooperation Agreement**, aligned with a **shared vision of the Indo-Pacific**.
  - Indonesia is a crucial partner in **India’s Act East Policy** and holds significance in the Indo-Pacific region.

Read more: [Local Currency Trade between India-Indonesia](#)

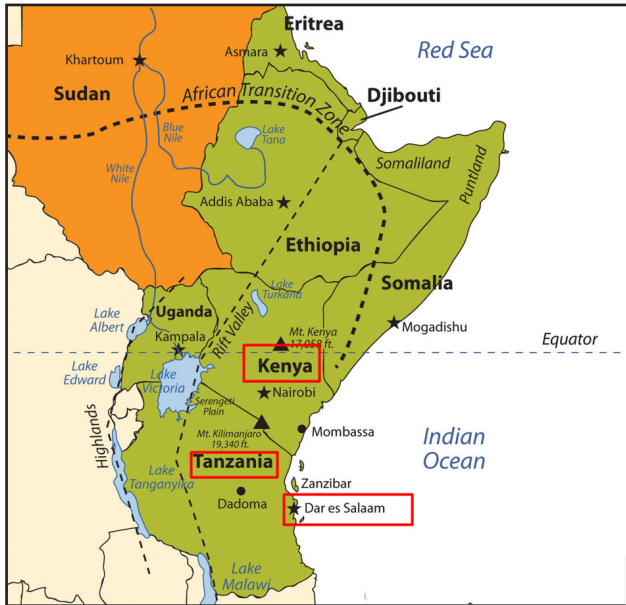
## Cyclone Hidaya

Recently, a severe storm named **Cyclone Hidaya** is set to hit the coast of **Tanzania near Dar es Salaam** from the Indian Ocean.

- Cyclone **Hidaya (Guidance in Arabic)**, may bring heavy rain and strong winds to regions in Tanzania like Tanga, Morogoro, the **islands of Unguja and Pemba**.
- It formed over the South Indian Ocean and was named by **France’s overseas tertiary in the Indian Ocean**.
- Even though **Kenya is usually considered safe from cyclones**, now it is preparing for the impact of Cyclone Hidaya.
  - Kenya falls within the latitude of **4° North and South** and is considered safe from cyclones because they typically **don’t form within 5 degrees of the equator** due to the **weak Coriolisforce** there, which is necessary for creating cyclones.

Note:

- Tropical cyclones usually develop in areas between 5° and 30° North or South of the equator.
- However, despite this usual safety, Kenya now faces the possibility of being impacted by Cyclone Hidaya. If this happens, it would be the first time Kenya has ever experienced a cyclone.



Read more: [Cyclone](#)

## Discovery of Peucetia Chhaparajnrvin

Recently, arachnologists have identified the **green lynx spider**, which was never discovered earlier.

- The newly identified spider species, found in Rajasthan's **Tal Chhapar Wildlife Sanctuary**, has been named **Peucetia chhaparajnrvin**.
- The **nocturnal** spider, blending with the **Vachellia nilotica** (babul) tree leaves due to its **green** hue, preys on **small insects** and serves as a **vital predator** in controlling **pest populations**, and maintaining ecological balance.
- The climatic conditions of the sanctuary, characterised by **extreme temperatures**, underscore the **spider's adaptability**.
- **Lynx spiders** are a family of active **hunting spiders (Oxyopidae)** that typically **don't build webs**.
  - These spiders, often **found on vegetation**, are known for their **excellent eyesight** and use **ambush**

or **stalking tactics** to capture prey, often waiting on flowers for insects to come close.

### NEVER SEEN BEFORE

➤ Green lynx spider species spotted in **Tal Chhapar Wildlife Sanctuary** in **Churu district of Rajasthan**

➤ It was discovered by **Nirmala Kumari** during fieldwork



➤ Species identified by **Atul Bodkhe** in the **Spider Research Lab** at **JD Patil Sangludkar Mahavidyalaya, Daryapur**

➤ It is found on the green leaves of the **babul tree**



Read more: [Spider](#)

## NPCI International Partners with the Bank of Namibia

**NPCI International Payments Ltd. (NIPL)** signed an agreement with the **Bank of Namibia** to create a real-time instant payment system similar to India's **Unified Payment Interface (UPI)**.

- The new system will facilitate faster **Person-to-Person (P2P)** and **Person-to-Merchant (P2M)** transactions, promoting **financial inclusion** for underserved populations.
- **NIPL**, established on 3<sup>rd</sup> April 2020, as NPCI's fully owned subsidiary, focuses on internationalising the **RuPay card scheme** and UPI mobile payment solution.
  - NIPL aims to **revolutionise global payments** through **innovation** and **technology**, enhancing payment systems worldwide, especially in **resource-limited countries**, leveraging its extensive experience and advanced payment knowledge.
- **Namibia** is the second least densely populated, located along the **Southern African coast**.
  - Namibia **shares a border** with the surrounding countries of South Africa, Botswana, Zimbabwe, Zambia, and Angola.
  - It has a diverse environment that is home to deserts, marshlands, savannas, mountains, and river valleys.

Note:



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Read more: [Unified Payments Interface \(UPI\)](#)

## Critical Minerals Summit

Recently, the Critical Minerals Summit was concluded in New Delhi on a note of strategic collaboration and policy insights, marking significant strides towards India's **critical minerals** objectives.

- The summit was **organised by the Ministry of Mines** in collaboration with Council on Energy, Environment and Water (CEEW), and the International Institute for Sustainable Development (IISD).
- The objective of the summit was **to equip government and industry stakeholders** with the **knowledge, connections and tools necessary to accelerate the domestic production of Critical Minerals**.
- The discussion emphasised a **cluster-based approach** to enhance synergies in mineral extraction, refining, and utilisation, especially in low-carbon technologies.
- The summit stressed on the **need for regulatory clarity, financing structures, and ESG standards** to attract investors.
- Organisations like **Invest India** were commended for their facilitation services in establishing processing capabilities in India.

# CRITICAL MINERALS

## OUR GROWING DEPENDENCE ON CRITICAL MINERALS

### WHAT ARE CRITICAL MINERALS?

Minerals deemed critical vary by country. The United States classifies **35 minerals** as critical because they are:

- essential to economic and national security,
- from vulnerable supply chains, or
- a key part of the manufacturing of a product.<sup>1</sup>

#### TOP INDUSTRIES THAT RELY ON CRITICAL MINERALS

- 1 Telecommunications and electronics
- 2 Energy
- 3 Defence
- 4 Aerospace
- 5 Transportation

2

#### CRITICAL MINERALS ARE EVERYWHERE



Lithium is used to create batteries.



Helium is used in MRIs.



Uranium is used in radiation therapy.



Potash is used in fertilizer.



Indium is used to make LCD screens.



Strontium is used in fireworks.

3

Read more: [Critical Minerals for India](#)

Note:



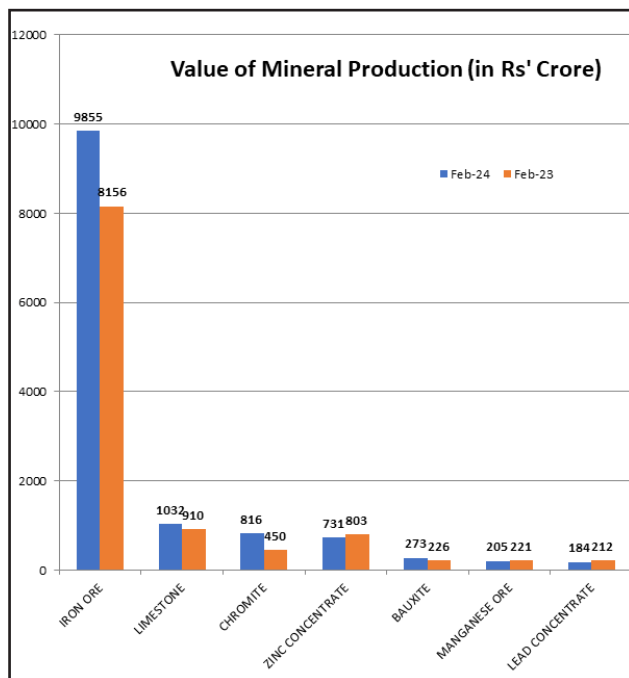
## Growth in Mineral Production

Recently, India's **mineral production** witnessed an **8.2% year-on-year growth** for the period April-February 2023-24 according to provisional data from the **Indian Bureau of Mines**.

- The **index of mineral production** for the **mining and quarrying sector** in February 2024 is 139.6, which is 8.0% higher compared to February 2023.
- Important **minerals showing positive growth** during February 2024 over February 2023 include: Gold (86%), Copper (28.7%), Bauxite (21%), Coal (12%), Natural gas (U) (11%), Petroleum(crude) (8%).
- Other important minerals showing **negative growth** include Iron Ore (-0.7%) and Lead (-14%).

### Index of Industrial Production:

- **IIP** is an indicator that measures the **changes in the volume of production** of industrial products during a given period.
- It is **compiled and published monthly** by the **National Statistical Office (NSO)**, Ministry of Statistics and Programme Implementation.
- Base Year for IIP is 2011-2012.



Read more: [Index of Industrial Production](#)

## PlayTrue Campaign of NADA

Recently, the National Anti-Doping Agency (NADA) India, concluded **#PlayTrue Campaign**, commemorating the **World Anti-Doping Agency (WADA)**'s **Play True Day**.

- The **PlayTrue Campaign** highlights **NADA India's commitment** to equipping athletes, coaches, and the entire sporting community with a thorough understanding of **anti-doping regulations**, empowering them to champion clean play in India.
- The campaign served as a crucial event for athletes and stakeholders to **collaborate, exchange insights**, and strategies towards establishing a **resilient anti-doping framework** in anticipation of the **Paris 2024 Olympics**.
- **NADA:**
  - **National Anti-Doping Agency (NADA)** was set up as a registered society with a mandate for dope free sports in India.
- **WADA:**
  - The **World Anti-Doping Agency (WADA)** was set up under the **International Olympic Committee** to develop, harmonise, and coordinate anti-doping regulations across all sports and countries.
- **National Drugs and Psychotropic Substances Act (NDPS) Act, 1985:**
  - It **prohibits a person** from producing, possessing, selling, purchasing, transporting, storing, and/or consuming **any narcotic drug or psychotropic substance**.

Read more: [Doping Practices In India](#)

## World's Deepest Blue Hole

Recently, researchers have discovered the **world's deepest blue hole** located in Mexico's **Chetumal Bay** in **Mexico**, known as **Taam Ja' Blue Hole (TJBH)**.

- It was originally believed to be the second deepest. However, recent measurements have shown that it **exceeds 420 meters** below sea level (mbsl), making it deeper than any other known blue hole.
- The new measurement reached into the **mesopelagic zone**, where sunlight is significantly reduced, and marine life concentration is high.
- TJBH's depth surpasses other well-known blue holes such as the **Sansha Yongle Blue Hole** in the South

Note:



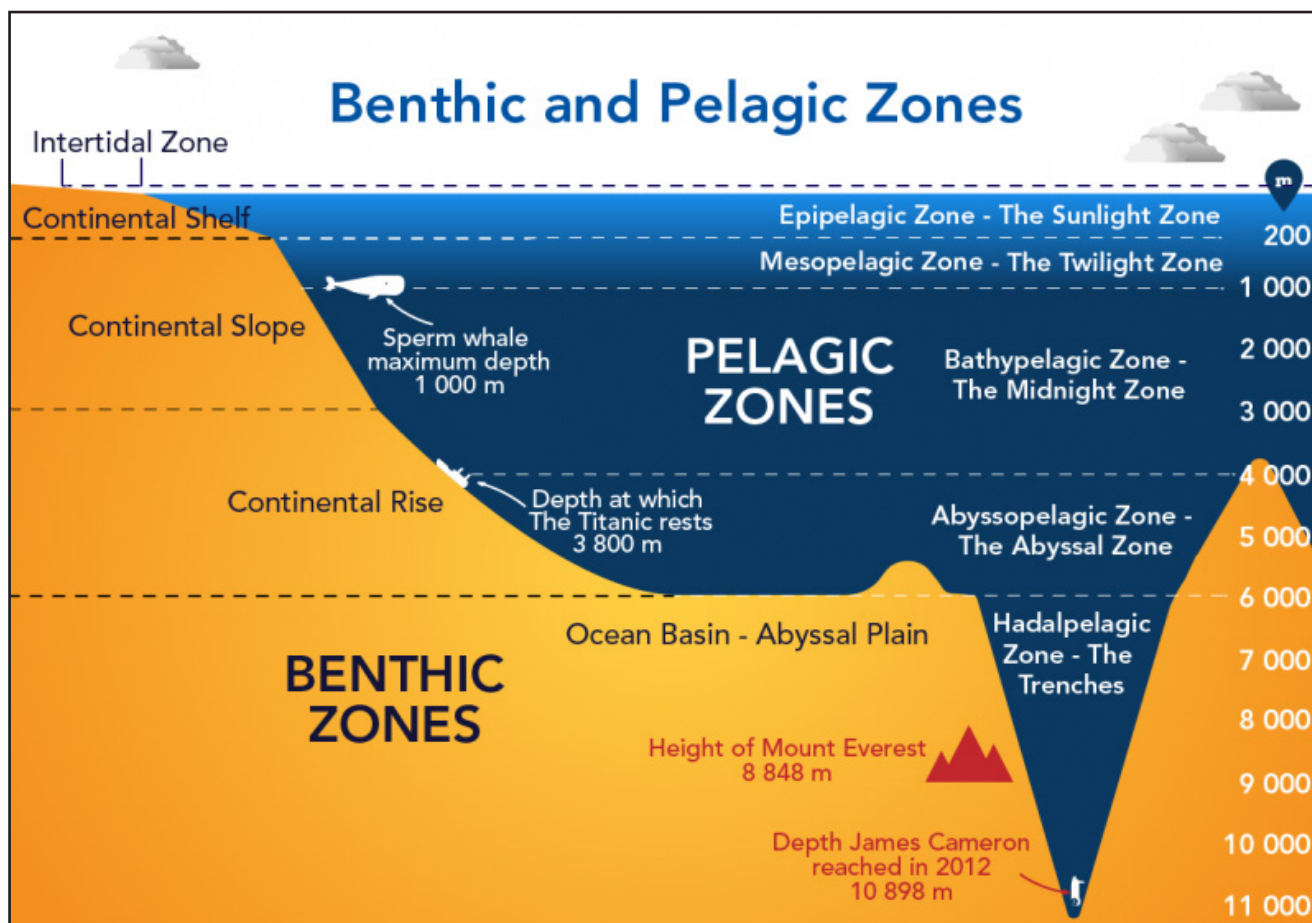
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China Sea (301 mbsl) and the **Dean's Blue Hole** in the Bahamas (202 mbsl).

- **Blue holes** serve as **biological hotspots** hosting diverse marine life, including corals, sponges, molluscs, sea turtles, and sharks.
- Exploration of blue holes has been limited due to **challenging access conditions**, as most blue holes have small openings that are several hundred feet underwater, making them inaccessible for automated submersibles.

Feature	Blue Holes	Deep Trenches
Formation	Cave collapse	Subduction of tectonic plates
Location	Continental shelves, reefs, etc.	Convergent plate boundaries
Depth	Variable, from shallow to very deep	Deepest parts of the ocean (Mariana Trench >36,000 ft)



Read more: [Biological hotspot](#)

## Orangutan Treats Wound With Medicinal Plant

- An **orangutan** named Rakus in **Sumatra** (Indonesia) treated a **facial wound** with a medicinal plant called **Akar Kuning** (*Fibraurea tinctoria*).
  - This is the **first documented** instance of a **great ape** using a tool with medicinal properties to treat a wound.

- The plant is known for its **antibacterial**, **anti-inflammatory**, and **anti-fungal** properties.
- Rakus' behaviour suggests that **wound treatment** may have **originated** in a common **ancestor** of humans and orangutans.
- **Great apes** belong to the taxonomic family **Hominidae** within the primate superfamily **Hominoidea**.
  - **Bonobo** (*Pan paniscus*); **Chimpanzee** (*Pan troglodytes*); **Eastern Gorilla** (*Gorilla beringi*);

Note:

**Western Gorilla (*Gorilla gorilla*), and orangutans (*Pongo*)** are referred to as **great apes** due to their large size and humanlike features.



Read more: [Hollongapar Gibbon Sanctuary](#)

## Chinese Road Construction in Shaksgam Valley

India expresses concern over recent [Chinese road construction](#) activities in the **Shaksgam Valley** in the **trans-Karakoram tract of Pakistan-occupied Kashmir (PoK)**, a territory ceded by Pakistan to China in 1963.

- India has consistently rejected the 1963 China-Pakistan Boundary Agreement, which attempted to cede the Shaksgam area to China and assert Shaksgam Valley as its territory.
- The [Siachen glacier](#), a vital piece of Indian territory, is situated adjacent to the Shaksgam Valley and holds strategic importance, particularly amidst the 2020 standoff between Indian and Chinese troops in [eastern Ladakh](#).
- China's extensive military build-up along the [Line of Actual Control](#), especially in eastern Ladakh, poses threats to Indian positions in regions like [Depsang](#) and [Daulat Beg Oldie](#).



Read more: [Pakistan-China Relationship & India](#)

## Study Advocates Removal of Exotic Plant Species

A recent study conducted by the **Kerala State Forest Protective Staff Organisation (KSFPSO)**, an association of frontline forest officers highlights the importance of removing exotic [plant species](#) from forests to ensure ample food for wild animals, particularly elephants, at Chinnakkanal in Munnar, Kerala.

- The KSFPSO emphasises the necessity of removing exotic species like *Acacia mearnsii* (black wattle) and *Eucalyptus* (*Eucalyptus teriticornis*) from forest areas to mitigate [human-elephant conflicts](#).
  - Exotic plants inhibit the growth of other species and restrict animal movement, leading to **food scarcity for wildlife**.
  - Changing these areas to natural grasslands will provide food and water for wild elephants at Chinnakkanal and improve the landscape.
- The Chinnakkanal landscape is overrun by **West Indian Lantana (*kongini*)**, hindering the growth of diverse vegetation and posing challenges for animal access.
- **Nearly 4,000 hectares of forestland** in the district are affected by exotic species, impacting prey availability and consequently attracting predators like [tigers](#) and [leopards](#) to adjacent areas.

Note:



# INVASIVE ALIEN SPECIES

*Invasive alien species are non-native organisms introduced outside their natural habitat, posing economic, environmental, and health risks.*

## ➔ Definition as per the Wildlife Protection Act, 1972

- Species which is not native to India, and whose introduction or spread may threaten or adversely impact wildlife or its habitat
- Includes animals, plants, fungi, and even microorganisms

## ➔ Characteristics

- Introduction via natural or human intervention
- Survive on native food resources
- Reproduce at a fast rate
- Edge out native species in the competition over resources

## ➔ Invasive Species Worldwide

*"1 in 10 species on the IUCN Red List are threatened by invasive species"*

- **Water Hyacinth:** Top global land invasive species
- **Lantana & Black Rat:** 2<sup>nd</sup> and 3<sup>rd</sup> most widespread invaders

*African catfish, Nile tilapia, red-bellied piranha, and alligator gar dominate the list of invasive wildlife in India*

- ➔ **Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) 2023 Report:** 37,000 established alien species worldwide, 200 new species introduced annually

Invasive Species	Impact
<b>African Catfish</b> ( <i>Clarias gariepinus</i> )	Preys on waterfowl and migratory birds in Keoladeo Park, Rajasthan, a UNESCO site
<b>Rough Cocklebur</b> ( <i>Xanthium strumarium</i> )	Severe threat to agriculture field crops such as soybeans, cotton, maize, etc.
<b>Cotton Mealy Bug</b> ( <i>Phenacoccus solenopsis</i> )	Causes severe yield losses in Deccan cotton crops
<b>Vilayati Kikar</b> ( <i>Prosopis juliflora</i> )	Mexican invasive species, dominates Delhi Ridge, posing severe harm as sole thriving vegetation
<b>Eucalyptus</b>	Tipu Sultan introduced Australian Eucalyptus to India, is non-invasive but allelopathic, hindering native species growth
<b>Subabul</b> ( <i>River tamarind</i> )	Introduced for fuel and fodder, responsible for depleting groundwater level

## INITIATIVES RELATED TO MANAGEMENT OF INVASIVE SPECIES

### ➔ Global

- Convention on International Trade in Endangered Species of Wild Fauna and Flora (1975)
- Convention on the Conservation of Migratory Species (1979)
- Convention on Biological Diversity (1992)
- Kunming-Montreal Global Biodiversity Framework (2022)

### ➔ India

- Plant Quarantine (Regulation of Import into India) Order (2003)
- National Biodiversity Action Plan (2008) (Target 4)
- National Action Plan on Invasive Alien Species (NAPINVAS) (2021-25)



Read more: [Invasive Alien Species](#), [Planting of Exotic Trees in Nilgiris is Harmful](#)

Note:

## 6<sup>th</sup> Conference of the ICDRI

Recently, the Prime Minister of India addressed the 6<sup>th</sup> International Conference on Disaster Resilient Infrastructure (ICDRI) 2024.

- ICDRI is the **annual international conference** of the Coalition for Disaster Resilient Infrastructure (CDRI) in partnership with member countries, organisations and institutions
  - It aim to increase the resilience of infrastructure systems to climate and disaster risks, thereby ensuring **sustainable development**.
- CDRI was **launched in 2019, at the United Nations Climate Action Summit** in New York. It is India's second major global initiative after the International Solar Alliance (ISA).
  - The **CDRI Secretariat** is based in **New Delhi, India**.
- CDRI's initiatives:
  - **Infrastructure for Resilient Island States (IRIS)**: India launched this initiative and it focuses on building capacity, having pilot projects in Small Island Developing States or SIDS.
  - **Infrastructure Resilience Accelerator Fund**: It is a fund supported by both the United Nations Development Programme (UNDP) and United Nations Office for Disaster Risk Reduction (UNDRR).
- Few other **CDRI programs** are the **resilient housing in Dominica, resilient transport networks in Papua New Guinea**, and enhanced early warning systems in the Dominican Republic and Fiji.

Read more: [India Approves Ratification of HQ Agreement with CDRI](#)

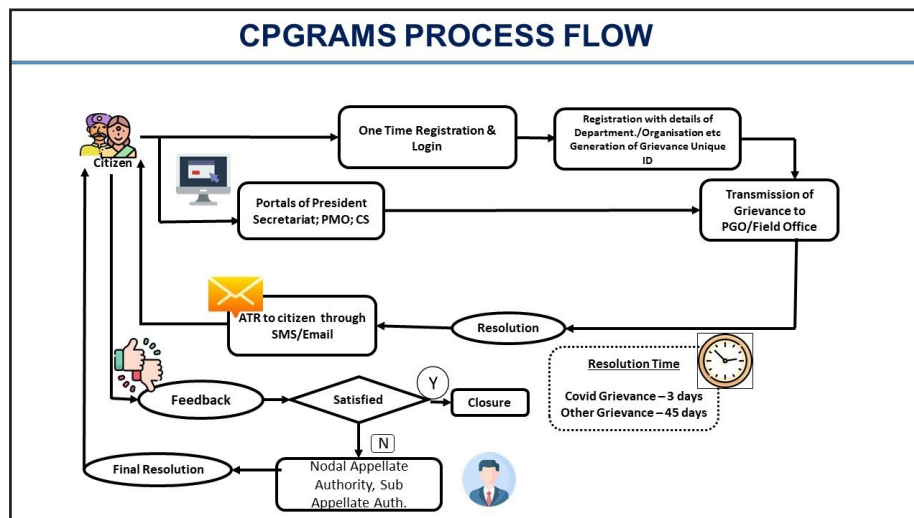
## CPGRAMS

Recently, the **Centralised Public Grievance Redressal and Monitoring System (CPGRAMS)** of India was recognised as a **state-of-the-art** grievance redressal system and a best practice of smart government by the **Commonwealth Secretariat**.

- Other country's monitoring systems are the Civil Registration and Vital Statistics System (CVRS) and identity management systems of **Namibia**, Human Resource Management and E-Citizen models of **Kenya**.

### CPGRAMS:

- It is an **online web-enabled system** developed by the **National Informatics Centre, (MeitY)**, in association with the **Ministry of Personnel, Public Grievances & Pensions**.
- It aims to **receive, redress and monitor** the grievances of the public.
- It acts as a **single portal** connecting all Ministries/ Departments of the Government of India and States.
- Citizens can access CPGRAMS through a standalone **mobile application** via the **UMANG integrated mobile application**.
- While registering, citizens receive a **unique registration ID** to track the status of their grievances.
- It also offers an **appeal mechanism** for citizens unsatisfied with the resolution.



Read more: [Santusht Portal](#)

Note:



## Microsoft Unveils Phi-3-Mini

Recently, Microsoft unveiled **Phi-3-Mini** as part of its family of **open AI models**, designed to be capable and cost-effective **Small Language Models (SLMs)**.

- **SLMs** are **AI systems** trained on existing data to solve language-related tasks such as **text classification**, **question answering**, **text generation**, etc.
- Phi-3-Mini reportedly outperforms models of similar size and even larger ones in key areas like **language**, **reasoning**, **coding**, and **math**.
- Phi-3-mini is the first model in its class to support a context window of up to **128K tokens**, with little impact on quality.
  - The amount of conversation that an **AI** can read and write at any given time is called the **context window**, and is measured in something called **tokens**.
- Microsoft collaborates with Imperial Tobacco Company (ITC) utilising Phi-3- Mini for their ongoing partnership in developing **Krishi Mitra**, a farmer-focused app benefiting over a million farmers.

Read More: [Microsoft's Phi-2: Small Model, Big Impact](#)

## 65<sup>th</sup> Foundation Day of CSIR-Indian Institute of Petroleum (IIP)

Recently, the **Council of Scientific & Industrial Research** - **Indian Institute of Petroleum (CSIR-IIP)** celebrated its **65th Foundation Day**, established on **14th April, 1960**.

- During the event, scientists were encouraged to undertake challenging research in **e-Methanol** and **Green Hydrogen**, **Carbon neutrality**.
- The **Director of CSIR-IIP** presented the institute's roadmap for **2024-2030**, aiming to achieve **Vikasit Bharat** and highlighted achievements of institute such as **Numaligarh Wax Plant**, **Sustainable Aviation Fuel**, **US Grade Gasoline**, **Medical Oxygen Units**, **Sweetening Catalyst**, **PNG Burner**, and **Improved Gur Bhatti**.
- CSIR is **one of the largest research and development (R&D) organisations**, established in 1942.

- It is funded by the **Ministry of Science and Technology** and it operates as an autonomous body through the **Societies Registration Act, 1860**.

- **CSIR** covers a broad range of fields from **radio and space physics, oceanography**, and **geophysics to biotechnology, nanotechnology, mining, aeronautics, environmental engineering**, and **information technology**.

Read More: [Council of Scientific and Industrial Research](#)

## Options Writing

Retail investors and affluent individuals are increasingly diving into **options writing**, a riskier segment once dominated by institutional players and experts.

- This surge is amidst regulatory concerns over retail participation in derivatives trading, with a **Securities and Exchange Board of India** study estimating losses for 90% of individual traders in the Futures and Options (F&O) segment.
- **Options writing** refers to the strategy of selling options contracts, which grants the **seller (writer) an obligation to buy or sell the underlying asset at a predetermined price (strike price)** within a specified period (expiration date).
  - This strategy is often employed by investors seeking to generate income through **collecting premiums**, but it comes with the risk of potentially unlimited losses if the market moves unfavourably against the writer.
- The introduction of **daily and weekly expiry options** has further fueled options writing, allowing traders to capitalise on short-term market movements and premium decay.
  - Options writers benefit from **theta decay (daily decline in an option's value)**, while buyers face challenges due to faster premium decay.
- Derivatives, financial instruments derived from underlying securities, include **forwards, futures, and options**.
  - Forwards and futures mandate buyers to purchase an asset at a pre-agreed price on a future date.
  - Options give **buyers the right, but not obligation**, to buy or sell the underlying asset at a predetermined price, exercisable on or before the maturity date.

Read more: [Nifty Next 50 index](#)

Note:



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## GST Revenue Collection for April 2024

The **Gross Goods and Services Tax (GST)** collections hit a record high in April 2024 at Rs 2.10 lakh crore. This represents a significant **12.4% year-on-year growth**, driven by a strong increase in **domestic transactions (up 13.4%)** and **imports (up 8.3%)**.

- After accounting for refunds, the **net GST revenue for April 2024 stands at Rs 1.92 lakh crore**, reflecting an impressive 15.5% growth compared to the same period of 2023.
- Finance Minister attributed this surge to the strong momentum in the economy and **efficient tax collections, with no dues pending on account of IGST (Integrated GST) settlement to the States.**
- **GST compensation cess** collections also hit an all-time high of Rs 13,260 crore,
  - Introduced for five years to compensate States for revenue losses due to the 2017 switch to the GST regime, the **cess is now being used to repay loans taken during the pandemic** to compensate States amid a lockdown-triggered collapse in revenues.
- **Mizoram reported the highest growth at 52%**, followed by Assam at 25%, and Delhi, Bihar, and Goa at 23% rise in revenues.



Read more: [Goods and Services Tax \(GST\)](#)

## Shompen Cast their First Vote

For the first time **7 members** of the **Shompen tribe**, one of the **Particularly Vulnerable Tribal Groups (PVTGs)** residing in the **Great Nicobar Island** cast their votes in the Andaman and Nicobar Lok Sabha constituency.

- They are highly **isolated, semi-nomadic hunter-gatherers**. The estimated population of the **Shompen tribe** was **229** as per the 2011 Census data.
- They are known for their distinctive **unique language**, consisting of various dialects understood only within specific bands.
- The tribe's **social structure is patriarchal**, with the eldest male member overseeing family affairs. While **monogamy is common**, polygamy is also permissible.
- Five PVTGs are residing in Andamans archipelago are **Great Andamanese, Jarwas, Onges, Shompens and North Sentinelese**.

Note:



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- PVTGs were originally labelled as Primitive Tribal Groups (PTGs) by the **Dhebar Commission in 1973**, later **renamed PVTGs by the Government of India in 2006**.

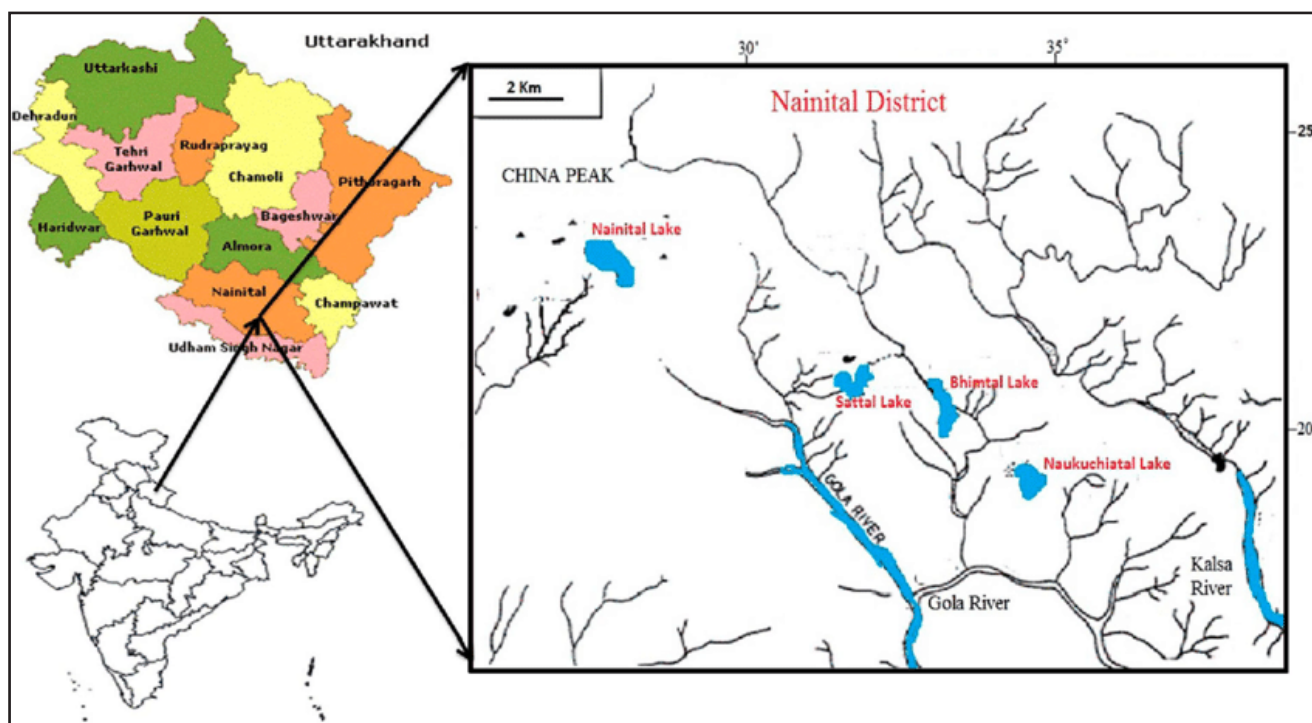
Read more [Particularly Vulnerable Tribal Groups \(PVTGs\)](#)

## Bhimtal Lake

- Bhimtal Lake is the **largest lake in the Nainital district**, in the state of **Uttarakhand**. It is the largest lake in the **Kumaon region**, known as the “lake district of India”.
  - It is named after the second **Pandava called Bhima** of the famous epic Mahabharata.
- It is a **natural lake** and its origin is attributed to

**several faults** that occurred due to the shifting of the **Earth's crust**.

- The lake was built during **British time in 1883** and has a **masonry dam** built on it.
- The lake has rich flora and fauna around it and thick forests of **pine and oak** cover the hill slopes around the lake.
  - It is home to a **number of migratory birds** in the winter months.
  - Famous species found in the area include **bulbul, wall creeper, Emerald Dove, Black Eagle, and Tawny fish owl**.
- The lake has an **island at its centre** developed as a tourist attraction **with an aquarium**.



Read more: [sun-stream lake](#)

## Simultaneous Eruption of Solar Flares

Recently, the [National Aeronautics and Space Administration \(NASA\)](#) solar dynamics observatory captured a rare celestial event that occurred with **four solar flares erupting simultaneously**.

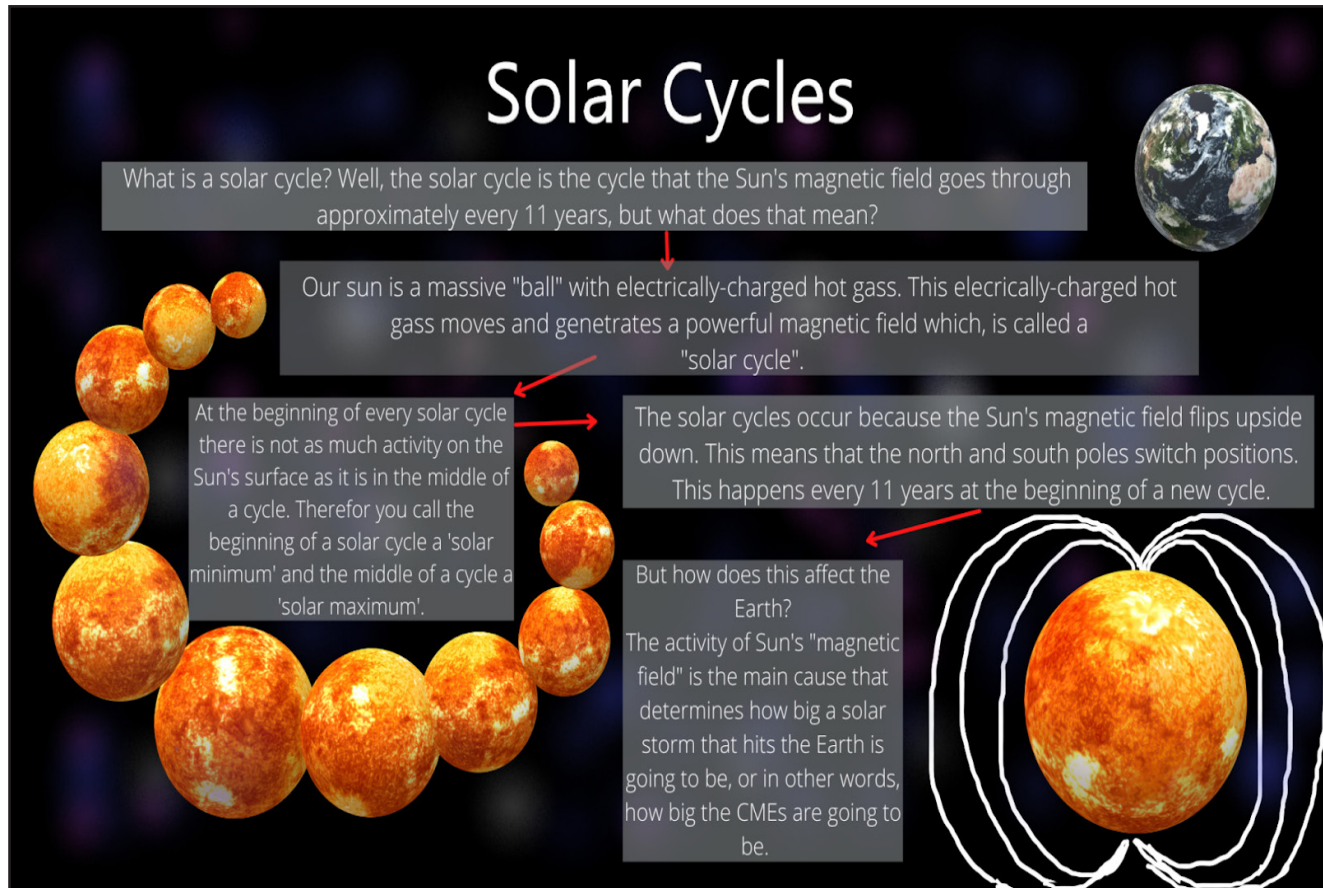
- It originated from **three sunspots** and a large magnetic filament, demonstrating complex magnetic interactions.

- When the sun reaches the peak of its 11-year solar cycle known as solar maximum, it exhibits heightened activity.
  - It is known as a **sympathetic solar flare**, where multiple eruptions occur across the Sun's magnetic field, linked by massive magnetic field loops.
- **Sympathetic flares** are caused by **one eruption triggering others**, leading to **Coronal Mass Ejections (CMEs)** and massive bursts of plasma.

Note:



- It is considered **rare** because most reported sympathetic flares involve **only two linked flares**, while this one involved **four flares** erupting in unison making it a super-sympathetic event.
- These types of events have the **potential to disrupt power grids, telecommunication networks on Earth**, and expose astronauts to dangerous radiation levels.
- This event offers scientists an opportunity to understand the **Sun's complex life cycle** and magnetic interactions better.
- The **sun's magnetic field goes through a cycle**, called the solar cycle, every 11 years the Sun's magnetic field completely flips which means the **sun's north and south poles switch places**.



Read more: [Solar Radiation Management](#)

## IREDA Gets Navratna Status

**Indian Renewable Energy Development Agency (IREDA)** achieves a significant milestone as it attains '**Navratna**' status from the **Department of Public Enterprises**.

- IREDA was set up in 1987 as a non-banking financial institution, it operates under the **Ministry of New and Renewable Energy** and promotes and develops projects related to **renewable energy** sources.
- **Navratna Privileges:** Firms with Navratna status can undertake investments up to Rs 1,000 crore without central authority approval, allocate 30% of net worth annually, and engage in joint ventures and overseas subsidiaries.
- **Qualification Criteria:** Companies must attain **Miniratna Category-I designation** and be listed in Schedule A of CPSEs to qualify for Navratna status.

Note:



Classification of CPSEs			
Category	Launch	Criteria	Examples
Maharatna	➤ Maharatna Scheme was introduced for CPSEs in May, 2010, in order to empower mega CPSEs to expand their operations and emerge as global giants.	<ul style="list-style-type: none"> <li>➤ Having Navratna status.</li> <li>➤ Listed on Indian stock exchange with minimum prescribed public shareholding under Securities and Exchange Board of India (SEBI) regulations.</li> <li>➤ An average annual turnover of more than Rs. 25,000 crore during the last 3 years.</li> <li>➤ An average annual net worth of more than Rs. 15,000 crore during the last 3 years.</li> <li>➤ An average annual net profit after tax of more than Rs. 5,000 crore during the last 3 years.</li> <li>➤ Should have significant global presence/ international operations.</li> </ul>	➤ Bharat Heavy Electricals Limited, Bharat Petroleum Corporation Limited, Coal India Limited, GAIL (India) Limited, etc.
Navratna	➤ Navratna Scheme was introduced in 1997 in order to identify CPSEs that enjoy comparative advantages in their respective sectors and to support them in their drive to become global players.	<ul style="list-style-type: none"> <li>➤ The Miniratna Category - I and Schedule 'A' CPSEs, which have obtained 'excellent' or 'very good' rating under the Memorandum of Understanding system in three of the last five years, and have composite score of 60 or above in the six selected performance parameters, namely. <ul style="list-style-type: none"> <li>○ Net profit to net worth.</li> <li>○ Manpower cost to total cost of production/ services.</li> <li>○ Profit before depreciation, interest and taxes to capital employed.</li> <li>○ Profit before interest and taxes to turnover.</li> <li>○ Earning per share.</li> <li>○ Inter-sectoral performance.</li> </ul> </li> </ul>	➤ Bharat Electronics Limited, Hindustan Aeronautics Limited, etc.
Miniratna	➤ Miniratna scheme was introduced in 1997 in pursuance of the policy objective to make the public sector more efficient and competitive and to grant enhanced autonomy and delegation of powers to the profit-making public sector enterprises.	<ul style="list-style-type: none"> <li>➤ <b>Miniratna Category-I:</b> The CPSEs which have made profit in the last three years continuously, pre-tax profit is Rs.30 crores or more in at least one of the three years and have a positive net worth are eligible to be considered for grant of Miniratna-I status.</li> <li>➤ <b>Miniratna Category-II:</b> The CPSEs which have made profit for the last three years continuously and have a positive net worth are eligible to be considered for grant of Miniratna-II status.</li> <li>➤ Miniratna CPSEs should have not defaulted in the repayment of loans/interest payment on any loans due to the Government.</li> <li>➤ Miniratna CPSEs shall not depend upon budgetary support or Government guarantees.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Category-1: Airports Authority of India. Antrix Corporation Limited, etc.</li> <li>➤ Category-II: Artificial Limbs Manufacturing Corporation of India, Bharat Pumps &amp; Compressors Limited, etc.</li> </ul>

Read more: [Sectors of Indian Economy](#), [India's Renewable Energy Vision: IREDA](#)

Note:

## Hangor Class Submarine

Recently, China has launched the first of eight Hangor-class submarines being built for Pakistan. It is a **diesel-electric attack submarine**.

- It is bigger than the Indian Navy's **Kalvari class submarines**, with a displacement of 2,800 tons compared to 1,775 tons for the Kalvari class.
- The Hangor class has **Air independent propulsion (AIP)**.
  - AIP allows submarines to stay submerged for longer periods.
  - AIP is planned to be installed on the first Scorpene class submarine **INS Kalvari** in 2024.
- In terms of armament, both carry **torpedoes and anti-ship missiles**, The Kalvari class likely has more modern and battle-tested armament.
- The bigger size of the Hangor class may hamper its **manoeuvrability in littoral waters** compared to the smaller Kalvari class.



Read more: [Air Independent Propulsion for Diesel Electric Submarines](#)

## Plato and the Avars

Recent scientific advances have uncovered **Plato's burial site** and shed light on the **Avars'** historical significance, unveiling two intriguing past chapters.

- Plato (427-348 BCE), a prominent philosopher from Greece, was a student of Socrates (470-399 BCE) and a teacher of Aristotle (384-322 BCE).
  - In North India and Pakistan, they are known as 'Sukraat', 'Aflatoon', and 'Arastu' respectively.
  - Ancient **papyrus scrolls** (writing material used in ancient Egypt and the Mediterranean) discovered

in the 18<sup>th</sup> century from Herculaneum unveiled Plato's burial in **Athens' Academia garden**.

- Avars, a dominant power in eastern central Europe from the late 6<sup>th</sup> century CE to the early 9<sup>th</sup> century.
  - The Avars originated from eastern central Asia and settled in the Carpathian Basin. The researchers collected DNA from Avar cemeteries and used a method called **ancIBD** to investigate the social practices of the Avars.
    - ancIBD detects **Identity-by-Descent (IBD) segments** in ancient human DNA (aDNA). IBD segments are long DNA sequences shared between two individuals and are a signal for recent genealogical connections.
  - The findings reveal that **Avars avoid cousin marriage** and have minimal intermarriage with non-Avars.
    - They practised **Levirate unions** (a widow married a male from the family of her deceased spouse), which is not common in Europe but were an **established feature of steppe peoples from Asia** and had a strict **patrilineal structure**.

## AI-powered Election Outreach

As the ongoing Lok Sabha elections in India unfold the use of technologies like **artificial intelligence (AI)** and **augmented reality (AR)** is rapidly transforming how politicians interact with and reach out to potential voters.

- **AI-generated Conversation:** It involves **generating the realistic-sounding voice of a local leader** to make calls to voters and respond to their issues using a generative AI and making promises to improve the situation.
- **Augmented Reality Rallies:** Political parties use AR technology to create computer-generated images of politicians delivering messages to voters in their real-world environment, accessed through QR codes.
- **Social Media Deepfakes:** **AI-generated deepfakes** of politicians and bollywood celebrities are being used on social media and messaging platforms to deliver positive and negative messages to sway voter sentiment.
- **Concerns about Literacy and Transparency:** The widespread use of these technologies raises concerns

Note:

about the potential for misinformation and the need for greater transparency, especially in a country with a large and diverse population of internet users with varying degrees of digital literacy.

Read more: [Deepfakes: Opportunities, Threats, and Regulation, Artificial intelligence](#)

## Goldman Environmental Prize 2024

Alok Shukla, a forest and tribal rights activist, has been awarded the prestigious [Goldman Environmental Prize 2024](#) for his successful campaign that saved **4.45 lakh acres of biodiversity-rich forests** from 21 planned [coal mines in Chhattisgarh's Hasdeo Aranya region](#).

- The forest of the Hasdeo Aranya is spread over 1.70 lakh hectares across the districts of Korba, Surajpur, and Surguja in Chhattisgarh, known as the “**lungs of Chhattisgarh**”, with rich biodiversity and home to **25 endangered species**, 92 bird species, and 167 rare and medicinal plant species.

- The **Hasdeo River**, which flows into the [Mahanadi River](#), is fed by these forests and supplies water to the **Hasdeo Bango reservoir**, irrigating 741,000 acres of farmland.

- Chhattisgarh, where 44% of the land is forested, has the **third largest forest coverage in India**.
- Furthermore, nearly 15,000 Indigenous peoples rely on the Hasdeo Aranya forests for their livelihood, cultural heritage, and food.

- The Goldman Environmental Prize also known as the **Green Nobel Awards** awarded by the Goldman Environmental Foundation. The Prize was founded by **Richard and Rhonda Goldman in 1989**.

- It recognises grassroots environmental leaders from six regions (Asia, Africa, Europe, North America, South and Central America) and lastly, islands and island nations.
- The winners are selected by an international jury and awarded USD 200,000 as prize money.

Read more: [Protests in Chhattisgarh Over Coal Mining](#)

Note: