

The Road Map to Mussoorie...



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## **Polity**

### NATIONAL SECURITY ACT, 1980

**Context:** Manipur Governor Ajay Kumar Bhalla, shortly after assuming charge, urged the use of legal measures like the National Security Act, 1980, to address miscreants and troublemakers during a security review meeting.

- The National Security Act was passed by the Parliament in 1980 and has been amended several times since then.
  - NSA "empowers the state to detain a person without a formal charge and without trial".

#### Need of NSA:

 Under the Act, a person is taken into custody to prevent them from acting in any manner prejudicial to "the security of the state" or for "maintenance of the public order".

#### Administrative order of District Magistrate:

 It is an administrative order passed either by the Divisional Commissioner or the District Magistrate (DM) and not detention ordered by police based on specific allegations or for a specific violation of the law.

#### **Key highlights of NSA:**

- Even if a person is in police custody, the District Magistrate can slap NSA against them.
- Or, if a person has been granted bail by a trial court, they can be immediately detained under the NSA.
- If the person has been acquitted by the court, the same person can be detained under the NSA.

- The law takes away an individual's constitutional right to be produced before the magistrate within 24 hours, as is the case when the accused is in police custody.
- The detained person also does not have the right to move a bail application before a criminal court.
- Grounds of detention:
  - NSA can be invoked to prevent a person from acting in any manner prejudicial to the defence of India, relations of India with foreign powers or the security of India.
  - Among others, it can also be applied to prevent a person from acting in any manner prejudicial to the maintenance of supply and services essential to the community.
- Period of detention:
  - An individual can be detained without a charge for a maximum period of 12 months.
  - The detained person can be held for 10 to 12 days in special circumstances without being told the charges against them.

#### Protection available under the Act

- Representation before an independent advisory board:
  - The Indian Constitution allows both preventive detention and the right of protection against arrest and detention in certain cases, enshrined under Article 22 of the Constitution.
  - However, Article 22(3) provides that the rights available to an arrested person will not be applicable in case of preventive detention, thus an exception is carved out.

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- One crucial procedural safeguard under the NSA granted is under Article 22(5), where all the detained persons have the right to make an effective representation before independent advisory board. which consists of three members; and the board is chaired by a member who is, or has been, a judge of a high court.
  - In a private investigation of 2021, it was found that in all the NSA cases before the Allahabad High Court in the previous three years, the independent advisory board upheld the detention.
- The DM who passes the detention order is protected under the Act:
  - o No prosecution or any legal proceeding can be initiated against the official who carries out the orders. Therefore, the writ of habeas corpus is the available remedy under the Constitution against the state's power of taking people into custody under the NSA.

### **UAPA, 1967**

**Context:** Supreme Court recently rejected bail applications of some members of the now-banned Popular Front of India, who are charged under provisions of the UAPA, 1967.



## About Unlawful Activities (Prevention) Act, 1967 (UAPA):

- It is India's premier anti-terror law. It is and upgrade on the Terrorist and Disruptive Activities (Prevention) Act which lapsed in 1995 and the Prevention of Terrorism Act (POTA) which was repealed in 2004.
- Assigns absolute power to Union Govt., by way of which if the govt. deems an activity as unlawful, then it may declare it so in the Gazette.
  - It provides for the **death penalty and life imprisonment** as the highest punishments for terrorist acts.
- Investigating agency can file a charge sheet in a maximum of 180 days after arrest and this duration can be extended after intimating the court.
- It allows for the detention of suspects without charge or trial for up to 180 days, and for the denial of bail to the accused unless the court is satisfied that they are not guilty.
- It defines unlawful activity as any action that supports or incites the cession or secession of any part of India, or that questions or disrespects its sovereignty and territorial integrity.
- It defines terrorist act as any act that causes or intends to cause death or injury to any person, or damage or destruction to any property, or that threatens the unity, security or economic stability of India or any other country.
- Under UAPA, both Indian and foreign nationals can be charged. It will be applicable to the offenders in the same manner, even if crime is committed on a foreign land, outside India.

#### 2019 Amendment to UAPA:

• Empowers Union Govt. to designate individuals as terrorists on certain grounds provided in the Act.

 Empowers Director General of National Investigation Agency (NIA) to grant approval of seizure or attachment of property.

#### NCRB 'Crime in India' Report (2022):

- Charge sheets in close to 50% of UAPA cases have been filed at least a year after the FIR was registered.
- 15% of these charge sheets took more than two years to file before a court.

#### DAM SAFETY ACT OF 2021

**Context:** Supreme Court recently criticized the Union Govt. for its inaction in fully implementing the Dam Safety Act, 2021.



#### About the Dam Safety Act, 2021:

- It was enacted to ensure the structural and operational safety of over 5,700 large dams in India. It aims to:
  - Prevent dam-related disasters by ensuring dam safety.
  - Establish institutions for monitoring, maintenance, and preparedness.

#### **Bodies Created under the Act:**

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 National Committee on Dam Safety (NCDS): Chaired by the Chairperson of the Central Water Commission (CWC) and reconstituted every three years to develop guidelines and standards.

- National Dam Safety Authority (NDSA):
   Implement NCDS guidelines, regulate dam safety standards, and resolves disputes between State Dam Safety Organizations (SDSOs) and dam owners.
- State Committees on Dam Safety (SCDS): Provide state-level oversight.
- State Dam Safety Organizations (SDSOs): Monitor and inspect dams at the state level, reporting to NDSA.

#### **Other Major Provisions:**

- Responsibilities of Dam Owners: Form
   Dam Safety Units, prepare and Emergency
   Action Plans (EAPs) and conduct regular
   Comprehensive Safety Evaluations (CSEs).
- **Emergency Preparedness:** Mandates EAPs for rapid response during crises.
- **Penalties**: Imprisonment up to two years, fines, or both for failing to comply with Act provisions.

#### Why is dam safety a concern in India?

- Third-highest Number of Dams Globally: India has over 4,500 large dams, following China and the USA.
- **Aging Dams:** By 2025, over 1,115 dams will be >50 years old. By 2050, 4,250 dams will be >50 years of age and 64 dams will be >150 years of age.
- **Decreasing** Storage Capacity: Sedimentation reduces reservoir efficiency, affecting water availability for irrigation, drinking, and hydropower. As per a 2022 UN study, around 3,700 dams in India will lose 26% of total storage by 2050 due to sediment accumulation.
- Structural Vulnerabilities: Poorly designed sedimentation management systems make many dams structurally weak over time. Extreme environmental events, such as floods, can exacerbate these vulnerabilities.
- Lack of Data & Monitoring: Insufficient documentation of storage loss,

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sedimentation rates, and other critical metrics leads to a lack of preparedness.

## DIGITAL PERSONAL DATA PROTECTION ACT, 2023

**Context:** Multiple articles in today's edition of The Hindu analyses the provisions and shortcomings of the recently issued draft DPDP rules.



Key features of the Digital Personal Data Protection Act, 2023 (DPDP Act):

- It applies to the processing of digital personal data within India. It applies to processing of personal data outside India, if it is to offer goods or services to individuals in India.
- Personal data may be processed only for a lawful purpose for which an individual has given consent. A notice must be given before seeking consent. Consent may be withdrawn at any point in time.
- An individual, whose data is being processed (data principal), will have the right to:
  - o obtain info about processing
  - seek correction and erasure of personal data
  - nominate another person to exercise rights in the event of death or incapacity

- Data principals will have the following duties. They must not:
  - o register a false or frivolous complaint
  - furnish any false particulars or impersonate another person in specified cases.
- The entity determining the purpose and means of processing, (data fiduciary), must:
  - make reasonable efforts to ensure accuracy of data
  - build security safeguards to prevent
     a data breach
  - inform Data Protection Board of India and affected persons in the event of a breach
  - erase personal data as soon as the purpose has been met and data retention is not necessary.
- For govt entities, right of data principal to erasure will not apply.
- Transfer of Personal Data outside India:
   Union Govt. will notify countries where a data fiduciary may transfer personal data. Act relaxes data localisation rules and permits data to flow to certain destinations, based on data security landscape.
- Data Protection Officer and an independent data auditor: They will be appointed by businesses of a certain size (based on volume of data processed), to evaluate compliance.
- Union govt. may also exclude certain enterprises from Act's restrictions based on volume of users and personal data handling.

#### **Exemptions:**

- Union Govt. is empowered to exempt its agencies from the Act in the interest of:
  - Sovereignty and integrity of India, Security of state, Friendly relations

with foreign states, Public order, Incitement to offence.

- Union govt may exempt certain activities the Act. These include:
  - Data processing by govt entities in the interest of the security of the state and public order
  - Research, archiving, or statistical purposes.
- Rights of the data principal and obligations of data fiduciaries will not apply in cases of:
  - Prevention and investigation of offences
  - Enforcement of legal rights or claims.

#### **Penalties:**

- Focus is more on financial penalties than a criminal conviction.
- For companies: Between Rs 50 250 crores for data breaches and noncompliance.
- A consumer who submits false documents for an online service or makes bogus grievance complaints may face Rs 10,000 fine.

#### Data Protection Board (DPB)

- It will act as the adjudicating body to enforce the provisions of the Act.
- Key functions of the Board include
  - monitoring compliance and imposing penalties
  - directing data fiduciaries to take necessary measures in the event of a data breach
  - hearing grievances made by affected persons
- Appeals will lie to Telecom Disputes
   Settlement and Appellate Tribunal
   (TDSAT) set up under TRAI Act, 1997.

#### **Draft DPDP Rules, 2025**

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- **Data Transfer:** Allow the transfer of certain personal data outside India, as approved by the Union Govt.
- Citizens at the Core: Citizens have the right to demand data erasure, appoint digital nominees, and have user-friendly mechanisms to manage their data by Data Fiduciaries.
- Data Erasure: Data retention can be done up to 3 years from the last interaction with the Data Principal. The Data Fiduciary must notify the Data Principal at least 48 hours before erasure.
- Graded Responsibility: Startups and MSMEs have a lower compliance burden, while larger Data Fiduciaries have higher obligations.
- Consent Managers: Platform may also collect consent via Consent Managers (they handle collection, storage, and use of user consent). A Consent Manager must be a firm incorporated in India with sound financial & operational capacity, and a minimum net worth of Rs. 2 crore.
- **Setting up of DPB:** DPB will have the powers of a civil court.

### POCSO ACT, 2012

**Context:** The case filed against a former Chief Minister of Karnataka under the POCSO Act has been in the news recently.



About Protection of Children from Sexual Offences (POCSO) Act, 2012:

• It was enacted in consequence to **India's** ratification of the UN Convention on the Rights of the Child in 1992.

- It aims to address offences of sexual exploitation and sexual abuse of children, which were either not specifically defined or in adequately penalised.
- The Act defines a child as any person below the age of 18 years. The Act provides punishment as per the gravity of offence.
- The Act was amended in 2019 to introduce more stringent punishment including the death penalty for sexual crimes on children, with a view to deter such crimes against children.
- The Govt of has also notified the POCSO Rules, 2020.
- Nodal Agency: Ministry of Women and Child Development

#### **Key provisions of POCSO Act:**

- Gender-neutral legislation: The Act recognizes that both girls and boys can be victims of sexual abuse.
- Non-reporting is a crime: Any person in charge of an institution who fails to report commission of a sexual offence faces punishment.
- No time limit for reporting abuse: A victim may report an offence at any time, even years after the abuse.
- Victim's identity is confidential: It forbids disclosure of victim's identity in any form of media unless authorised by POCSO special courts.
- The **storage of child pornography** has also been made a new offence.
- Offence of 'sexual assault' has been defined in explicit terms unlike the abstract definition of 'outraging modesty of a woman' in the Indian Penal Code.

#### POCSO Rules 2020:

- Interim Compensation and Special Relief:
  - It allows the Special Court to order interim compensation for the child's needs related to relief or rehabilitation after FIR registration.

This payment is adjusted against the final compensation, if any.

#### • Immediate Payment of Special Relief:

- The Child Welfare Committee (CWC) may recommend payment for needs like food, clothes, transport, etc. using funds from the District Legal Services Authority (DLSA), the District Child Protection Unit (DCPU), or funds maintained under Juvenile Justice Act 2015.
- Payment must be made within a week of receiving the CWC's recommendation.

#### • Support Person for the Child:

- CWC can provide a support person to assist the child throughout the investigation and trial process.
- This person protects the child's best interests such as physical, emotional, and mental well-being, access to medical care, counselling, & education. They also inform the child and their guardians about developments related to the case.

## Scheme to Support Pregnant Minor Victims of Sexual Assault

- It was notified under Section 4 & 6 of the POCSO Act, 2012.
- It seeks to assist minor girls who have been abandoned by their families due to forced pregnancies resulting from rape or gang rape.
- It acknowledges the physical and emotional trauma on minor victims of rape and aggravated assault.
- The scheme, with an outlay of Rs 74.10 crore, will offer shelter, food, legal aid, medical care and other necessary assistance to victims under the Nirbhaya Fund.
- It is **not mandatory for victims to possess a copy of the FIR** to avail the benefits provided by the scheme.

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- The funds will be utilized to set up shelters dedicated to these victims, either as standalone shelters or designated wards within existing child care institutions (CCIs).
- It will **leverage the administrative structure of Mission Vatsalya** in collaboration with state govts & CCIs.

#### **Key Data regarding POCSO Act:**

- 415 POCSO fast-track courts have been established across India to expedite justice for minor victims.
- According to National Crime Records Bureau (NCRB) 2021 data, 51,863 cases were reported under the Act.
- Out of these cases, 64% were reported under Sections 3 and 5 of the Act, which pertain to penetrative sexual assault and aggravated penetrative sexual assault.

#### Nirbhaya Fund:

- ✓ Established in 2013 and provides for a nonlapsable corpus fund for safety & security of women. It is administered by Dept. of Economic Affairs (DEA) of the Ministry of Finance.
- ✓ But **Ministry of Women and Child Development selects proposals** to be funded under the Nirbhaya Fund.

#### **Mission Vatsalya:**

✓ Centrally Sponsored Scheme under the Ministry of Women & Child Development to achieve development and child protection priorities aligned with the SDGs.

#### **Child Care Institutions:**

✓ Defined under the Juvenile Justice Act 2015 as a facility fit for providing care and protection to children who are in need of such services.

#### **Child Welfare Committees (CWC):**

- ✓ They are **created under the Juvenile Justice Act of 2015.**
- ✓ It is a **quasi-judicial agency** and is the final authority on children in need of care and

- protection. Anyone who is connected to the child can file a petition to the Magistrate of that District, who heads the CWC.
- ✓ It is mandatory to form one or more CWCs in every district.

## CENTRALIZED PENSION PAYMENTS SYSTEM (CPPS)

**Context:** The Employees' Provident Fund Organisation recently it has fully rolled out the Centralized Pension Payments System (CPPS) under Employees' Pension Scheme 1995.

- It is implemented by the Employees'
   Provident Fund Organisation
   (EPFO) which allows pensioners to access their pension from any bank or branch nationwide.
- The system aims to streamline the payment process, eliminate the need for physical verifications, and ensure seamless pension disbursement for over 7.85 million pensioners.
- It is a paradigm shift from the existing pension disbursement system that is decentralised, with each zonal/regional office of EPFO maintaining separate agreements with only 3-4 banks, the ministry explained in a statement.
- Under CPPS, a beneficiary will be able to withdraw pension from any bank and there will be no need for to visit the bank for verification at the time of commencement of pension, and the amount will be immediately credited upon release.
- It will also ensure disbursement of pension throughout India without any need for transfer of pension payment orders (PPO) from one office to another even when the pensioner moves from one location to another or changes his bank or branch.

Key Facts about Employees' Provident Fund Organisation (EPFO):

- It is a statutory body under the Employees' Provident Funds and Miscellaneous Act, 1952.
- It is under the administrative control of the Union Ministry of Labor and Employment.
- Structure of EPFO:
  - The Act and all its schemes are administered by a tripartite board called the Central Board of Trustees.
  - The board comprises representatives of the Government (both Central and State), employers, and employees.
  - The board is chaired by the Union Minister of Labour and Employment, Government of India.
- The Central Board of Trustees operates 3 schemes:
  - The Employees' Provident Funds
     Scheme, 1952 (EPF)
  - The Employees' PensionScheme, 1995 (EPS)
  - The Employees' Deposit Linked Insurance Scheme, 1976 (EDLI)
- EPFO is also the nodal agency for implementing Bilateral Social Security Agreements with other countries on a reciprocal basis.
- Coverage: The schemes offered by EPFO cover Indian workers and international workers (from countries with whom the EPFO has signed bilateral agreements).

#### **UNIFORM CIVIL CODE**

**Context:** Uttarakhand is likely to roll out its new Uniform Civil Code (UCC) by the end of January.



#### **About Uniform Civil Code:**

- The Uniform Civil Code is mentioned in Article 44 of the Indian Constitution, which is part of the Directive Principles of State Policy.
  - These principles are not legally enforceable but are meant to guide the state in making policies.
- It has been supported by some as a way to promote national integration and gender justice, but opposed by others as a threat to religious freedom and diversity.
- Goa retained its common family law known as the Goa Civil Code after it was liberated from Portuguese rule in 1961.
- Recently, **Uttarakhand** has also introduced a Uniform Civil Code.
- The rest of India follows different personal laws based on their religious or community identity.

#### Personal Laws in India:

- Currently, Muslims, Christians, Hindus, Jains, Buddhists, Sikhs, Parsis, and Jews are governed by their own personal laws.
- Personal laws are determined based on religious identity.
- The reformed Hindu Personal Law still incorporates certain traditional practices.
- Differences arise when Hindus and Muslims marry under the Special Marriage Act, where Hindus continue to be governed by Hindu Personal Law, but Muslims are not.
- The 21<sup>st</sup> Law Commission had recommended that a uniform civil code is neither desirable nor necessary at this stage in India. However,

the issue is once again being considered by the 22<sup>nd</sup> Law Commission.

#### **Important cases related to UCC:**

- Shah Bano Begum v. Mohammad Ahmed Khan (1985)
  - The Supreme Court upheld the right of a Muslim woman to claim maintenance from her husband under Section 125 of the Criminal Procedure Code, even after the expiry of the Iddat period.
  - It also observed that a UCC would help in removing contradictions based on ideologies.
- Sarla Mudgal v. Union of India (1995):
  - The Supreme Court held that a Hindu husband cannot convert to Islam and marry another woman without dissolving his first marriage.
  - It also stated that a UCC would prevent such fraudulent conversions and bigamous marriages.
- Shayara Bano v. Union of India (2017):
  - The Supreme Court declared the practice of triple talaq as unconstitutional and violative of the dignity and equality of Muslim women.
  - It also recommended that the Parliament should enact a law to regulate Muslim marriages and divorces.

## FOREIGN CONTRIBUTION REGULATION ACT (FCRA)

Context: The Union home ministry has granted registration under the FCRA to the famous Banke Bihari temple in Uttar Pradesh enabling it to receive donations from foreign countries for religious activity.

#### **About FCRA:**

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- It was originally enacted during the emergency in 1976.
- **Reason for enactment:** Apprehensions that foreign powers were interfering in India's affairs by pumping money into the country through independent organizations.
- The law sought to regulate foreign donations to individuals and associations so that they functioned in a manner consistent with the values of a sovereign democratic republic.



#### **Amendments:**

- 2010 Amendment:
  - Enacted to consolidate the law to regulate the acceptance and utilization of foreign contribution by certain individuals or associations and to prohibit acceptance and utilization of foreign contribution for any activities detrimental to the national interest.
- 2020 Amendment:
  - Prohibiting the transfer of foreign contribution to any other person or organization.
  - Reducing the limit of usage of foreign contribution for administrative expenses from 50% to 20%.

#### FCRA Registration:

• Registration under the FCRA is essential for receiving foreign donations in India.

- It's granted to individuals or associations engaged in various areas of work, including cultural, economic, educational, religious, or social programs, among others.
- The FCRA regulates foreign contributions in these defined areas to **ensure transparency** and **compliance with the law**.

#### Criteria:

- The FCRA requires every person or NGO seeking to receive foreign donations to be:
  - o **registered** under the Act.
  - to open a bank account for the receipt of the foreign funds in State Bank of India, Delhi
  - to utilize those funds only for the purpose for which they have been received and as stipulated in the Act.

#### **Prohibitions under FCRA:**

- The applicant must not represent fictitious entities.
- The applicant should not have been involved in religious conversion activities, either directly or indirectly.
- The applicant should not have a history of prosecutions related to communal tension or disharmony.
- The applicant must not be engaged in activities related to sedition.
- The FCRA prohibits election candidates, journalists, media companies, judges, government servants, politicians, and

**political organizations** from receiving foreign funds.

#### Validity and Renewal:

- FCRA registration is valid for **five years**.
- NGOs are required to apply for renewal within six months of the registration's expiry.
- The government can cancel an FCRA license for violations of the Act or a lack of reasonable activity in their chosen field for two consecutive years.
  - Once cancelled, an NGO is **ineligible for re-registration for three years**.

#### FCRA 2022 rules:

- In July 2022, the MHA introduced changes to FCRA rules. These changes included increasing the number of compoundable offences from 7 to 12.
- The rules also raised the limit for contributions from relatives abroad that do not require government intimation from Rs 1 lakh to Rs 10 lakh and extended the time limit for intimation of the opening of bank accounts.



### **International Relations**

#### **BRICS**

**Context:** Indonesia has joined BRICS as a full member. With this, BRICS now has 10 members consisting of major emerging economies.



#### **About BRICS:**

- BRICS is an acronym for the grouping of the world's leading emerging economies, namely Brazil, Russia, India, China and South Africa.
- BRICS nations account for more than 45% of global population, 25% of global GDP and 20% of global trade.
- 2024 Summit: Kazan, Russia.

#### **Evolution:**

- The acronym "BRICS" was coined in 2001 by Goldman Sachs economist Jim O'Neill. He projected that Brazil, Russia, India, and China would be among the world's largest economies in the next 50 years or so.
- As a formal grouping, BRIC started after the meeting of the leaders of Russia, India and China in Russia on the margins of the G8 Summit in 2006.
- The first BRIC Summit was held in Yekaterinburg, Russia, in 2009.
- South Africa was invited to join BRIC in December 2010, after which the group adopted the acronym BRICS.

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- BRICS has been envisaged as a grouping of non-Western countries, which can act as a counterweight to institutions like the World Bank and the International Monetary Fund, dominated by the Global North.
- In 2023, during the 15th BRICS Summit, held in South Africa, six countries were invited to join the alliance: Iran, the United Arab Emirates, Saudi Arabia, Argentina, Egypt, and Ethiopia.
- In January 2024, BRICS admitted four new members: **Egypt, Ethiopia, Iran and the United Arab Emirates**.
- In January 2025, **Indonesia** has become the 10<sup>th</sup> member of BRICS.
  - Saudi Arabia has accepted the invitation but delayed formal joining.
  - Argentina, whose new President Javier Milei is more pro-West, declined to join.

#### **Important initiatives:**

- New Development Bank: To fund infrastructure and sustainable development projects in BRICS countries and other emerging economies. Headquartered at Shanghai.
- Contingent Reserve Arrangement: To provide financial support through liquidity and precautionary instruments in response to actual or potential short-term balance of payments pressures.
- BRICS Science, Technology, and Innovation Framework Programme
- BRICS Vaccine Research and Development Centre
- BRICS Partnership on New Industrial Revolution (PartNIR)

Kazan Declaration Highlights (made after 2024 BRICS Summit):

#### • Geopolitical Concerns:

- Call for resolution to the Ukraine conflict via diplomacy.
- Concerns over humanitarian crisis in the Gaza Strip.

#### Multilateralism:

- Emphasis on the reform of global financial architecture and multilateralism.
- Support for the continued functioning of the G20 and a reformed, responsive global financial system.

#### • Economic Cooperation:

- Promotion of local currencies for cross-border payments to reduce trade barriers.
- Agreement to explore the establishment of a BRICS Grain Exchange and a BRICS Cross-Border Payment System.

#### • Pandemic Preparedness:

- Support for the BRICS R&D Vaccine Center and Early Warning Systems for infectious diseases.
- Addressing antimicrobial resistance and enhancing healthcare collaboration.

#### • Environment:

 Support for the International Big Cat Alliance and collaboration on protecting endangered species.

#### **INDUS WATER TREATY**

**Context:** The Neutral Expert under the IWT, 1960, decided that he was competent to decide on issues related the design of hydroelectric projects built on the Indus Treaty-rivers.

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#### **About Indus Water Treaty (IWT):**

- It was signed in Sept., 1960 after nine years of negotiations, with World Bank being a signatory to the pact.
- It sets out a mechanism for mutual cooperation as well as information exchange on the use of water of Indus River and its five tributaries.
  - Sutlej, Beas, Ravi, Jhelum, and Chenab (and all its tributaries)
- This exclusivity restricts what hydro projects India can make (run of the river projects only).

#### Water Sharing under the IWT:

- IWT allocated three western rivers (Indus, Chenab and Jhelum) to Pakistan for unrestricted use (but allows agricultural and domestic uses by India).
- The three Eastern rivers Ravi, Beas and Sutlej - were allocated to India for unrestricted usage.
- This meant that 80% of the share of water went to Pakistan, while leaving 20% of water for use by India.

#### **Permanent Indus Commission:**

 The IWT created a Permanent Indus Commission constituted by permanent commissioners on both sides. It is required to meet at least once a year.  Permanent Indus Commission meetings have been put on hold until India and Pakistan discuss about India's demand to update the IWT. Its last meeting was held in May 2022.

#### **Dispute Resolution Mechanism:**

- The IWT creates a **3-step graded dispute resolution mechanism** under Article IX.
- Questions on both sides can be resolved at Permanent Commission or intergovernment level.
- In case of unresolved questions -either side can approach the World Bank to appoint a Neutral Expert (NE).
- Appeals against the NE's decision or disputes with regards to interpretation and extent of the IWT itself will be referred to a Court of Arbitration.

#### Why is India rethinking the IWT?

- **IWT mostly favours Pakistan:** 80.52% of water flow in the Indus system is allotted to Pakistan.
- Reclaiming riparian rights: India conceded upper riparian position on western rivers for complete rights on eastern rivers. Water supply is critical for developmental plans in the region.
- **Blow against terrorism:** PM Modi stated that "Blood and waters cannot flow together".
- Changed Demographics: India states that a major increase in its population in the Punjab-Haryana region necessitate a reassessment of water-sharing obligations under the IWT.
- Environmental Considerations: The need to accelerate clean energy development (hydropower) to meet emission targets has been highlighted as a reason for modifying the IWT.
- **Security Issues:** Persistent cross-border terrorism has been cited as a factor

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- undermining India's ability to utilize its rights under the treaty fully.
- Water Scarcity: Declining ground water tables in the Punjab-Haryana region increase dependence on the river systems covered in the IWT.
- **Economic Development:** A new IWT would allow India to expand its hydroelectric power projects.

In September 2024, India served formal notice to Pakistan seeking "review and modification" of the IWT.

#### **INTERPOL**

**Context:** The Interpol has launched its first-ever Silver Notice, which aims to track and recover laundered assets across international borders.



#### **About Interpol:**

- Interpol stands for International Criminal Police Organisation. It is an international police organisation made up of 194 member countries.
- It does not work under UN, but has had status of a Permanent Observer at the UN since 1996.
- It was **founded in 1923** and is headquartered at **Lyon, France.** India became a member on Oct 15, 1949.
- It supports national efforts in combating crimes across three areas - terrorism, cybercrime and organised crime.

#### **Functions of Interpol:**

- It is not a proper police force its agents cannot arrest criminals.
- It is more of an information-sharing network, providing a way for national police forces to co-operate effectively and thereby tackle international crime ranging from human trafficking and terrorism to money laundering and illegal art dealing.
- It operates centralised criminal databases of fingerprint records, DNA samples and stolen documents.
- In each country, an Interpol National Central Bureau (NCB) provides the central point of contact for Interpol and other NCBs.
- In India, the Central Bureau of Investigation (CBI) coordinates investigations on behalf of Interpol.

#### **Interpol Notices**

 Sharing of information is done by issuing colour-coded notices in four languages -English, Spanish, French, and Arabic.

Red Notice	Request to locate and arrest an individual pending extradition. It is issued on request of a member country or an international tribunal based on a valid arrest warrant.
Yellow Notice	Issued to help locate missing persons, often minors, or to help identify persons who are unable to identify themselves. This is useful in cases of human trafficking.
Blue Notice	Issued to collect additional info about a person's identity, location, or activities in relation to a crime. It does not guarantee

extradition or arrest of the person.
Request to seek information on unidentified bodies in member nations.
Issued to provide warnings and info about persons who committed criminal offenses and are likely to repeat these crimes in other countries.
Issued to provide warnings about an event, a person, an object representing a serious and imminent threat to public safety.
Request to seek or provide information on modus operandi, objects, devices & concealment methods used by criminals.
Track and recover criminally acquired assets such as properties, vehicles, financial accounts, and businesses.

## INDIA-MIDDLE EAST-EUROPE ECONOMIC CORRIDOR (IMEC)

**Context:** With Donald Trump taking charge as the 47<sup>th</sup> President of the United States, the IMEC project can help develop the relationship between India and USA.



#### **About IMEC:**

- It is an ambitious project consisting of Railroad, Ship-to-Rail networks and Road transport routes extending across two corridors, that is:
  - The East Corridor connecting India to the Arabian Gulf,
  - The Northern Corridor connecting the Gulf to Europe.
- The IMEC corridor will also include an electricity cable, a hydrogen pipeline and a high-speed data cable.

**Signatories:** India, the US, Saudi Arabia, UAE, the European Union, Italy, France, and Germany.

#### Ports to be Connected:

- India: Mundra (Gujarat), Kandla (Gujarat), and Jawaharlal Nehru Port Trust (Navi Mumbai).
- Middle East: Fujairah, Jebel Ali, and Abu Dhabi (UAE); Dammam and Ras Al Khair (Saudi Arabia).
- Railway line will connect Fujairah port (UAE) to Haifa port (Israel) via: Saudi Arabia (Ghuwaifat and Haradh) and Jordan.
- Israel: Haifa port.

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• **Europe:** Piraeus port in Greece, Messina in South Italy, and Marseille in France.

#### **Objective:**

 It aims to create a comprehensive transportation network, comprising rail, road, and sea routes, connecting India, the Middle East, and Europe.  It aims to enhance transportation efficiency, reduce costs, increase economic unity, generate employment, and lower Greenhouse Gas (GHG) emissions.

#### Significance:

- It is estimated that the time and cost of transporting goods to Europe from India will be reduced by 40% and 30% respectively.
- The project is also seen as a challenge to China's Belt and Road Initiative (BRI).

#### WORLD HEALTH ORGANIZATION

**Context:** The USA's exit from the World Health Organization has raised concerns about funding as well as pandemic preparedness.



#### **About WHO:**

- World Health Organization (WHO), is a **specialized agency of the United Nations (UN)** established in 1948.
- WHO is the first global health organization, replacing many regional and national health bodies.
- Its primary role is to direct and coordinate international health within the United Nations system.
- **Headquarters:** Geneva, Switzerland.

#### **Member Countries:**

- All Member countries of the United Nations may become members of WHO by accepting its Constitution.
- Other countries may be admitted as members when their application has been approved by a simple majority vote of the World Health Assembly.
- 194 Members of WHO are grouped according to 6 regions.

#### Role of WHO:

- It has the authority of directing and coordinating matters related to international health.
- World Health Assembly is the supreme decision-making body of WHO, attended by delegations from all member states.
- The Executive Board of WHO implements the decisions and policies of the World Health Assembly.
- The US was the biggest financial contributor to the WHO, and has been its active member for many decades.
- Aim: It aims to enhance international cooperation for improved public health conditions.
- Each year WHO celebrates its date of establishment, April 7, 1948, as World Health Day.
- Functions: Its specific tasks include epidemic control, quarantine measures, and drug standardization.
- WHO promotes the attainment of "the highest possible level of health" by all people.

#### **Definition of Health by WHO:**

 WHO defines health positively as 'a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity'.

#### World Health Assembly:

 The World Health Assembly is the decisionmaking body of WHO.

- It is attended by delegations from all WHO
   Member States and focuses on a specific
   health agenda prepared by the Executive
   Board.
- The main functions of the World Health Assembly are to determine the policies of the Organization, appoint the Director-General, supervise financial policies, and review and approve the proposed programme budget.

#### **Reports Published:**

- 1. World Health Report
- 2. Global Nutrition Report
- 3. World Vision Report
- 4. Ambient Air Pollution Report
- 5. World Report on Hearing

## International Labour Organization (ILO)

- It is a **specialized agency of the United Nations** (UN) dedicated to **improving labour conditions** and living standards throughout the world.
- History:
  - o It was **created in 1919**, as part of the **Treaty of Versailles** that ended World War I, to reflect the belief that universal and lasting peace can be accomplished only if it is based on social justice.
  - In 1946, the ILO became a specialized agency of the newly formed UN.
- **HO: Geneva.** Switzerland.
- It is also a member of the United Nations
   Development Group (UNDP), a coalition
   of UN organization aimed at helping meet
   the Sustainable Development Goals.
- Members: The ILO has 187 member states: 186 out of 193 UN member states plus the Cook Islands.

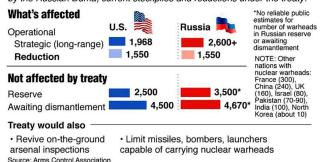
- Structure: It is the only tripartite U.N. agency, that brings together governments, employers and workers' representatives of 187-member States.
- It serves its tripartite constituents and society as a whole - in a variety of ways, including:
  - Formulation of international policies and programmes to promote basic human rights, improve working and living conditions, and enhance employment opportunities.
  - Creation of international labour standards backed by a unique system to supervise their application.
  - An extensive programme of international technical cooperation formulated and implemented in an active partnership with constituents, to help countries put these policies into practice in an effective manner.
  - Training, education, and research activities to help advance all of these efforts.
- In recognition of its activities, the ILO was awarded the Nobel Prize for Peace in 1969.

#### **NEW START**

**Context:** The Kremlin informed recently that it wants to resume nuclear disarmament talks with the United States.

#### **New START arms treaty**

The U.S. Senate has ratified the new START treaty to reduce deployed strategic warheads by about 30 percent. The treaty must now be ratified by the Russian Duma; current stockpiles and reductions under the treaty:



#### **About New START:**

- New START (Strategic Arms Reduction Treaty) was the last remaining arms reduction pact between the former Cold War rivals.
- It caps to 1,550 the number of nuclear warheads that can be deployed by Russia and United States of America.
- It entered into force on 5th February, 2011.
- It continues the bipartisan process of verifiably reducing U.S. and Russian strategic nuclear arsenals by limiting both sides to 700 strategic launchers and 1,550 operational warheads.
- Its duration was for ten years till 2021, but it was extended by five more years till 2026.

Other similar treaties between Russia and USA:

- 1. Strategic Arms Limitation Talks-1 (SALT): It began in 1969, under the Interim Agreement, both sides pledged not to construct new Intercontinental Ballistic Missile (ICBM) silos, not to increase the size of existing ICBM silos significantly, and capped the number of Submarine-Launched Ballistic Missile (SLBM) launch tubes and SLBM-carrying submarines.
- **2. Strategic Arms Reduction Treaty-1 (START):** Signed in 1991, the agreement required the destruction of excess delivery vehicles which was verified using an

intrusive verification regime that involved on-site inspections, the regular exchange of information (including telemetry), and the use of national technical means (i.e., satellites).

- 3. Strategic Arms Reduction Treaty-2: Signed in 1993, called for reducing deployed strategic arsenals to 3,000-3,500 warheads and banned the deployment of destabilizing multiple-warhead land-based missiles.
- **4. Strategic Offensive Reductions Treaty (SORT):** Signed in 2004, under which the United States and Russia reduced their strategic arsenals to 1,700-2,200 warheads each.

#### GLOBAL BIOFUELS ALLIANCE

**Context:** The Global Biofuels Alliance is among the big-ticket schemes introduced by the government in the past year.



#### **About Global Biofuels Alliance:**

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- Global Biofuels Alliance (GBA) is a multistake holder alliance of Governments, International Organizations and Industries.
- It is an initiative by India as the G20 Chair, bringing together the biggest consumers and producers of biofuels to drive development and deployment of biofuels.
- It was launched on the sidelines of the 2023
   G20 summit in New Delhi.

• The initiative aims to position biofuels as a key to energy transition and contribute to jobs and economic growth.

#### **Significance of the alliance:**

- It will place emphasis on strengthening markets, facilitating global biofuels trade, development of concrete policy lessonsharing and provision of technical support for national biofuels programs worldwide.
- It intends to expedite the global uptake of biofuels through facilitating capacitybuilding exercises across the value chain, technology advancements, and intensifying the utilization of sustainable biofuels through the participation of a wide spectrum of stakeholders.
- GBA will facilitate the development, adoption, and implementation of internationally recognized standards, codes, sustainability principles, and regulations to incentivize biofuel adoption and trade.
- The alliance will also act as a **central repository of knowle**dge and an expert hub.
- 24 countries and 12 international organizations have already agreed to join the alliance.
- Founding members: India, USA, Brazil, Italy, Argentina, Singapore, Bangladesh, Mauritius, UAE.

### **PARIS AI SUMMIT**



 France is hosting a two-day AI Action Summit beginning on February 10. It will be co-chaired by PM Modi along with the French President.

- The Summit is the brainchild of French President Emmanuel Macron.
- The initiative focuses on the broader agenda of global AI governance, innovation, and on means of serving the larger public interest.
- It is in continuation of AI Safety Summit held in Britain in Bletchley Park in 2023 and a smaller meeting in Seoul in 2024.
- It aims to deliberate on the issue of monopoly of AI market as the foundational models are being owned by few corporations like Microsoft, Amazon, Meta.
- The summit brings stakeholders from different fields such as govt. representatives, businesses, civil society, artists and journalists.
- It holds great relevance for Europe as AI
  is being increasingly seen as a race
  between America and China.

## ECONOMIC COMMUNITY OF WEST AFRICAN STATES (ECOWAS)



- Burkina Faso, Mali and Niger have officially announced their exit from ECOWAS.
- ECOWAS is a regional inter-governmental organization established in 1975.
- Created through: Lagos Treaty.
- Aim: Foster economic integration, cooperation, and development among West African nations.

- **Secretariat: Abuja**, Nigeria.
- ECOWAS now consists of 12 member states: Benin, Cape Verde, Cote d' Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, Senegal, and Togo.

#### **Primary Goals and Objectives of ECOWAS:**

- Promoting economic integration among member states.
- Facilitating the free movement of people, goods, and services.
- Enhancing regional cooperation in various sectors, including industry, transport, energy, and finance.
- Fostering a borderless region governed by democratic principles, the rule of law, and good governance.
- Addressing security and political challenges through collaboration and conflict resolution.

The Alliance of Sahel States (AES) is a confederation between Mali, Niger, & Burkina Faso. It was established on September 16, 2023, to strengthen mutual defense and cooperation. It binds the signatories to assist one another – including militarily – in the event of an attack on any one of them.



### **Economy**

#### **INDEX OF CORE INDUSTRIES**

**Context:** Output level in core sectors reached a four-month high in November 2024, with output rising at an impressive 4.3%.



#### **About Core Industries in India:**

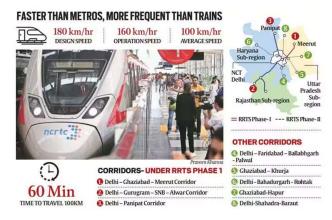
- The core sector in India comprises eight key industries.
- Growth rate of core sector is a crucial indicator of the overall health of the Indian economy. A strong growth rate in the core sector often signals a positive economic outlook.
- The Index of Eight Core Industries (ICI) is prepared every month and released by the Dept. for Promotion of Industry & Internal Trade (DPIIT), Ministry of Commerce & Industry.
- ICI comprises various components that collectively reflect performance and vitality of India's industrial sector. These components include:
  - Coal production, excluding Coking coal.
  - Electricity from thermal, nuclear, and hydro sources & imports from Bhutan.
  - o Total **crude oil** production.

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- Cement production in both large plants and mini plants.
- o Total production of **natural gas.**
- Production of alloy and non-alloy steel.
- o Total **refinery production.**
- Fertiliser: Production of urea, ammonium sulphate, calcium ammonium nitrate, single superphosphate, among others.
- The current weightage in ICI is Refinery Products (28.04%) > Electricity (19.85%) > Steel (17.92%) > Coal (10.33%) > Crude Oil (8.98%) > Natural Gas (6.88%) > Cement (5.37%) > Fertiliser (2.63%).
- Choice of base year of ICI is according to the choice of base year for the Index of Industrial Production (IIP). The base year in the current series of ICI and IIP is 2011-12.
- IIP helps in measuring the growth rates in different industry groups of the economy in a fixed period.
  - o It is a composite index that shows short-term changes in production volume of a basket of industries compared to a chosen base period.
- ICI comprises 40.27% of the weight of items included in the IIP.

### REGIONAL RAPID TRANSIT SYSTEM

**Context:** Recently the CAG red flagged certain expenses by National Capital Region Transport Corporation, the firm responsible for the Regional Rapid Transit System.



#### About Regional Rapid Transit System (RRTS):

- RRTS is a new, dedicated, high speed, high capacity, comfortable commuter service connecting regional nodes in NCR.
- RRTS is different from conventional Railway
  as it will provide reliable, high frequency,
  point to point regional travel at high speed
  along dedicated path way.
- RRTS is different from metro as it caters to passengers looking to travel a relatively longer distance with fewer stops and at higher speed.

#### **Background:**

- The Planning Commission formed a Task Force in 2005 under the Chairmanship of Secretary, Ministry of Urban Development (MoUD) to develop a multi modal transit system for Delhi National Capital Region (NCR).
- This was included in the Integrated Transport Plan for NCR 2032 with special emphasis on Regional Rapid Transit System (RRTS) connecting regional centers.
- The Task Force identified 8 corridors and prioritized three corridors namely Delhi-Meerut, Delhi-Panipat and Delhi- Alwar for implementation.

#### **Intended Benefits:**

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• Environment Friendly: The corridor is estimated to reduce 2.5 lakh CO2 tonnes/year of total annual greenhouse gas emissions, making the city a cleaner and a much better place to live.

- **Economic Development:** It is estimated to increase the share of public transportation usage along the corridor from 37% to 63%.
- High-speed connectivity will result in balanced economic development across the region, leading to economic benefits to all strata of society and many nodes of development rather than all economic activity happening at one place.
- **Sustainable Urbanization:** The project will serve as a demonstration for developing high-capacity rapid urban transit corridors in other urban areas of India.
- It will help in reducing traffic congestion and total emissions from the transport sector in NCR.

## CLUSTER DEVELOPMENT PROGRAMME (CDP)

**Context:** The 8<sup>th</sup> edition of National Programme for Organic Production begun recently, and the CDP Scheme was highlighted by the Union Govt.



**About Cluster Development Programme** (CDP) Scheme:

- It is a central sector scheme aimed at growing and developing identified horticulture clusters to make them globally competitive.
- Cluster is a regional concentration of targeted horticulture crops.

- **Nodal Agency: National Horticulture** Board (NHB) under the Ministry of Agriculture and Farmers' Welfare.
- I&K, Assam, West Bengal, Manipur, Jharkhand, UP, Mizoram, TN, Andhra Pradesh. Karnataka, Telangana Uttarakhand will be covered across 55 clusters, and will be identified with respective focus/main crops.

#### **Objectives of CDP Scheme:**

- Improve exports of targeted crops by about 20% and create cluster-specific **brands** to enhance competitiveness.
- Address all major issues related to the horticulture sector including production, production. post-harvest management, logistics, marketing, and branding.
- Leverage geographical specialization and promote integrated and market-led development of clusters.
- Converge with other schemes of the govt. such as Agriculture Infra Fund.
- Bring in private investment to the horticulture sector.

#### Significance of the Horticulture Sector in India:

- It contributes around 33% to agri-GVA (gross value added) while using only 13% of the gross cropped area.
- recent years, total horticulture production in India has exceeded the total production of food grains.
  - o 320.48 million tonnes from 25.6 million hectares (127.6 million hectares for cereals).
- Productivity grew from 8.8 tonnes per hectare (TPH) in 2001-02 to 12.49 TPH in 2020-21 - 38.5% growth (food grains is 2.23 TPH)

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India is the **2nd largest producer of fruits** and vegetables. But despite this, India's share in the global horticultural market is a mere 1%.

#### Other Govt. Initiatives for Horticulture **Sector:**

Mission for Integrated **Development** of *Horticulture (MIDH):* 

- ✓ Centrally Sponsored Scheme for holistic growth of horticulture sector.
- ✓ MIDH scheme is in operation since 2014-15. It has two sub-Schemes:
  - **National Horticulture Mission** (NHM): Being implemented by Horticulture State Missions (SHM) in select districts of 18 States and 6 UTs.
  - **Horticulture Mission for North** East & Himalayan **States** (HMNEH)

Central Institute for Horticulture (CIH):

✓ Estd. in Nagaland in 2006 to provide capacity building & training of farmers.

Horticulture Area Production Information System (HAPIS):

- ✓ Web-enabled system for reporting data from states/districts promptly.
- Aim to minimize time lag and maximize coverage area.

Coordinated *Programme* on Horticulture Assessment and Management using Geoinformatics (CHAMAN):

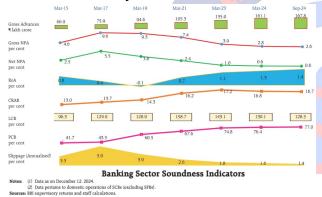
✓ Aims to develop a methodology for estimation of area & production under horticulture crops using remote sensing and sample survey techniques.

In April 2024, the Union govt. launched the CDP Suraksha platform to disburse subsidies via DBT to horticulture farmers under the CDP Scheme.

### FINANCIAL STABILITY REPORT

**Context:** The RBI's Financial Stability Report released recently, highlights significant improvements in the asset quality of Scheduled Commercial Banks (SCB).

- Published bi-annually by the Reserve Bank of India.
- It reflects the collective assessment of the Sub-Committee of Financial Stability and Development Council (FSDC), which is headed by the RBI Governor.
- The report evaluates the resilience of the Indian financial system and identifies risks to financial stability.



#### Major Highlights of RBI's Financial Stability Report

- **Gross NPA ratio** has declined to a 12-year low of 2.6% in September 2024.
- Scheduled Commercial Bank's Net NPA ratio stayed at 0.6%.
- Provisioning Coverage Ratio improved to 77% in September, mainly due to proactive provisioning by Public Sector Banks.
- Improvement in **Return on Assets** and earnings before provisions and taxes.
- Sequential decline in the net interest margin abetted by shift of deposits to higher interest rate buckets.
- Decline in share of low-cost Current Account Savings Account (CASA) deposits.

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• Increase in share of **term deposits**, especially for higher interest-rate bucket.

#### TOBACCO BOARD OF INDIA

**Context:** The Tobacco Board has implemented various strategic initiatives to promote the sustainability and development of the tobacco industry.

#### Tobacco Board of India:

- It is a statutory body established on 1st January 1976 by an Act of Parliament "Tobacco Board Act, 1975 (Act 4 of 1975)".
- The Board is headed by a Chairman and is responsible for the development of the tobacco industry.

#### Functions

- The primary function of the Board is **export promotion of all varieties of tobacco and its allied products**, its functions extend to production, distribution (for domestic consumption and exports) and regulation of Flue Cured Virginia (FCV) tobacco.
- It ensures the smooth functioning of the farming system and to ensure fair and remunerative prices for tobacco farmers and the promotion of exports.
- Financial assistance is **extended to farmers through banks**, along with
  the necessary inputs for the
  production of quality tobacco.
- The Board also engages in extension and developmental activities to promote sustainable tobacco cultivation practices.
- The Board supports farmers by providing handholding assistance to produce tobacco of requisite quality to meet the standards of importing countries.
- **Headquarters:** Guntur, Andhra Pradesh

 Nodal Ministry: Ministry of Commerce and Industry

#### **India's Tobacco Industry**

- India is the **2nd largest producer of tobacco** in the world after China.
- India is the 4th largest producer of FCV tobacco in the world after China, Brazil and Zimbabwe.
- India is the 2nd largest exporter of unmanufactured tobacco (quantity terms) after Brazil.

# REMISSION OF DUTIES AND TAXES ON EXPORTED PRODUCTS (RODTEP) SCHEME

**Context:** The RoDTEP scheme's expiry for exports under AA, EOU, and SEZ schemes on December 31, 2024, has left exporters uncertain about its benefits, affecting their competitiveness.

- Introduced by the Government as a duty remission scheme on exports, implemented from 1st January 2021.
- Aimed at repealing and reducing taxes for exported products to boost exports in the country.
- Administered by the Department of Revenue, Ministry of Finance.
- Provides reimbursement of taxes, duties, and levies not refunded under any other mechanism, incurred by export entities in the manufacturing and distribution of exported products.
- Includes direct costs incurred by exporters and prior stage cumulative indirect taxes on goods.

#### **Compliance with the WTO**

- Follows the global principle that taxes/duties should not be exported.
- Replaced the Merchandise Export Incentive Schemes (MEIS) after a WTO dispute ruling against India.

#### **Eligibility Criteria**

- Applicable to all export sectors regardless of turnover, with the country of manufacturing of exported goods in India.
- Applies to merchant or manufacturer exporters **directly exporting goods**.
- Goods exported through **e-commerce platforms** are eligible.

#### **Refund process**

- Rebate provided to eligible exporters as a percentage of the Freight on Board (FOB) value of exports.
- Remission issued as transferrable escrips maintained in an electronic credit ledger by CBIC.
- E-scrips can be used for paying basic customs duty on imports or transferred electronically to another party.

#### **Export Oriented Units (EOUs)**

Emportorione	cu onts (Lous)
	Details
Establishmen	EOUs are established under the provisions of the Foreign Trade (Development and Regulation) Act, 1992, and the Export Import Policy.
Regulation	Regulated by the Directorate General of Foreign Trade (DGFT)
Benefits	<ul> <li>Duty-free procurement of raw materials.</li> <li>Reimbursement of GST and duty on fuels.</li> <li>Fast track clearance facilities.</li> <li>Exemption from industrial licensing for certain sectors.</li> </ul>
Qualification	Project must have a minimum investment of Rs. 1 crore in plant and machinery, except for specific sectors like software technology parts and biotechnology parks.
Geographical Scope	EOUs can be set up anywhere in India based on scheme criteria.

	<ul> <li>SEZs are demarcated</li> </ul>
Comparison with SEZs	enclaves outside Customs
	jurisdiction.
	<ul> <li>SEZs enjoy tax exemptions,</li> </ul>
WIUI SEZS	while EOUs pay taxes that
	can be claimed as refunds
	later.

#### **Special Economic Zones (SEZs)**

	Details
	SEZ policy in India was first
Inception Date	implemented on April 1, 2000.
	• Enhance foreign
	investment and provide
	an internationally
	competitive and hassle-
Objective	free environment for
	exports.
	• Promote exports and
	ensure a level playing field
	for domestic enterprises.
	Enacted to provide the legal
SEZ Act 2005	framework covering all
SLE NCC 2003	important aspects of SEZ
	development and operations.
	Any private/public/joint
	sector, state government,
Setting up SEZs	or its agencies can
5 c c c c c c c c c c c c c c c c c c c	establish an SEZ.
	Foreign agencies can also
	set up SEZs in India.
	• State government
	representatives are
	consulted during the
	proposal consideration
Role of State	1
Governments	States must ensure the availability of basic
	infrastructure like water
	and electricity before
	recommending proposals.
	Statutory functions are
Government	controlled by the
Control	government in all SEZs.
	government in an 3LL3.

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1	
	The central government controls operation and maintenance in central government-controlled SEZs; the rest are privatized.
Exemption fro Labor Laws	SEZs are subject to normal labor laws enforced by state governments.  A single-window clearance mechanism and simplified procedures/returns have been requested from state governments.
Monitoring Units in SEZs	Annually by a unit approval committee consisting of a development commissioner, customs, and state government representatives.
Special Featur for Busine Units	Business units in SEZs are entitled to incentives and a simplified operating
Monitoring Units in SEZs  Special Featur for Busine	SEZs are subject to normal labor laws enforced by state governments.     A single-window clearance mechanism and simplified procedures/returns have been requested from state governments.  Annually by a unit approvation committee consisting of development commissione customs, and state government representatives.  Business units in SEZs are entitled to incentives and a simplified operating environment.  No license is required for imports, including the state government in the state government.

## TELECOM REGULATORY AUTHORITY OF INDIA (TRAI)

**Context:** TRAI has been fighting the everincreasing spam calls in India



**About TRAI** 

- It was established by an Act of Parliament called the Telecom Regulatory Authority of India Act, 1997.
- Purpose: To regulate telecom services, including fixation/revision of tariffs for telecom services which were earlier vested in the Central Government.
- It is responsible for framing regulations, guidelines, and policies for the telecommunications sector in India. This includes setting rules related to tariffs, quality of service, and the allocation of spectrum.

#### • Composition:

- It consists of a chairperson and not more than two full-time members and not more than two part-time members.
- The chairperson and the members of TRAI are appointed by the Central Government, and the duration for which they can hold their office is three years or until they attain the age of 65 years, whichever is earlier.

#### • Government Control over TRAI:

- TRAI is not a completely independent telecom regulator.
- Under section 25 of the Act, Central Government has the power to issue directions which are binding on TRAI.
- The recommendations made by the TRAI are not binding on the Central Government.
- Central Government has to mandatorily ask for recommendations from TRAI with respect to the need and timing of new service providers and the terms and conditions of the licence to be granted to the service provider.

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 TRAI also has the power to notify in the official gazette the rates at which telecommunication services are being provided in and outside India.

#### **PAY COMMISSION**

**Context:** Union Govt. approved the creation of 8th Pay Commission to revise the salaries of nearly 50 lakh Union Govt. employees and the allowances for 65 lakh pensioners.



#### **About Pay Commission:**

- It is a body set up by the Union Govt. that reviews and recommends changes to the salary structure of employees. Its composition is decided by the Department of Expenditure (Ministry of Finance).
- They are usually constituted every 10 years and the first pay commission was set up in 1946. Since Independence, a total of 7 pay commissions have been formed.
- The latest pay commission was set up in 2014 and its recommendations came into effect in 2016. Currently, Union Govt employees & pensioners are paid based on recommendations of the 7th Pay Commission.
- It is not mandatory for the govt to accept the recommendations of the pay commission. The government may choose to accept or reject the recommendations.
- The recommendations of a Pay Commission apply to:

- Union Govt Employees: Those paid from the Consolidated Fund of India.
- Civil and Military Personnel:
   Employees from all central civil services and defense services.
- Pensioners: Retired personnel receiving pensions from govt.
- Notably, employees of Public Sector Undertakings (PSUs) and autonomous bodies are excluded. PSU employees follow separate pay scales specific to their organization.

## Factors Affecting Pay Commission Recommendations:

- **Economic Conditions:** The country's fiscal health, GDP growth, inflation rates, and revenue collections significantly influence the commission's recommendations.
- Employee Demands: Unions and associations often advocate for higher wages, improved allowances, and better working conditions.
- Cost of Living: The commission considers factors like inflation, housing costs, and education expenses, which directly affect an employee's quality of life.
- Global Comparisons: Pay parity with international standards in similar roles is sometimes taken into account, especially for defense and specialized positions.
- **Technological Advancements:** The growing reliance on technology and increasing skill requirements influence the revision of salaries and allowances.
- Budgetary Constraints: While addressing employee demands, the commission must ensure recommendations align with the government's fiscal capabilities to avoid undue strain on the exchequer.

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#### WORLD ECONOMIC FORUM

**Context:** The World Economic Forum (WEF) is convening its Annual Meeting from January 20 to 24, 2025, in Davos, Switzerland, under the theme "Collaboration for the Intelligent Age".



#### **About World Economic Forum:**

- World Economic Forum is an international organization for public-private cooperation.
- The Forum engages the foremost political, business, cultural and other leaders of society to shape global, regional and industry agendas.
- **Headquarters:** Geneva, Switzerland.

#### Foundation:

- Klaus Schwab, a German professor with a background in mechanical engineering and a Master of Public Administration from Harvard, founded WEF in 1971, originally known as the European Management Forum.
- He introduced the concept of "stakeholder capitalism."
  - According to Schwab, "It is a form of capitalism in which companies do not only optimize short-term profits for shareholders, but seek long term value creation, by taking into account the needs of all their stakeholders, and society at large."

#### **Evolution:**

- Events in 1973, namely the collapse of the Bretton Woods fixed exchange rate mechanism and the Arab-Israeli War, saw the Annual Meeting expand its focus from management to economic and social issues.
- Two years later, the organization introduced a system of membership for the 1,000 leading companies of the world.
- In **1987**, the European Management Forum formally became the World Economic Forum and sought to broaden its vision to include providing a **platform for dialogue**.
- In 2015, the Forum was **formally recognised** as an international organization.
- **Funding:** Primarily supported by partnering corporations, typically with annual turnovers exceeding USD 5 billion.
- Annual Meeting in Davos: Davos brings together around 3,000 participants (including paying members and select invitees): investors, business leaders, political leaders, economists, celebrities, and others to discuss global issues across 500 sessions.

#### **Key Diplomatic Moments at WEF:**

- Korean Diplomacy: North and South Korea held first ministerial-level meetings in Davos.
- German Reunification (1989): East German Prime Minister and German Chancellor met at WEF to discuss reunification.
- South African Milestone (1992): South African President de Klerk, Nelson Mandela, and Zulu prince Mangosuthu Buthelezi made their inaugural joint appearance outside South Africa, marking a significant milestone in the country's political transition.
- G20 Genesis (1998): WEF emphasized the need to involve major developing countries.
   Therefore, the concept of G20 emerged, initially limited to finance ministers.
  - G20, born from WEF discussions, evolved into a summit.

#### **Major Reports:**

1. Global Competitiveness Report

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- 2. Global Gender Gap Report
- 3. Energy Transition Index
- 4. Global Risk Report
- 5. Global Travel and Tourism Report

## ASSET RECONSTRUCTION COMPANIES (ARCS)

**Context:** RBI has recently instructed ARCs that they should settle with borrowers only after exhausting all other options.



#### **About Asset Reconstruction Companies:**

- An ARC is a specialized financial institution that purchases the bad debts of a bank at a mutually agreed value and attempts to recover those debts or associated securities by itself.
- ARCs are registered under the RBI and regulated under the Securitisation and Reconstruction of Financial Assets and Enforcement of Securities Interest Act, 2002 (SARFAESI Act, 2002).
- They function under the supervision and control of the RBI.
- ARC performs the functions of: Acquisition of financial assets, Change or takeover of Management or Sale or Lease of Business of the Borrower, Rescheduling of Debts, Enforcement of Security Interest and Settlement of dues payable by the borrower.
- ARCs take over a portion of the bank's debts, which qualify as Non-Performing Assets (NPAs).

- Therefore, ARCs are involved in the business of asset reconstruction, securitisation, or both.
- All the rights previously held by the lender (the bank) in regard to the debt are transferred to the ARC.
- The required funds to purchase such debts can be raised from Qualified Buyers.
- Qualified Buyers include Financial Institutions, Insurance companies, Banks, State Financial Corporations, State Industrial Development Corporations, trustee or ARCs registered under SARFAESI and Asset Management Companies registered under SEBI that invest on behalf of mutual funds, pension funds, FIIs, etc.
- The Qualified Buyers are the only persons from whom the ARC can raise funds.

# COMPETITION COMMISSION OF INDIA

**Context:** The CCI is conducting a market study to understand the competition related issues in the renewable energy space across BRICS nations.



About the Competition Commission of India (CCI):

 CCI is a statutory body of the Government of India, established under the Competition Act, 2002.

- The Monopolies and Restrictive Trade Practices Act, 1969 (MRTP Act) was repealed and replaced by the Competition Act, 2002, on the recommendations of the Raghavan committee.
- The commission is a quasi-judicial body which gives opinions to statutory authorities and also deals with other cases.
- Headquarters: New Delhi.

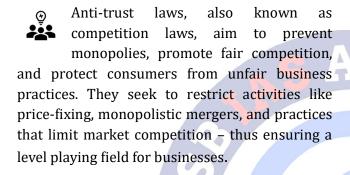
## **Eligibility criteria of members of CCI:**

- It consists of **one chairperson and six** additional members.
- The Chairperson and every Member shall be a person who, has been, or is qualified to be a judge of a High Court, or, has special knowledge of, and professional experience of >15 years in international trade, economics, business, commerce, law, finance, management, industry, public affairs, and administration.
- The Chairperson and other Members shall be whole-time Members.
- All members of the CCI are appointed by the Central Government.

## Working of CCI:

- The goal of CCI is to create and sustain fair competition in the economy that will provide a 'level playing field' to the producers and make the markets work for the welfare of consumers.
- The priority of the Commission is to eliminate practices having adverse effects on competition, promote and sustain competition, protect the interests of consumers, and ensure freedom of trade in the markets of India.
- **Mandate:** To implement provisions of The Competition Act, 2002, which –

- prohibits anti-competitive agreements and abuse of dominant position by enterprises;
- regulates mergers and acquisitions (M&A), which can have an adverse effect on competition within India. Thus, deals beyond a certain threshold are required to get clearance from CCI.
- Appeals from CCI lie to the **National Company Law Appellate Tribunal**.



# NATIONAL INTERNET EXCHANGE OF INDIA

Context: The National Internet Exchange of India (NIXI) announced the launch of its Internet Governance Internship and Capacity Building Scheme to build awareness and develop expertise in internet governance (IG) among Indian citizens.

#### **About:**

- It was established as a not-for-profit organization under the Companies Act 2013 in in 2003.
- It is tasked to increase Internet penetration and adoption in India by facilitating the various infrastructure aspects to enable the Internet ecosystem to be managed and used by the masses.
- NIXI operates **eight Internet Exchange Points (IXPs)** across the country that enables peering among ISPs and content providers.

- NIXI allocates Internet Protocol (IP) addresses and Autonomous System (AS) numbers to Indian entities through its Indian Registry for Internet Names and Numbers (IRINN) division.
- The four services which come under the NIXI:
  - Setting IXPs, towards Building Internet Exchange Points
  - IN Registry towards building the .in domain digital identity
  - Indian Registry for Internet Names and Numbers (IRINN) towards Internet Protocol (IPv4 and IPv6) addresses adoption.
  - Data Centre services under NIXI-CSC towards data storage services.

## NITI AAYOG FISCAL HEALTH INDEX

**Context:** The NITI Aayog recently released the fiscal health index.

## **About NITI Aayog Fiscal Health Index:**

- The **Fiscal Health Index (FHI)**, 2025 provides a comprehensive assessment of the fiscal performance of 18 major states in India.
- It has been developed by NITI Aayog, with data sourced from the Comptroller and Auditor General (CAG).
- Base Year: Fiscal data from financial year
   2022-23 is used as the reference for rankings and analysis.
- **Aim:** To evaluate fiscal health, highlight interstate disparities, and encourage targeted interventions for improving fiscal performance and governance.

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#### Criteria used:

- The FHI evaluates states across five subindices:
  - Quality of Expenditure: Efficiency in capital and social sector spending.
  - Revenue Mobilization: States' ability to generate revenue from taxes and other sources.
  - Fiscal Prudence: Adherence to fiscal deficit targets and financial management.
  - o **Debt Index:** States' total debt burden.
  - Debt Sustainability: Debt-to-GSDP ratio and interest burden on revenue.

## **Highlights of the report:**

## **Top Performers:**

- Odisha: Ranked first with an FHI score of 67.8, Odisha excelled in Debt Index and Debt Sustainability due to its low fiscal deficit, strong debt management, and effective capital expenditure strategies.
- Chhattisgarh: Achieved the second rank with strengths in Debt Index and revenue growth from mining activities.
- Goa: Positioned third, excelling in Revenue Mobilization due to high tax efficiency and non-tax revenue generation.

## **Aspirational States:**

 States like Punjab, Kerala, and West Bengal faced challenges in debt sustainability and revenue mobilization, highlighting the need for fiscal reforms.

#### **Sub-Index Insights:**

## **Quality of Expenditure:**

- States like Madhya Pradesh and Chhattisgarh prioritized social and economic services, allocating substantial portions of their expenditure to health and education.
- However, states such as Punjab and Rajasthan lagged in capital expenditure, impacting longterm developmental goals.

### **Revenue Mobilization:**

- Odisha, Goa, and Chhattisgarh led in revenue mobilization, leveraging non-tax revenues from mining and industrial activities.
- States like Bihar and West Bengal struggled with low own-tax revenues, relying heavily on central transfers.

#### **Fiscal Prudence:**

- Odisha and Jharkhand maintained fiscal prudence with lower fiscal deficits, enabling better allocation of resources toward development.
- States with persistent revenue deficits, such as Kerala and Andhra Pradesh, faced constraints in managing fiscal stability.

### Debt Index:

- Maharashtra and Gujarat demonstrated robust debt management practices, maintaining low debt-to-GSDP ratios.
- Conversely, Punjab and Haryana grappled with rising debt burdens and high interest payments.

#### **Debt Sustainability:**

- Odisha and Chhattisgarh showcased sustainable debt management by ensuring economic growth outpaced interest payment growth.
- In contrast, states like West Bengal and Punjab exhibited growing fiscal stress due to persistent deficits.

## SPECIAL ECONOMIC ZONES

**Context:** Adani Ports is planning on developing Vizhinjam as a Special Economic Zone.



### **About SEZs:**

- 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.
- They are created to better administer these areas, allowing for ease of doing business.

#### SEZs in India:

- Asia's first EPZ (Export Processing Zones) was established in 1965 at Kandla, Gujarat.
- While these EPZs had a similar structure to SEZs, the government began to establish SEZs in 2000 under the Foreign Trade Policy to redress the infrastructural and bureaucratic challenges that were seen to have limited the success of EPZs.
- The Special Economic Zones Act was passed in 2005.
- The Act came into force along with the SEZ Rules in 2006.
- However, SEZs were operational in India from 2000 to 2006 (under the Foreign Trade Policy).
- India's SEZs were structured closely with China's successful model.

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- About 64% of the SEZs are located in five states – Tamil Nadu, Telangana, Karnataka, Andhra Pradesh and Maharashtra.
- The Board of Approval is the apex body and is headed by the Secretary, Department of Commerce (Ministry of Commerce and Industry).
- The Baba Kalyani Committee was constituted by the Ministry of Commerce and Industry to study the existing SEZ policy of India.
- 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.

## **Objectives of SEZ Act:**

- 1. To create additional economic activity.
- 2. To boost the export of goods and services.
- 3. To generate employment.
- 4. To boost domestic and foreign investments.
- 5. To develop infrastructure facilities.

## Major Incentives and Facilities Available to SEZ:

- Duty free import/domestic procurement of goods for development, operation and maintenance of SEZ units.
- Exemption from various taxes like Income Tax, minimum alternate tax, etc.
- External commercial borrowing by SEZ units upto US \$ 500 million in a year without any maturity restriction through recognized banking channels.
- Single window clearance for Central and State level approvals.

## WHEN LISTED PLATFORM

 The SEBI (Securities and Exchange Board of India) has been looking to launch a when listed platform.

- It is for trading of shares of companies that have finished their initial public offering (IPO) and are yet to be listed on stock exchanges.
- This is aimed at reducing the activity in the grey market, which is largely unregulated and has a significant influence on listings.
- At present, once the IPO is closed, shares have to be listed on trading platforms in trading plus three working days (T+3), with T being the closing day of the offer.
- The allotment of shares is done on T+1 day.
- In the period between the allotment of shares and listing day, investors trade in the grey market.

## **Grey market**

- It refers to an unofficial trading of securities even before they are listed on a stock exchange.
- This is an unregulated market and works on demand and supply.
- Many investors look at the premium offered in the grey market for stock of a company which has launched an IPO, before considering investing in the offer.
- To curb grey market activity, SEBI is working on launching 'when-listed' platform.

## **Art & Culture**

## **INDUS VALLEY SCRIPT**

**Context:** Tamil Nadu Chief Minister M.K. Stalin announced a \$1-million prize to incentivize experts or organizations to decipher the Indus Valley Civilization script, unlocking its mysteries for universal understanding.



## **Indus Script Evolution**

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- The Indus script, also known as the Harappan script, evolved from prefiring potter's marks and post-firing graffiti to a fully developed writing system.
   The Indus script might have evolved through two phases:
  - Early phase (3500-2700 BC):
     Initial examples of Indus Script signs were discovered on Ravi and Kot Diji pottery at Harappa. These signs are typically singular, reflecting a preliminary stage of the script.
  - Urban period (2600-1900 BC):The script

reached **maturity** during this era, with longer inscriptions appearing. Over thousands of **inscriptions** have been found across 60 excavation sites. averaging five signs per inscription, with none exceeding 26 signs.

#### **Features**

- **Pictographic Script**: Developed during the Indus Valley Civilisation; symbols represent ideas, objects, or sounds.
- Boustrophedon Writing:
   Bidirectional style; written right to left in one line and left to right in the next.
- **Logo-Syllabic System**: Combines word signs and symbols with phonetic values.
- Length of Inscriptions: Inscriptions are short and lack bilingual texts, making decipherment challenging.
- Timeframe: Likely developed between 3500 BCE and 2700 BCE, disappeared by 1800 BCE.

### **Numerical Representation**

- Single Unit: Represented by a downward stroke.
- **Units of 10**: Represented by semicircles.

## **Materials and Usage**

- **Found On**: Seals, seal impressions, bronze and copper tablets, pottery, tools, bones, and other archaeological objects.
- Possible Functions:
  - Seals: Speculated to be amulets, talismans, or identification markers.
  - Administrative Use: Likely used by elites to record transactions.
  - Trade: Clay tablets with inscriptions found in Mesopotamia, suggesting usage in trade.

## **Decipherment Challenges**

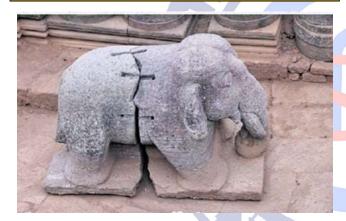
- Absence of Bilingual Texts: Lack of Rosetta Stone-like records for interpretation.
- Incomplete Understanding: Interconnectedness of symbols and full meaning remains unknown.

#### **Decline**

 Civilisation Decline: Script disappeared with the decline of the Indus Valley Civilisation around 1800 BCE.

## RATNAGIRI BUDDHIST SITE

**Context:** The Archaeological Survey of India (ASI) has recently undertaken significant excavations at the Ratnagiri Buddhist site in Odisha, unearthing valuable relics that shed light on its historical prominence.



### **About Ratnagiri:**

- Situated on a hill between the Brahmani and Birupa rivers in Jajpur district, Odisha, Ratnagiri is approximately 100 km from Bhubaneswar.
- Established no later than the reign of Gupta king Narasimha Baladitya in the first half of the 6th century CE, Ratnagiri flourished as a major Buddhist monastic centre until the 12th century.
- It was renowned for its extensive Buddhist ruins, including stupas, monasteries, shrines, and temples.
- The site evolved into a significant center for Tantric Buddhism (Vajrayana), with

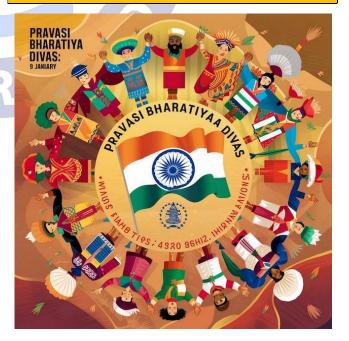
numerous sculptures of Buddhist deities, indicating its role in the development of esoteric Buddhist practices.

## **Recent Discoveries by ASI:**

- **Monolithic Elephant:** A broken monolithic elephant statue, measuring approximately 1.5 meters in length and 1.1 meters in height, has been uncovered, highlighting the site's rich sculptural heritage.
- Buddhist Artifacts: The excavation has yielded a colossal Buddha head, fragments of Buddhist deities, monolithic and masonry votive stupas, and various brick and stone structures, reflecting the site's architectural and religious significance.
- Ceramics Collection: An assortment of ceramics has been discovered, providing insights into the daily life and material culture of the monastic community that once thrived at Ratnagiri.

## PRAVASI BHARATIYA DIVAS

**Context:** The 18th Pravasi Bharatiya Divas (PBD) is currently happening in Bhubaneswar, Odisha.



- It is the flagship event of the Ministry of External Affairs.
- It is held in different cities, to showcase the diversity and progress of different regions of India.
- Since 2015, it has evolved into a biennale event, with theme-based conferences held in the intervening years.
- History: This bi-annual celebration, held on January 9th, commemorates the day in 1915 when Mahatma Gandhi, the greatest Pravasi, returned to India from South Africa to lead the country's freedom struggle.
- The primary goals of Pravasi Bharatiya Divas are:
  - To commemorate the contributions of the Indian diaspora to India's development
  - To create a better understanding of India abroad
  - o To support India's causes and work for the welfare of local Indian communities worldwide
  - To provide a platform for overseas Indians to engage with the government and people of their ancestral land.
- These conventions have proven instrumental in fostering connections between India and its vast overseas community, enabling the sharing of experiences, knowledge, and skills across various fields.
- The theme for this year is the "Diaspora's contribution to a Viksit Bharat" (Developed India).

## KASHI TAMIL SANGAMAM

**Context:** The Union Govt. has announced that the 3<sup>rd</sup> edition of the Kashi-Tamil Sangamam will focus on the legacy of sage Agasthyar.



## **About Kashi Tamil Sangamam:**

- It is part of the Union Govt's 'Ek Bharat Shreshtha Bharat Yuva Sangam programme.' It aims to celebrate the many aspects of the historical and civilizational ties between India's North and South.
- The broader objective is to create an understanding of shared heritage and deepen the people-to-people bond between the North and South regions.
- Nodal Ministry: Ministry of Education, in collaboration with other ministries like Culture, Textiles, Railways, Tourism, etc., and the Govt of Uttar Pradesh.
- Implementing agencies: IIT Madras and Banaras Hindu University.
- It encompasses lectures covering literature, philosophy, spirituality, music, dance, yoga, and ayurveda.
- The endeavor is in sync with NEP 2020's emphasis on integrating the wealth of Indian Knowledge Systems with modern systems of knowledge.
- The first and second editions of the Kashi Tamil Sangamam were held in 2022 and 2023.

## **Mythological Ties**

 As per legend, King Parakrama Pandya from the Madurai region in the 15<sup>th</sup> century traveled to Kashi to acquire a lingam for constructing a grand Shiva temple. However, during his return, the cow carrying the lingam halted at a place. Considering this divine intervention, Parakrama Pandya installed the lingam there, and the site is now known as Siyakasi.

- To enable devotees who couldn't travel to Kashi, the Pandyas built the Kasi Viswanathar Temple in Tenkasi, replicating the Kashi experience.
- In the 19<sup>th</sup> century, another king, Adhivir
  Ram Pandyan constructed a Shiva
  temple in Tenkasi after returning from a
  pilgrimage to Kashi, further solidifying the
  connection between these regions.

## **About sage Agasthyar:**

- Agasthyar is a revered sage in Hinduism.
  He was an influential scholar in diverse languages of the Indian subcontinent. He is regarded in some traditions to be a Chiranjivi (immortal being).
- He and his wife Lopamudra are traditionally attributed as the authors of many hymns in the Rigveda and other Vedic literature.
- Agasthyar is considered to be the father of Siddha system of medicine. Agastya appears in numerous Itihasas and Puranas including the major Ramayana and Mahabharata.
- He is one of the seven most revered rishis (the Saptarishi) in the Vedic texts, and is referred to as "Tamil Siddhar" in the Shaivite tradition.
- He is credited with inventing the earliest grammar text in Tamil, "Agattiyam".
- He also played a key role in developing Shaivite centres in present-day Sri Lanka and South India. Depictions of him are found in ancient sculpture and reliefs in Hindu temples of South Asia, and Southeast Asia such as in Thailand, Cambodia, and Indonesia.

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## DENOTIFIED, NOMADIC, SEMI-NOMADIC TRIBES

**Context:** An article in today's edition of the Hindu analyzes the various issues faced by denotified, nomadic and semi-nomadic tribes.

# About Denotified, Nomadic and Semi-Nomadic Tribes (DNTs):

- DNTs are communities that were 'notified' as being 'born criminals' during the British regime under a series of laws starting with the Criminal Tribes Act of 1871.
- These Acts were repealed by the Indian Govt. in 1952, and these communities were "De-Notified". A few of these communities which were de-notified were also nomadic.
- While most DNTs are spread across the SC, ST and OBC categories, some DNTs are not covered in any of the SC, ST or OBC categories.
- More than 10 crore Indians from >1,400 communities are denotified, nomadic or semi-nomadic.
- Many commissions constituted since independence have referred to issues faced by DNTs, starting with the Criminal Tribes Inquiry Committee (1947) in the United Provinces (now Uttar Pradesh).

# Commissions set up post-1947 regarding issues faced by DNTs:

- Ananthasayanam Ayyangar Committee
  in 1949 (it was based on the report of this
  committee the Criminal Tribes Act was
  repealed),
- The Kaka Kalelkar Commission (1953) and B.P. Mandal Commission (1980), though primarily concerned with OBCs, also made some recommendations on the issue.

- The National Commission to Review the Working of the Constitution (2002) held that DNTs have been wrongly stigmatized as crime prone and subjected to high handed treatment as well as exploitation.
- The Union Govt. in 2014 constituted the National Commission for DNTs (NCDNT or Idate Commission) for a period of 3 years:
  - To prepare a State-wise list of castes belonging to Denotified and Nomadic Tribes and
  - To suggest appropriate measures in respect of Denotified and Nomadic Tribes that may be undertaken by the Central or the State Government.

# Implementation of Idate Commission Report (2017):

- The Commission recommended the setting up of a permanent commission for these communities. But since most DNTs are covered under SC, ST or OBC, the govt felt setting up a permanent commission would be in conflict with the respective National Commissions for SCs, STs and OBCs.
- The govt thus set up the DWBDMCs (Development and Welfare Board for Denotified, Nomadic and Semi-Nomadic communities) in 2019 under the chairmanship of BR Idate, under the Societies Registration Act, 1860 under the aegis of the Ministry of Social Justice and Empowerment.

# About SEED (Scheme for Economic Empowerment of DNTs):

- It was launched in February 2022, with an allocation of ₹200 crore, to be spent over five years from FY 2021-22 to FY 2025-26.
- **DWBDNCs** has been tasked with the implementation of this scheme.

 DNT communities whose annual family income is Rs. 2.50 lakhs or less and who are not availing benefits under any other central/state schemes are eligible.

## **Components:**

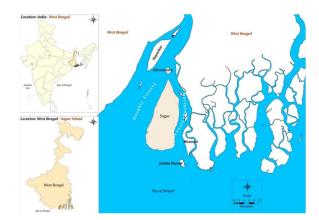
- **Education:** Free competitive exam coaching for DNT candidates.
- **Health:** Health insurance (through PM Jan Arogya Yojana).
- **Livelihoods:** Through National and State Rural Livelihood Missions.
- Land and Housing: Financial assistance for construction of houses through PM Awas Yojana.

## **MODHWETH FESTIVAL**



- The Toda tribe, one of the oldest ethnic groups in the Nilgiris Hills of Kerala and Tamil Nadu, celebrated their traditional 'Modhweth' festival to mark the New Year.
- It is held at the Moonpo temple in Muthanadu Mund village, located in the Nilgiri district of Tamil Nadu.
- Prayers are offered to the deity, Thenkish Amman, for good health, rains, and a bountiful harvest.
- Toda Tribe is a pastoral tribe of the Nilgiri Hills. They are classified as a Particularly Vulnerable Tribal Group (PVTG) in Tamil Nadu. Toda lands are part of the Nilgiri Biosphere Reserve.

## **GANGASAGAR MELA**



- West Bengal has announced many new initiatives to attract pilgrims to the Gangasagar Mela, which is the largest and oldest living tradition in West Bengal. It is celebrated during the Makar Sankranti festival.
- The mela is held at Sagar Island, which lies in the Ganga delta, around 100 kms south of Kolkata.
- It has been mentioned in epics such as the Ramayana and Mahabharata, putting its existence as early as 400 BCE.
- Post their sacred bath in the Ganga, pilgrims often visit the temple of Kapila Muni, a revered sage in Hindu mythology. He is considered to be the original proponent of the Samkhya system of Indian philosophy.
- It is **India's second largest pilgrimage gathering** after the Kumbh Mela.

## KOKBOROK LANGUAGE

- Kokborok is a language of the Borok people, geographically known as Tripuris.
- It is **one of the State's official languages of Tripura**, notified on January 19, 1979.
- It is a Sino-Tibetan language and can be traced back to at least the 1st century AD when the historical record of Tripuri kings started to be written down in a book called the Raj Ratnakar.

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 So far, the term Kokborok is known to first occur as 'Kok-boro' in 1897/98 in an early primer on the language, Daulat Ahmed 'Kokboroma.



- In 1900, **Thakur Radhamohan Debbarma** spelt 'Kokborok' in a published grammar of the language.
- At the time, various British Political Agents, District Officers, Sub- Division Officers were known as linguists – they called this language Tipperh, Tipura, or Tipra Language.
- The word Kokborok is derived from the word 'Kok', meaning 'verbal', and 'Borok', meaning 'people' or 'human'.
- According to the 2011 Census report, the number of Kokborok-speaking people is 8,80,537, which is 23.97% of the total population of Tripura.
- The Kokborok language has been a focal point of debate and activism in Tripura for several decades, particularly regarding the choice of script for writing the language.
- The Twipra Student Federation (TSF), a wing of the North East Students Organisation (NESO), staged a protest in Agartala recently, demanding the adoption of the Roman script for the Kokborok language.

## **JALLIKATTU**



- Jallikattu is a traditional sport that is popular in the Indian state of Tamil Nadu.
- The sport involves releasing a wild bull into a crowd of people, and the participants attempt to grab the bull's hump and ride it for as long as possible, or attempt to bring it under control.
- The bull-taming sport is popular in Madurai,
   Tiruchirappalli, Theni, Pudukkottai and
   Dindigul districts known as the Jallikattu belt.
- Jallikattu is celebrated in the second week of January, during the Tamil harvest festival, Pongal.
- A tradition over 2,000 years old, Jallikattu is a competitive sport as well as an event to honour bull owners who rear them for mating.
- It is a traditional sport in which contestants try to tame a bull for a prize; if they fail, the bull owner wins the prize.
- Jallikattu is considered a traditional way for the peasant community to preserve their pure-breed native bulls.
- Kangayam, Pulikulam, Umbalachery, Barugur and Malai Maadu are among the popular native cattle breeds used for Jallikattu.
- In 2014, the Supreme Court banned Jallikattu after petitions from animal welfare organizations.

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• In 2017, the Tamil Nadu government passed an amendment to the Prevention of Cruelty to Animals Act (PCA) to allow Jallikattu.

## Кно кно

- Kho-kho is a popular form of the Run-Chase sport from ancient India.
- The game involves chasing and touching runners while running in a linear path around two poles with techniques of forming a relay of chasers while passing on the chasing turn.
- Kho-kho is an ancient Indian game, possibly derived from the different strategies and tactics of the war in Kurukshetra as described in the Mahabharata.
- The chariot fight during the war and the zigzag pathways followed by the retreating soldiers show similarity with kho-kho.
- The goal of the game is to chase and catch.



- **Kho is a voice signal** sent to communicate to other players to indicate their turn to chase.
- The **ultimate objective** of the game is strategically building a chain to catch the runner.
- The runners run zigzag, crossing between the sitting players, and change directions rapidly to make it tough to be tagged themselves.
- India recently emerged as the **inaugural champions** in both the men's and women's events at the Kho Kho World Cup 2025.

- Pune's Deccan Gymkhana club first came out with formalised rules and regulations for Kho Kho. These gave the sport a structured look.
- Kho Kho, along with other indigenous Indian sports like kabaddi and mallakhamb, was demonstrated on the sidelines of the 1936 Berlin Olympics.

## **NATIONAL SPORTS AWARDS**

**Context:** Recently, the union Ministry of Youth Affairs & Sports announced the National Sports Awards 2024.



- · Manu Bhaker was awarded Khel Ratna for her shooting excellence
- · World Chess champion Gukesh D earned Khel Ratna award
- India Hockey captain Harmanpreet Singh was also amongst the winners
- National Sports Awards are given every year to recognize and reward excellence in sports.
- 'Major Dhyan Chand Khel Ratna Award'
  - It is given for the spectacular and most outstanding performance in the field of sports by a sportsperson over the period of the previous four years.

#### • Arjuna Award:

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o It is given for outstanding performance in Sports and Games' is given for good performance over a period of the previous four years and for showing qualities of leadership, sportsmanship and a sense of discipline.

## Arjuna Award (Lifetime)

o It is given to honour and motivate those sportspersons who have contributed to sports by their performance and continue to contribute to promotion of sports even after their retirement from active sporting career.

## • 'Dronacharya Award

- It is given for outstanding coaches in Sports and Games' is given to coaches for doing outstanding and meritorious work on a consistent basis and for enabling sportspersons to excel in International events.
- Maulana Abul Kalam Azad (MAKA)
   Trophy: It is awarded forthe overall top performing university in Khelo India University Games.
- This year's awards were decided by the Selection Committee headed by Justice (Retd.) V. Ramasubramanian, Supreme Court of India and consisting members from eminent sportspersons, persons having experience in sports journalism and sports administrators.

## WINTER CHAR DHAM

The Winter Char Dham refers to the temporary relocation of the presiding deities of the Char Dham shrines—Gangotri, Yamunotri, Kedarnath, and Badrinath to lower-altitude locations during winter months due to heavy snowfall in Uttarakhand.



## Winter Seats of Char Dham

- Gangotri Dham: Moved to Mukhba in Uttarkashi.
- Yamunotri Dham: Moved to Kharsali in Uttarkashi.
- Kedarnath Dham: Moved to Omkareshwar Temple in Ukhimath, Rudraprayag.
- Badrinath Dham: Moved to Pandukeshwar in Chamoli.

## **Purpose**

- Ensures continued pilgrimage opportunities during off-season months.
- Supports Uttarakhand's tourism-driven economy through winter pilgrim footfall.

#### **Significance**

- Enhances tourist inflow during winters.
- Preserves the religious continuity of Char Dham even when the main shrines are inaccessible.

## **LEZIM DANCE**



 It is a folk dance from the state of Maharashtra.

- It gets its name after a musical instrument- a unique wooden stick, with jingling cymbals attached to it that the dancers carry while performing the dance.
- Lezim is as much a rigorous physical exercise, a drill, as a dance: the formations are in twos and fours and sometimes even a circle.
- The dance is accompanied by a **dhol or dhalgi** (small dhol).
- There are no wind or string instruments
   accompanying it, often there is no song
   accompaniment either, but of late, sometimes,
   a song is sung.

#### **Musical Instruments:**

- **Lizem** is a kind of musical instrument which was earlier traditionally used as an instrument in all folk dances but today it is primarily used in **Ganesha procession**.
- The dancers carry a wooden stick fixed with jingling cymbals. These jingling cymbals are called Lezim.
- Dholki, a drum instrument is used as the main percussion music.





## **Environment**

# ANNUAL GROUNDWATER QUALITY REPORT 2024

**Context:** The Annual Groundwater Quality Report 2024 was released by the Union Minister of Jal Shakti.

- The Annual Groundwater Quality Report 2024 was released by the Union Minister of Jal Shakti.
- Conducted by the Central Ground Water Board (CGWB), the report provides a scientific baseline for groundwater quality across India.

Annual Groundwater Quality Report, 2024: Key Highlights Monitoring Scale

Data collected from 15,200 locations and 4,982 trend stations both before and after the monsoon.

## **Contamination Levels**

- Nitrate
  - 20% of samples exceeded the safe limit of 45 mg/L.
  - Hotspots include Rajasthan, Tamil Nadu, Maharashtra
     (>40% of samples), Telangana
     (27.48%), Andhra Pradesh
     (23.5%), and Madhya Pradesh
     (22.58%).
  - States such as Arunachal Pradesh,
     Assam,
     Nagaland remain within safe limits.

#### Fluoride

- 9.04% of samples above permissible limits.
- Affected states: Rajasthan, Haryana, Karnataka, Andhra Pradesh, and Telangana.

#### Arsenic

- Detected in West Bengal, Assam,
   Bihar, Uttar Pradesh (Ganga Brahmaputra
- o Floodplains).
- Linked to cancer and skin lesions.

#### Uranium

- 42% of Rajasthan and 30% of Punjab samples exceed 100 ppb.
- Over-exploited zones in Gujarat, Haryana, Tamil Nadu, Andhra Pradesh also show elevated levels, posing kidney damage risks.

## **Agricultural Suitability**

- SAR (Sodium Adsorption Ratio) & RSC (Residual Sodium Carbonate): 81% of samples suitable for irrigation; 100% suitability in North-Eastern states.
- High Sodium: Elevated levels in Andhra Pradesh, Gujarat, Haryana, risking soil degradation.
- Salinity (as a measure of Electrical Conductivity (EC)): High in Rajasthan, Delhi, Gujarat, Haryana, Punjab, Karnataka.

## **Temporal Trends**

- Seasonal Improvements: Post-monsoon recharge improves EC (salinity) and fluoride levels.
- Stable Nitrate since 2015 in Rajasthan, Madhya Pradesh, Gujarat.
- Rising Nitrate (2017–2023) in Uttar Pradesh, Tamil Nadu, Andhra Pradesh, Haryana.

## **Hotspots of Contamination**

- Nitrate:
  - Rajasthan (Barmer, Jodhpur), Maharashtra, Andhra Pradesh, Tamil Nadu, Punjab.

- Uranium:
  - Over-exploited aquifers in Rajasthan, Punjab, Gujarat.
- Arsenic:
  - Ganga-Brahmaputra floodplains in West Bengal, Assam, Bihar.

## FOREST RIGHTS ACT, 2006

**Context:** Ministry of Tribal Affairs has directed states to create an institutional mechanism to ensure compliance with the Act and set up a mechanism to address grievances.

About STs and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act of 2006 (also called FRA 2006):

- It recognizes and vests forest rights and occupation in Forest land in Forest Dwelling
   STS (FDST) and Other Traditional Forest
   Dwellers (OTFD) who have been residing in such forests for generations.
- Forest rights can be claimed by any member or community who has for at least 3 generations (75 years) prior to 13th December, 2005 primarily resided in forest land for livelihood needs.
- It strengthens the conservation regime of the forests while ensuring livelihood and food security of FDST and OTFD.
- Gram Sabha is the authority to initiate process for determining the nature and extent of Individual Forest Rights (IFR) or Community Forest Rights (CFR) or both that may be given.

#### Rights for the dwellers

What the Forest Rights Act, 2006, entails

- Tenurial security over the forestland under occupation prior to December 13, 2005
- Recognition of community right over forest and forest products
- Protection and conservation of community forest resources
- Conversion of all forest villages and habitation located inside the forestland into revenue villages
- In situ rehabilitation of displaced persons evicted without compensation prior to December 13, 2005
- Recognition of ancestral domain (habitat) right to



Residents of Gunduribadi village in Odisha's Nayagarh district get ready for mapping their land boundaries for the Forest Rights Act implementation. • SPECIAL ARRANGEMENT

Particularly Vulnerable Tribal Groups

 Seasonal access to nomadic, pastoral and semi-nomadic communities over forestland  Conversion of all leases granted by erstwhile governments, zamindars and king into permanent land records

## • The Act identifies four types of rights:

- o **Title rights:** Gives FDST and OTFD right to ownership to land farmed by tribals/forest dwellers (max. 4 hectares). Ownership is only for land that is actually being cultivated and no new lands will be granted under the Act.
- Use rights: Rights of the dwellers extend to extracting minor forest produce, grazing areas etc.
- Relief and development rights:
   Rehabilitation in case of illegal eviction/forced displacement and to basic amenities, subject to restrictions for forest protection.
- o **Forest management rights:** Rights to protect, regenerate, conserve or manage any forest resource which they have been traditionally protecting and conserving for sustainable use.
- Nodal Agency: Tribal Affairs Ministry

### Rationale behind FRA 2006:

 Forest management policies in both colonial and post-colonial India did not recognize the symbiotic relationship of STs with the forests, reflected in their dependence on the forest and their traditional wisdom in conservation of the forests. Therefore, the Act was enacted to undo this historic injustice and empower the forest dwellers.



As of 2023, 22 lakh individual land titles and 1.1 lakh community titles have been accorded

to tribal and forest dwellers. In the same period, 45 lakh claims to title have been received.

# GENETIC ENGINEERING APPRAISAL COMMITTEE (GEAC)

**Context:** The Union Ministry of Environment, Forest and Climate Change has amended the rules governing the selection of experts to the Genetic Engineering Appraisal Committee (GEAC).

## Genetic Engineering Appraisal Committee (GEAC):

- It is the statutory committee
  constituted under the "Rules for the
  Manufacture, Use/Import/Export and
  Storage of Hazardous Micro
  Organisms/Genetically Engineered
  Organisms or Cells (Rules,
  1989)" framed under the Environment
  (Protection) Act, 1986.
- It was earlier called the Genetic Engineering Approval Committee, which was changed to Genetic Engineering Appraisal Committee in the year 2010.
- It functions in the Ministry of Environment, Forest, and Climate Change (MoEF&CC).
- The functions of GEAC as prescribed in the Rules 1989 are as follows:
  - To appraise activities involving large-scale use of hazardous microorganisms and recombinants in research and industrial production from the environmental angle.
  - To appraise proposals relating to the release of genetically engineered organisms and products into the environment, including experimental field trials.
  - The committee or any persons authorized by it has powers to

**take punitive action** under the Environment Protection Act.

- It keeps a check on the use, import, and export of genetically modified (GM) organisms and crops.
- Clearance of GEAC is mandatory for the environmental release of GM crops.
- Composition:
  - GEAC is chaired by the Special Secretary/Additional Secretary of MoEF&CC and co-chaired by a representative from the Department of Biotechnology (DBT).
  - o Presently, it has 24 members and meets every month. The members comprise experts from other ministries as well as institutions such as the ICAR, ICMR, CCMB, and so on.

## **New Rules Governing the Selection of Experts:**

- Under the new rules, an "expert member" ought to be disclosing their "interest" that could conflict with their duties.
- The expert is also expected to take all steps necessary to ensure that any conflict of interest not affect any decision of the GEAC.
- An expert member with any direct or indirect association with a matter being discussed in a meeting of the committee is obliged to disclose this prior to the meeting.
- Unless specifically requested by the committee, the expert is expected to recuse their selves from the meeting.
- All selected members would also have to fill out a form detailing their professional affiliations to a decade prior to joining the committee.

# WILDLIFE PROTECTION ACT OF 1972

**Context:** The Kerala Govt. requested the Union Govt. to amend the Wildlife Protection Act in order to classify wild boars as vermin, and thus tackle mananimal conflict.



# About the Wildlife Protection Act of 1972 (WPA):

- It provides a legal framework for the protection of various species of wild animals and plants, management of their habitats, regulation, and control of trade in wild animals, plants, and products made from them
- India's entry to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) was made easier by the Wildlife Act.

## **Authorities Appointed under WPA**

- Union Govt. appoints Director of Wildlife Preservation.
- State Govts appoint Chief Wildlife Warden (CWLW)
- States are also entitled to appoint Wildlife Wardens in each district.

## **Salient Features of WPA**

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 Prohibits hunting of animals listed in Schedules I to IV. Can be hunted after getting permission from CWLW if it:

- becomes dangerous to human life or to property or crops
- o is disabled or suffering from a disease beyond recovery.
- Both union and state govts. can declare areas as national parks or wildlife sanctuaries.

#### **Bodies Constituted under WPA**

- National Board for Wildlife (NBWL):
   Apex body for review of all wildlife-related matters & approving projects in/around NPs and WSs. Chaired by PM. Board is only advisory in nature
- **Standing Committee of NBWL:** For approving all projects falling inside or within 10 kms of protected areas. Chaired by Environment Minister.
- **State Board for Wildlife (SBWL):** CM is chairperson. Advises state govt in selecting & managing protected areas.
- **Central Zoo Authority (CZA):** Chaired by Environment Minister. Recognises & regulates zoos across the country.
- National Tiger Conservation Authority (NTCA): Chaired by Environment Minister. Recommends to state govt. to declare an area as Tiger Reserve.
- Wildlife Crime Control Bureau (WCCB):
   To combat organized wildlife crime.

#### Schedules under the Act:

- **Schedule I** for animal species with highest level of protection.
- **Schedule II** for animal species with lesser degree of protection.
- **Schedule III** that covers plants.
- **Schedule IV** for specimens listed in Appendices under CITES

#### Other Features

• Union Govt. can regulate and prohibit import of invasive alien species.

- Central and state govts. have power to declare **community reserves**.
- State govts. may declare areas adjacent to national parks and sanctuaries as conservation reserve.
- Allows persons to surrender captive animals or animal products to CWLW. No compensation will be paid for this.

## NATIONAL CLEAN AIR PROGRAMME

**Context:** NCAP cities achieved a 24.45% reduction in nationwide PM levels between 2019 and 2024, according to a new report.

## **CLEARING THE AIR**

AIM OF NATIONAL CLEAN AIR PROGRAMME To meet prescribed annual average ambient air quality standards at all locations in the country How it will work A NEW INSTITUTIONAL | Monitoring committee under joint secretary FRAMEWORK FINALISED National project State-level implementation project Apex committee unit at CPCB monitoring units under environment (5-6 scientific (3-4 scientific minister personnel) personnel) Steering committee National project monitoring unit in under secv environment min (25 scientific personnel) (environment)

## **About National Clean Air Programme:**

- The National Clean Air Programme (NCAP)
  was launched by the Ministry of
  Environment, Forests and Climate Change
  (MoEFCC) in January 2019.
- It is the first-ever effort in the country to frame a national framework for air quality management with a time-bound reduction target.
- It seeks to cut the concentration of coarse Particulate Matter (PM of diameter 10 micrometer or less, or PM10) and fine particles (particulate matter of diameter 2.5 micrometer or less, or PM2.5) by at least 40% by 2026, with 2017 as the base year.
- It covers 132 non-attainment cities which were identified by the Central Pollution Control Board (CPCB). In addition to this, all

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- cities with a population of one million are covered.
- The NACP mandates the preparation of the **city-specific action plans**, including:
  - Measures to strengthen the monitoring network
  - Reduce vehicular and industrial emissions
  - o Increase public awareness.
- Implementation of the city-specific action plans are regularly monitored by Committees at Central and State level
- From 2020-21 onwards, cities are required to quantify all improvements made in air quality.



Non-attainment cities are those that have fallen short of the National Ambient Air Quality Standards (NAAQS) for over five

years.

## About National Ambient Air Quality Standards:

- The mandate provided to the CPCB under the Air (Prevention and Control of Pollution) Act empowers it to set standards for the quality of air. Hence the current National Ambient Air Quality Standards were notified in November 2009 by the CPCB.
- Pollutants monitored:
  - o PM10
  - o PM2.5
  - Sulphur Dioxide (SO2)
  - Nitrogen Dioxide (NO2)
  - Carbon Monoxide (CO)
  - o Ammonia (NH3)
  - Ozone
  - o Lead
  - o Benzene
  - Benzopyrene
  - o Arsenic
  - o Nickel

# GRADED RESPONSE ACTION PLAN (GRAP)

**Context:** Due to improvements in air quality in Delhi, restrictions placed under Stages III and IV of GRAP have been fully removed by the CAQM.



#### What is GRAP?

- GRAP is a framework designed to **combat** air pollution in the Delhi-NCR region.
- It was introduced as an emergency response mechanism, and its implementation is triggered when the Air Quality Index (AQI) reaches "poor" levels.
- GRAP is particularly **important during the winter months** when air quality tends to plummet.
- The Commission for Air Quality Management (CAQM) in NCR and adjoining areas oversees the implementation of GRAP.
- It collaborates with the Ministry of Environment, Forest and Climate Change (MoEFCC).
- The CAQM has constituted a subcommittee for the operationalization of the GRAP.
- The orders and directions of the CAQM will prevail in case of any conflict between directions issued by the State governments and the CAQM.

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- **GRAP consists of four stages**, each with targeted actions to be taken by the necessary authorities and agencies.
  - Stage I: "Poor" air quality (Delhi AQI: 201-300)
  - Stage II: "Very Poor" air quality (Delhi AQI: 301-400)
  - Stage III: "Severe" air quality (Delhi AQI: 401-450)
  - Stage IV: "Severe+" air quality (Delhi AQI > 450)

## About the CAQM:

- It is a statutory body created by the Commission for Air Quality Management in National Capital Region (NCR) and Adjoining Areas, Act 2021.
- Mandate: Coordination, research, identification, and resolution of problems surrounding the air quality index and matters incidental thereto.
- The CAQM is required to coordinate its actions on monitoring of air quality with the government of Delhi and the adjoining states of Punjab, Haryana, Rajasthan, and Uttar Pradesh.

#### **Powers:**

- Restricting activities influencing air quality.
- Investigating and conducting research related to environmental pollution impacting air quality, preparing codes and guidelines to prevent and control air pollution,
- Issuing **directions** on matters including inspections, or regulations.
- All the directions and orders by the CAQM are of **binding nature**, and any person, officer, or authority shall be bound to comply with the same.
- The commission is directly accountable to the Parliament.

#### **Composition of CAQM:**

 Chairperson: A government official of the rank of Secretary or Chief Secretary. They will hold the post for three years or until they attain the age of 70 years.

- It has **five ex officio members** who are either Chief Secretaries or Secretaries in charge of the departments related to environment protection in Delhi, Punjab, Haryana, Rajasthan, and Uttar Pradesh.
- Three full time technical members.
- Three members from NGOs.
- Technical members from Central Pollution Control Board (CPCB), ISRO, and NITI Aayog.

## **BRAZILIAN VELVET ANT**

- Velvet ants are a group of parasitic wasps that are well known for a suite of defensive adaptations including bright coloration and a formidable sting.
- Habitat: It is found in shrub desert in Brazil called the Caatinga.



 Appearance: They're wasps, some of which are wingless, and are named in part for their exteriors. Velvet ant is known for its distinct black and white markings.

### • Characteristics

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- It demonstrates remarkable mobility and covers significant distances in pursuit of hosts on the ground.
- It is usually found throughout the day, peak activity typically coincides with the early morning

- and late afternoon, during periods of subdued sunlight.
- It is recently found that the black parts on **female velvet ants** were actually ultrablack so that they absorbed nearly all visible light.

## • Why this finding is Unique?

- Ultrablack pigmentation is rare in the animal kingdom.
- In organisms that have it, it helps them hide from predators, regulate body temperature or even attract mates, as the contrast against brighter colors can be visually enticing.

## **GOLDEN JACKAL**



- The golden jackal, also known as the common jackal, is a medium-sized wolflike canid.
- It is strictly nocturnal in areas inhabited by humans, but may be partly diurnal elsewhere.
- They dig caverns for shelter, or use crevices in rocks, or caverns that were dug by other animals.
- They are monogamous, meaning they mate for life.
- Diet: Golden jackals are omnivores. These opportunistic foragers have a rather diverse diet.
- **Habitat:** These animals are abundant in valleys and along rivers and their

- tributaries, canals, lakes, and seashores, but are rare in foothills and low mountains.
- Distribution: North and East Africa, Southeastern Europe and South Asia to Burma.
- They are quite widespread across India.
   Right from the Himalayan foothills, down to the Western Ghats, the Golden Jackal has a wide distribution.
- Conservation Status
  - o IUCN: Least Concern
  - o CITES: Appendix III
  - Wildlife Protection Act, 1972:
     Schedule I
- Threats: Habitat loss from encroachments and poor management threaten their survival.

Ecological Significance: Theyplay a crucial role in maintaining the biodiversity of mangrove and grassland ecosystems.

## MIYAWAKI METHOD

- It is a method of afforestation developed by the Japanese botanist and plant ecology expert Professor Akira Miyawaki.
- It involves planting two to four types of indigenous trees within every square meter.
- Due to the dense planting, the seedlings grow quickly as they compete for sunlight.
- Only native species that would occur naturally in that area without humans, given the specific climate condition, are planted.
- The selection of species to plant in a given area was originally linked to the theory of potential natural vegetation (PNV), in other words, the vegetation that would occur in a specific area without further human interference.
- In this method, the trees become selfsustainable and grow to their full length within three years.

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- Miyawaki forests grow 10x faster, are 30x denser and contain 100x more biodiversity.
- They are quick to establish, maintenancefree after the first two-to-three years, and can be created on sites as small as 3 sq. m.
- The goals of a Miyawaki technique include improving biodiversity, sequestering carbon, increasing green cover, lowering air pollution, and preserving the water table.
- Miyawaki forests are viable solutions for cities looking to rapidly build climate resilience.
- It is effective because it is based on natural reforestation principles, i.e., using trees native to the area and replicating natural forest regeneration processes.'

## **COWPEA**

- Cowpea (Vigna unguiculata) is an annual plant within the pea family (Fabaceae).
- It is a leguminous crop having long trailing vines producing seeds of black, white, or red colour used widely in various food preparations.
- It originated and was domesticated in Southern Africa and was later moved to East and West Africa and Asia.
- It is also known as a black-eyed pea, southern pea, etc.
- Cowpeas are typically climbing or trailing vines that bear compound leaves with three leaflets.
- The grains contain 25% protein and several vitamins and minerals.
- The plant tolerates drought, performs well in a wide variety of soils, and, being a legume replenishes low-fertility soils when the roots are left to decay.
- Well-drained loam or slightly heavy soil is best suited.
- In colder climates somewhat sandy soil is preferred as crops mature earlier in them.

- It is grown mainly by small-scale farmers in developing regions where it is often cultivated with other crops as it tolerates shade.
- It also grows and covers the ground quickly, preventing erosion.
- The world's largest production and consumption of cowpea is in West Africa, which accounts for more than 87% of world production and use.
- Nigeria, the largest producer and consumer, accounts for 46% of production worldwide.
- In the Indian context, it is a minor pulse cultivated mainly in arid and semi-arid tracts of Punjab, Haryana, Delhi, and West UP, along with considerable areas in Rajasthan, Karnataka, Kerala, Tamil Nadu, Maharashtra, and Gujarat.

## BANDED ROYAL BUTTERFLY



- Tripura recorded a milestone in biodiversity documentation with the firstever recording of the Banded Royal butterfly (Rachana jalindra indra), a rare species, in the state in the Sepahijala Wildlife Sanctuary
- It is a species of lycaenid or blue butterfly found in parts of South and Southeast Asia.
- Scientific Name: Rachana jalindra
- Habitat:

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 Found in forests, particularly near the Western Ghats, Northeast

# India, Sri Lanka, Myanmar, Thailand, and Malaysia.

- Prefers dense vegetation and can often be seen resting on leaves.
- There are three subspecies of Rachana jalindra found in India, including macantia, distributed from southwest India to Goa; R. j. tarpina, distributed in the Andamans; and R. j. indra, distributed from Orissa to lower West Bengal and Bangladesh.
- Presently the subspecies R. j. indra is recorded from Assam, Meghalaya, and Iharkhand.

## Appearance:

- Upper Side: Males have a deep purple or bluish sheen with dark brown borders, while females are more brownish with white markings.
- Under Side: Pale brown with distinct white bands running across the wings, giving it the "banded" appearance.
- It is legally protected under Schedule II of the Indian Wildlife (Protected) Act, 1972.

# **Key Facts about Sepahijala Wildlife Sanctuary** (SWL):

- It is situated in the state of **Tripura**, 25 kilometers from the capital, Agartala.
- It spans an area of approximately 18.53 sq.km.
- It is divided into five sections, basically to segregate the different types of animals living here. They are the carnivore section, primate section, ungulate section, reptile section, and aviary section.
- Clouded Leopard National Park, established in 2007, is a part of SWL.
- It also has two natural lakes, namely Abasarika and Amrit Sagar.
- Vegetation: Moist deciduous forest

- Flora: The sanctuary has no less than 456 plant species; many kinds of bamboo and a variety of grasses and medicinal plants also grow in the sanctuary.
- Fauna:
  - O It is the habitat of different species of primates like Rhesus macaque, Pigtailed macaque, Capped langur, Spectacled langur, Slow loris and several other wild animals like Leopard, Clouded leopard, Jungle fowl, Civets, Barking, Deer, Wild pig, etc.
  - The crab-eating mongoose (which was last seen in the 1930s) has also been revived here.

## WATER HYACINTH



- It is a perennial, free-floating aquatic plant native to tropical regions of South America, and now present on all continents except Antarctica.
- This plant rapidly increases biomass and forms dense mats in lakes, dams and irrigation channels and chokes them.
- This is not an indigenous species but was introduced to India during the British colonial rule as an ornamental aquatic plant from South America. The plant produces beautiful purple flowers that have high aesthetic value.

- It is rich in fibrous stems that can be processed into a wide array of handbags, interior decorative material, table mats, baskets and other products.
- Invasive Species: This simple, floating aquatic plant is also an obnoxious weed that has been suffocating surface freshwater sources like rivers, rivulets, streams, ponds, dams, lakes and bogs, making the water bodies unsuitable for commercial fishery, transportation and recreation.

## **Significance**

- The plant has been used as a bio-fertiliser in some organic agriculture practices.
- It has been reported that this plant is a good phytoremediation species, suggesting it has the ability to trap and remove toxic metabolites and harmful heavy metals from water.

## GANGETIC DOLPHIN



- It is a **freshwater species** and one of the few **river dolphins** found in the world.
- It inhabits the Ganges-Brahmaputra-Meghna and Karnaphuli-Sangu river systems of Nepal, India, and Bangladesh.
- Vikramshila Gangetic Dolphin Sanctuary of Bihar is an important protected area for the endangered Gangetic dolphins in Asia.

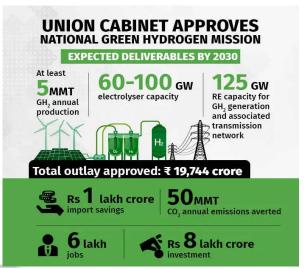
- Common Names: Blind dolphin, Ganges dolphin, Ganges susu, hihu, sideswimming dolphin, South Asian River Dolphin
- Scientific name: Platanista gangetica
- The Gangetic Dolphin has been recognized as **India's National Aquatic Animal**.

## **Description**:

- A long thin snout, rounded belly, stocky body and large flippers are characteristics of the Ganges River dolphin.
- It feeds majorly on fishes and is are usually found in counter-current systems of the main river channel.
- Its eyes lack lens, and as a result, this species is also referred to as the "blind dolphin".
- They have a highly developed bio-sonar system that facilitates them to hunt for fish even in murky waters.
- Being a mammal, the Ganges River dolphin cannot breathe in the water and must surface every 30-120 seconds. Because of the sound it produces when breathing, the animal is popularly referred to as the 'Susu'.
- Conservation status:
  - IUCN: Endangered
  - Wildlife (Protection) Act: Schedule-I
  - o CITES: Appendix I

# NATIONAL GREEN HYDROGEN MISSION (NGHM)

**Context:** PM Modi stated that the govt. aims to make India a hub for the mobility and logistics sectors – and highlighted the role of the NGHM in achieving this goal.



#### **About NGHM:**

- It was launched in January 2023 by the **Ministry of New & Renewable Energy.** It commits an outlay of ₹ 19,744 crore from 2023 to 2030.
- Union govt. to set up manufacturing zones, connectivity to grid, and free transmission for 25 years if facility commissioned before Jun 2025.
- Producers allowed to set up bunkers near ports for storage for later export.
- Production target raised from 1 million metric tonnes (MMT) per year in 2021 to 5 MMT per year by 2030. This target would create a demand for 100-125 GW of renewable energy & 60-100 GW of electrolysers.
- Aims for an investment opportunity of ₹8 lakh crore, while reducing annual emissions by 50 MMT.
- Manufacturers allowed to purchase renewable energy from power exchange or set it up themselves or through any other developer.
- Facility for producers to bank any surplus renewable energy generated with discoms up to 30 days.
- Discoms procuring renewable energy to supply green hydrogen producers will do so at concessional rates. Such procurement by discoms will count towards the state's Renewable Purchase Obligations (RPO).

Aims for cumulative reduction in fossil fuel imports by Rs 1 lakh crore.

#### **Sub Schemes:**

- Interventions Strategic for Green Hydrogen **Transition Programme** (SIGHT): It will fund the domestic manufacturing of electrolysers and produce green hydrogen.
- **Green Hydrogen Hubs:** States and regions capable of supporting large and/or utilization production of hydrogen will be identified and developed as Green Hydrogen Hubs.

## **About SIGHT Programme:**

- It is an integral component of NGHM to foster domestic electrolyser manufacturing and production.
- An investment of Rs 17,490 crore was allocated to SIGHT until 2029-30.
- **Dual Incentive Mechanisms:** SIGHT introduces two distinct financial incentive mechanisms:
  - o Incentive for Electrolyser To Manufacturing: boost production of essential electrolysis equipment.
  - o Incentive for Green Hydrogen Production: **Encouraging** generation of clean and sustainable green hydrogen.
- Incentive programs will evolve in response to market dynamics and technological advancements, ensuring the Mission's adaptability.
- Solar Energy Corporation of India (SECI) is entrusted with executing the scheme, driving its effective implementation.

## Current status of Hydrogen Production in India:

India produces 6.5 MMT per annum of hydrogen, predominantly for use in oil refineries & fertilizer production.

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- Most of India's current hydrogen supply is Grey Hydrogen, which is produced using fossil fuels.
- Green Hydrogen production requires ample supply of renewable energy for the electrolysis process.

When electricity is passed through water, it splits it into oxygen and hydrogen via electrolysis. And if the electricity used for this comes from a renewable source, then the hydrogen thus produced is called green hydrogen.

## BUREAU OF ENERGY EFFICIENCY

**Context:** The Bureau of Energy Efficiency (BEE) and The Energy and Resources (TERI) Institute have signed Memorandum of Understanding (MoU) to jointly establish a Centre of Excellence for Energy Transition (CoEET) in Hyderabad.

### **About BEE**

- It is a **statutory body** established by the *central government in 2002* under the provisions of the Energy Conservation Act, 2001.
- Its vision is to optimise energy intensity of Indian economy, thus ensuring sustainable development of the country.

## **Key Objectives:**

- Develop policies and programmes on efficient use of energy and its conservation.
- Design, manage and implement energy conservation programmes envisaged in the EC Act.
- o Establish robust systems and procedures to measure, monitor and verify energy efficiency results.
- Demonstrate efficiency energy delivery mechanisms through Private-Public Partnership (PPP).

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 Promote awareness of energy savings and energy conservation.

## • Key Functions:

- **o** Regulatory Functions:
  - Developing minimum energy performance standards for equipment and appliances under Standards and Labelling.
  - Establishing energy performance standards for commercial buildings.
  - Certifying energy managers and auditors.

#### o Promotional Functions:

- Creating awareness on energy efficiency and conservation
- Promoting innovative financing of energy efficiency projects
- Implementing international cooperation programmes in the domain of energy efficiency.
- The *important programmes* of BEE are Standards and Labelling, Perform, Achieve and Trade (PAT) Scheme, and the National Energy Efficiency Mission (NEEM).
- BEE functions under the *Ministry of Power*.

## **PARIS CLIMATE AGREEMENT**

**Context:** USA's withdrawal from the Paris Climate Agreement under Trump 2.0 raises alarm bells among climate activists and scientists.

## **About Paris Climate Agreement**

- It is a legally binding global agreement under the United Nations Framework Convention on Climate Change (UNFCCC) that was adopted in 2015. It was adopted in UNFCCC COP21.
- It replaced the Kyoto Protocol which was an earlier agreement to deal with climate change.



#### Goals:

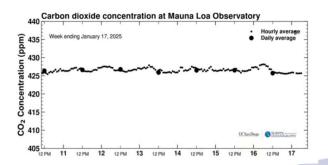
- Limit global temperature rise to well below 2°C, with efforts to cap it at 1.5°C above pre-industrial levels.
- o Enhance countries' abilities to adapt to climate impacts.
- Ensure nations commit to updated and ambitious Nationally Determined Contributions (NDCs) every five years.
- Under the Paris Agreement, each country is required to submit and update their Nationally Determined Contributions (NDCs) every 5 years, outlining their plans for reducing greenhouse gas emissions and adapting to climate change.
- NDCs are pledges made by countries to reduce their greenhouse gas emissions and to adapt to the impacts of climate change.

# India's Goals for Nationally Determined Contributions (NDCs)

- Reduction in Emissions: India intends to lower the emissions intensity of its GDP by 45% by the year 2030, compared to 2005 levels.
- **Creating Carbon Sinks:** India aims to develop an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent through afforestation and reforestation initiatives.
- **Energy from Renewables:** By 2030, the country aims to fulfil 50% of its energy

requirements from non-fossil fuel sources, aiming to install 500 GW of renewable energy capacity.

## **KEELING CURVE**



- It is a **graph representing the concentration of carbon dioxide** (CO2) in Earth's atmosphere since 1958.
- The curve is named after Dr. Charles David Keeling, the person who created it.
- The keeping curve is considered as a trustworthy measure of CO2 in the middle layers of the troposphere and its findings serve as a warning signal for global warming.
- It has played an instrumental role in generating awareness about the increasing concentration of carbon dioxide in the atmosphere.

## **BLUE CARBON**

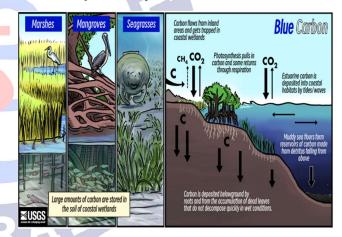
#### **About Blue Carbon**

- Blue Carbon is the carbon captured by the world's ocean and coastal ecosystems.
- The world's mangroves, sea grasses and salt marshes together comprise 'blue carbon ecosystems.' They are nature's most effective carbon sinks.
- Coastal ecosystems such as mangroves, tidal marshes and seagrass meadows sequester and store more carbon per unit area than terrestrial forests and are now being recognized for their role in mitigating climate change.

- The main causes of conversion and degradation of blue carbon ecosystems vary around the world but are largely driven by human activities.
- Common drivers are aquaculture, agriculture, mangrove forest exploitation, terrestrial and marine sources of pollution and industrial and urban coastal development.

## **Significance of Blue Carbon Ecosystems**

- They have the potential to help people and coastal environments mitigate and adapt to climate change.
- They help sustain the environment by mitigating climate change.
- These ecosystems also provide essential benefits for climate change adaptation, including coastal protection and food security for many coastal communities.



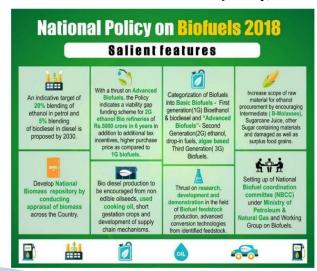
# WETLAND CITY ACCREDITATION (WCA)



- PM Modi today congratulated Indore and Udaipur on joining the list of 31 wetland accredited cities globally.
- In January 2024, the Ministry of Environment, Forest and Climate Change (MoEF&CC) submitted 3 nominations from India for the WCA - Indore, Bhopal, and Udaipur.
- The WCA is a voluntary accreditation system established by the Ramsar Convention during the Conference of the Contracting Parties (COP) 12 in 2015.
- It aims to recognize cities that have taken exceptional steps to safeguard their urban wetlands.
- The scheme aims to promote the conservation and wise use of urban and peri-urban wetlands, as well as sustainable socio-economic benefits for local populations.
- The WCA is **valid for 6 years**.

## **NATIONAL POLICY ON BIOFUELS**

**Context:** The CCEA has approved revision of ethanol procurement price for Public Sector Oil Marketing Companies (OMCs) under the National Policy on Biofuels.



## National Policy on Biofuels (2018):

- It expands the scope of raw material for ethanol production by allowing use of sugarcane juice, sugar containing materials like sugar beet, sweet sorghum, starch containing materials like corn, cassava, damaged food grains like wheat, broken rice, rotten potatoes, unfit for human consumption for ethanol production.
- Instead of initial deadline of 2030, in 2022, the govt. has announced ethanol-petrol blending target of 20% by 2025.
- The policy promotes production of biofuels under Make in India by units located in SEZs.
- The policy grants permission for export of biofuels in specific cases.
- National Biofuel Coordination Committee (NBCC) headed by the PM has been constituted for providing high-level co-ordination and policy guidance / review on different aspects of biofuel development.
- The policy categorizes biofuels into:
  - Basic biofuels 1<sup>st</sup> Gen (1G) ethanol produced from food crops.
  - Advanced biofuels 2<sup>nd</sup> Gen (2G) ethanol from food waste and Municipal Solid Waste (MSW).
  - 3<sup>rd</sup> Gen Biofuels produced from microbes and algae.

- 4<sup>th</sup> Gen Biofuels produced from genetically modified algae.
- The policy only promotes the use of 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> Gen biofuels.

#### **Related Initiatives**

- ✓ Pradhan Mantri JI-VAN Yojana:
  - To create an ecosystem for setting up commercial projects and to boost R&D in 2G Ethanol sector.
- ✓ GOBAR (Galvanizing Organic Bio-Agro Resources) DHAN scheme:
  - Managing and converting cattle dung and solid waste in farms to useful compost, biogas and bio-CNG.
  - Unified Portal for GOBARdhan was launched in June 2023 to ease setting up of biogas plants.
- ✓ Sustainable Aviation Fuel (SAF):
  - Aims to achieve 1% SAF blend by 2025, requiring 140 million litres of SAF per year.
- ✓ Global Biofuel Alliance:
  - Launched by USA, Brazil and India during the G20 Summit in September 2023.
  - Aims to ease cooperation and intensifying use of sustainable biofuels, with a specific focus on the transport sector.



## **Science & Technology**

## WILLOW QUANTUM PROCESSOR

**Context:** Google has unveiled its latest quantum processor, '*Willow*', which has sparked excitement about the potential of quantum computers to solve practical problems.

- Google's team of researchers developed Willow and shared their results in the scientific journal *Nature*.
- Willow has 105 qubits, which are the basic units of information in quantum computers.
  - Some qubits perform the actual calculations (called data qubits).
  - Others check for mistakes and fix them (called measurement qubits).
- It operates at an extremely low temperature almost absolute zero (-273.15°C)—to keep its qubits stable.
- How fast is It: Willow solved a tough problem
  in just a few minutes. The same task would
  take the world's best regular computer 10
  septillion years (that's 1 followed by 24
  zeros!).
- Each qubit can stay stable for 100 microseconds (a tiny fraction of a second), which is a big improvement for quantum computers.

## **Features and Significance**

- Smarter Error Handling:
  - Quantum computers are extremely sensitive, and even the tiniest disturbance can cause errors.
  - Willow uses a system where some qubits (called measurement qubits) are dedicated to spotting and fixing errors without disturbing the main qubits (called data qubits) that are doing the calculations.
- Bigger, Better Performance:

- Willow has 105 qubits: about half for computations and the rest for error correction.
- Most quantum computers become
  less reliable as more qubits are
  added. Willow is different—it
  actually improves its
  performance as more qubits are
  included.

## • Longer Stability:

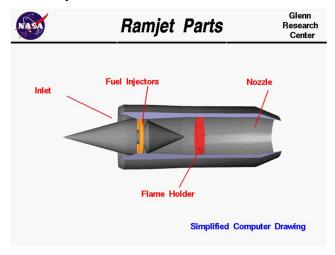
 Qubits in Willow remain stable for 100 microseconds—a significant improvement that allows it to perform more complex tasks.

## RAMJET AND SCRAMJET ENGINES

**Context:** The DRDO recently demonstrated a cutting edge active cooled scramjet combustor ground test.

## **About Ramjet Engine:**

- A ramjet engine is a jet propulsion system that utilizes the exhaust velocity of a combustion process to achieve thrust.
- Unlike turbojets, ramjet engines do not require an external compressor and turbine, instead relying solely on the speed of incoming air to ignite fuel in the combustion chamber and create thrust.
- This makes them an efficient option for highspeed applications, as they can be smaller and lighter than traditional turbojets while delivering comparable performance.
- The Ramjet engine has **no moving parts** and relies on high-speed motion for operation.
- It operates efficiently at supersonic speeds (around Mach 3 to 6).

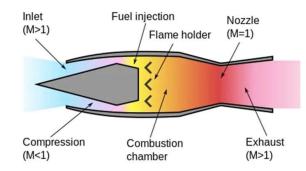


## **Advantages:**

- They have a compact size and lightweight construction.
- They do not require external compressors or turbines, as ramjets use the speed of incoming air to ignite fuel.
- They are more efficient for high-speed applications than turbojets.

## **Disadvantages:**

- They are likely to be inefficient at low airspeeds and may require large intakes to ensure efficient operation.
- They require a considerable amount of fuel compared to traditional turbojets, which are often more expensive to operate and maintain.



## **About Scramjet Engine:**

- A scramjet engine is an upgraded variant of a ramjet where combustion occurs due to supersonic airflow.
- This supersonic flow allows the jets to achieve even faster speeds than the standard ramjets.

- This engine does not need to slow the incoming air for combustion like a typical turbojet or even ramjet.
- It carries **liquid Hydrogen as fuel** and **liquid Oxygen for combustion** (oxidiser) to generate thrust.
- The fuel efficiency of the scramjets tends to be significantly better than that of traditional turbojets and ramjets.
- It makes them ideal for various high-speed applications.
- Due to the complexities of maintaining the supersonic airflow, scramjets are often more expensive and difficult to manage than other engines.
- They operate more efficiently at very high speeds (Mach 12 to 24).
- Just like the Ramjet engines, they also have no moving parts.
- The Scramjet engine is the central piece of many high-end applications in defence such as Hypersonic Cruise Missiles and Hypersonic Glide Vehicles (a warhead for Ballistic Missiles).
  - Hypersonic missiles are a class of advanced weaponry that travel at speeds greater than Mach 5 i.e., five times the speed of sound or more than 5,400 km/hr.
  - These advanced weapons have the potential to bypass existing Air Defence Systems and deliver rapid and high-impact strikes.
- Many countries have successfully developed hypersonic cruise missiles.
  - For example, Russia's Zircon missile and China's DF-27.
- **Hypersonic Glide Vehicles** use scramjet engines after achieving supersonic speed to attain the hypersonic speed of the missile.
  - o For example, China's HGV DF-ZF.
  - Russia's Hypersonic Glide Vehicle (HGV) Avangard has a speed of up to 20 Mach.

- The DRDO recently demonstrated a cutting edge active cooled scramjet combustor ground test for 120 seconds for the first time in India.
- Significance of DRDO's demonstration: The successful ground test marks a crucial milestone in developing next-generation hypersonic missiles, faster civilian air transportation and facilities for putting satellites into orbit at a low cost.
- Due to several advantages of the Air Breathing Propulsion System (Ramjet and Scramjet), India has been working on such technologies to be used in the Space as well as Defence sectors.

## Air Breathing Propulsion Project (ABPP) for Space:

- In 2016, ISRO successfully tested two indigenously developed scramjet engines through the Scramjet Propulsion Experiment (SPEX).
- ISRO wants to use rockets fitted with scramjets because their launching cost will be much less than that of conventional rockets.
- It will be able to carry heavier satellites.
- In 2023, India became the fourth country to successfully demonstrate the flight testing of a Scramjet Engine.
- This engine was carried by an Advanced Technology Vehicle (ATV) and demonstrated hypersonic flight at Mach 6.
- ISRO would likely use this in its future projects for Reusable Launch Vehicles.
- ISRO is working on the three concepts of ABBP, i.e., Ramjet, Scramjet and Dual Mode Ramjet (DMRJ).
- A dual-mode ramjet (DMRJ) is a jet engine where a ramjet transforms into a scramjet over Mach 4-8 range and it can efficiently operate both in subsonic and supersonic combustor modes.

#### In Defence Sector:

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- In 2020, DRDO achieved the hypersonic speed of Mach 6 (for 20 sec) through its cruise vehicle, the Hypersonic Technology Demonstrated Vehicle (HSTDV), propelled by an air-breathing scramjet engine.
- India's progress in ramjet engine development is impressive. In 2021, India successfully tested a solid fuel ducted ramjet (SFDR) engine.
- It is designed to be used in missiles and can reach speeds of up to Mach 3.5, demonstrating India's commitment to developing cuttingedge aerospace technology.

## **HMPV** virus

**Context:** China is reportedly witnessing a surge in human metapneumovirus (HMPV) cases, sparking concerns of another health crisis after COVID-19 pandemic.

- Human Metapneumovirus (HMPV) was discovered in 2001.
- It belongs to the **Pneumoviridae family**, same as Respiratory Syncytial Virus (RSV).

### **Nature of Infection**

- Causes upper and lower respiratory infections.
- Symptoms: Similar to common cold or flu, including cough, fever, sore throat, runny/stuffy nose.
- Severe cases: Can escalate to bronchitis, pneumonia, or asthma exacerbations.

## **High-Risk Groups**

- **Children under 5 years**, especially infants.
- Elderly adults (65+).
- Individuals with weakened immune systems or chronic respiratory conditions like asthma or COPD.

#### **Mode of Transmission**

- Spreads via:
  - Respiratory droplets (coughing/sneezing).
  - Close contact (touching, shaking hands).

- Contaminated surfaces, followed by touching face.
- Seasonal pattern: Peaks in late winter and spring in temperate regions.

# Prevention Measures (CDC Recommendations)

- **Frequent handwashing** with soap for 20 seconds.
- Avoid touching face with unwashed hands.
- Wear masks in crowded places during outbreaks.
- Stay home when sick to prevent spreading.
- Clean frequently touched surfaces regularly.

## **Testing and Diagnosis**

- Detection through:
  - Nucleic Acid Amplification Test (NAAT).
  - Direct detection of antigens (immunofluorescence or enzyme immunoassay).
- Routine testing is rare unless symptoms are severe or during outbreaks.

## **Treatment Options**

- No specific antiviral treatment or vaccine available.
- Focus on symptom management:
  - Stay hydrated, take rest.
  - Use OTC medications for pain, congestion, and fever.
  - Severe cases may require hospitalisation (oxygen therapy, IV fluids).

## **Current Perspective**

- HMPV is **not a new virus** or an imminent pandemic threat.
- Seasonal surges occur post-COVID-19 lockdowns due to weakened immunity.

### When to Seek Medical Attention

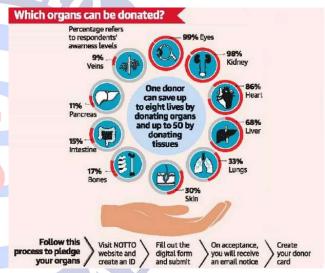
- Symptoms worsen after a few days.
- Difficulty breathing or cyanosis (bluish skin).
- Symptoms occur alongside chronic health conditions (e.g., COPD, asthma).

## **Comparison with COVID-19**

- Both cause similar respiratory issues (cough, fever, congestion).
- Spread through respiratory droplets.
- Seasonality: HMPV peaks in winter/spring; COVID-19 spreads year-round due to evolving variants.
- Post-lockdown surge: Reduced exposure to pathogens during lockdowns likely weakened immunity.

## **ORGAN TRANSPLANTATION**

**Context:** Union Govt employees who donate organs are eligible for 42 days of leave, as per the latest guidelines issued by NOTTO.



## **Organ Donation in India:**

- Transplantation of Human Organs and Tissues (THOT) Act, 1994 allows organ donations from living persons, primarily close relatives, and deceased donors.
- Objectives of THOT Act, 1994:
  - 1. Organize a robust system of procurement & distribution for organs and tissues.
  - 2. Promote deceased organ and Tissue donation.
  - 3. Train the required manpower.
  - 4. Protect vulnerable and poor people from organ trafficking.

- 5. Monitor organ and tissue transplant services and bring policy changes when needed.
- Curb on organ trade: It strictly prohibits organ trade to prevent exploitation of the poor.
- For living donations involving close relatives, both Indian and foreign nationals must submit proof of identity, family trees, relationship evidence, and financial status.
- **Scrutiny** for **Unrelated Donors:** Donations from non-relatives require additional evidence of long-term association and undergo rigorous examination by an external committee to prevent illegal transactions.
- Offering to pay for organs or supplying them for payment; initiating, negotiating, or advertising such arrangements; looking for persons to supply organs; and abetting in preparing false documents can attract a jail term up to 10 years and a fine up to Rs 1 crore.
- NOTTO (National Organ and Tissue Transplant Organization) under the Directorate General of Health Services functions as the apex centre for procurement, distribution and registry of organs and tissues.
  - NOTTO has been empowered to do this under Transplantation of Human Organs & Tissues (Amendment) Act, 2011.
- Delhi HC in Jan 2024 recommended a 6-8 week timeframe for completing organ transplant processes involving living donors. It also directed the govt to set timelines for all stages of organ donation applications, in line with the THOT Act, 1994 & THOT Rules, 2014.
- In April 2024, Union govt notified that all organ transplantations in India from hereon will be allotted a unique ID called

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**NOTTO-ID** for both the donor and the recipient.

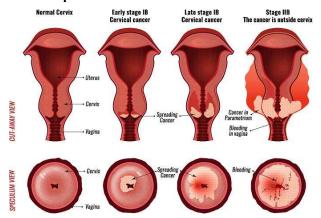
## Data from Health Ministry Report (August 2024):

- Women Lead in Living Donations: 9,784 women donated organs, surpassing 5,651 male donors.
- **Record High Transplants:** Total transplants in 2023 reached 18,378, the highest ever.
- **Deceased Donations:** More deceased donors were men (844) than women (255).
- **Kidney Transplants Dominant:** Most transplants were kidneys, followed by liver and heart transplants.
- State Rankings: Telangana led in cadaver donations, followed by Tamil Nadu and Karnataka.
- Low Donation Rate: The organ donation rate remains under one per million population.
- **Need for Awareness:** Promotion of deceased organ donation is necessary.

Ministry of Health and Family
Welfare modified the National Organ
Transplantation Guidelines in 2022 to allow
those above 65 years of age to receive an organ from deceased donors.

## **CERVICAL CANCER**

**Context:** To reduce cases of cervical cancer, the government is likely to roll out an immunization campaign against Human Papillomavirus (HPV) soon.



#### **About Cervical Cancer**

- It starts in the cells of the cervix. The cervix is the lower, narrow end of the uterus (womb).
- In a small percentage of people, the virus survives for years, contributing to the process that causes some cervical cells to become cancer cells.

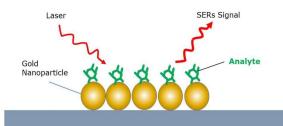
#### Causes

- Various strains of the Human papillomavirus (HPV) play a role in causing most cervical cancer.
- Human papillomavirus (HPV) is a common sexually transmitted infection which can affect the skin, genital area and throat.
- When exposed to HPV, the body's immune system typically prevents the virus from harming.

#### Types of HPV Vaccines available

- Quadrivalent vaccine (Gardasil): It protects against four types of HPV (HPV 16, 18, 6 and 11).
- Bivalent vaccine (Cervarix): It protects against HPV 16 and 18 only.
- Non-valent vaccine (Gardasil 9): It protects against nine strains of HPV.

# SURFACE-ENHANCED RAMAN SPECTROSCOPY

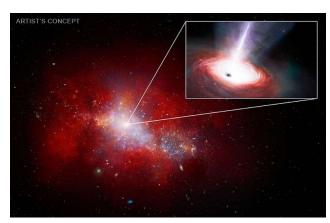


- Surface-enhanced Raman spectroscopy or surface-enhanced Raman scattering (SERS) is a surface-sensitive technique that enhances Raman scattering by molecules adsorbed on rough metal surfaces.
- It enhances the Raman scattering signals of molecules close to nanostructured metallic surfaces, typically gold or silver.
- It provides the same information that normal Raman spectroscopy does, but with a greatly enhanced signal.
- **Applications:** It has become a powerful tool in chemical, material and life sciences, owing to its intrinsic features.

#### **About Raman Spectroscopy**

- It is a spectroscopic technique used in condensed matter physics and chemistry to study vibrational, rotational, and other low-frequency modes in a system.
- It depends on the inelastic scattering, or Raman scattering of monochromatic light, usually from a laser in the visible, nearinfrared or near-ultraviolet range of electromagnetic spectra.
- Raman scattering or Raman effect is the inelastic scattering of photons from an atom or a molecule.
- This effect was discovered by the famous Indian physicist C V Raman in the year 1928.

## LID-568



- LID-568 is a supermassive black hole formed about 1.5 billion years after the Big Bang event.
- It has a mass about 10 million times greater than the sun, so 2-1/2 times that of Sagittarius A\*.
  - Sagittarius A\* is a supermassive black hole located at the center of our galaxy-the Milky Way.
- According to a study published in the journal Nature Astronomy, LID-568 is expanding at an unprecedented rate challenging the conventional understanding of black holes.
- Primordial black holes are formed either from the explosion of the universe's initial stars or the collapse of large gas clouds present in the early universe.
- LID-568 appeared to be consuming infalling material due to gravitational attraction known as accretion, at more than 40 times the Eddington limit.
- Its rapid growth suggests that significant portion of mass growth can occur during single episode of rapid accretion; it could explain formation of supermassive black holes early in universe.

## **Eddington limit**

 It is a theoretical limit for the maximum energy output the black hole can produce through the accretion process.

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# **H5N1** BIRD FLU

Context: Maharashtra reported India's first case of avian influenza among animals, prompting the Union Animal Husbandry Ministry to issue a circular urging all States to quarantine infected or symptomatic tigers and feline species to prevent further transmission.

#### Bird Flu

 Bird flu, also known as avian flu, refers to an infectious viral illness that mainly infects and spreads among poultry and some wild birds.

#### Cause of concern

- From time to time, a form of the flu virus jumps from wild birds to poultry farms, and replicates in cramped warehouses of farmed birds.
- It then quickly evolves into a highly pathogenic flu\_virus

that causes a larger wave of illness and death than usual among birds.

#### H5N1 Bird flu

- H5N1 is a type of influenza virus that causes a highly infectious, severe respiratory disease in birds called avian influenza (or "bird flu").
- Basically, it is a subtype of the influenza A virus.
- Influenza A viruses are classified by subtypes based on the properties of their surface proteins.
  - There are 18 different hemagglutinin subtypes and 11 different neuraminidase subtypes (H1 through H18 and N1 through N11, respectively).
  - For example, A(H1N1) and A(H3N2).
- Human cases of H5N1 avian influenza occur occasionally, but it is difficult to transmit the infection from person to person.
  - When people become infected, the mortality rate is about 60%.
- Origin and circulation

- The currently circulating type of H5N1 has descended from a virus that caused an outbreak on a goose farm in Guangdong, China, in 1996.
- The new version of H5N1 first emerged in Europe in 2020 and then rapidly reached Africa, and Asia.
- By late 2021, it had spread to North America and in the fall of 2022, it appeared in South America.
- In February 2024, the virus stormed through mainland Antarctica.

## Reasons behind the large-scale spread of H5N1

- The exact factors behind the large outbreaks of the bird flu are still largely unknown. Some scientists suggest that one reason could be climate change.
- According to studies, soaring global temperatures impact the behaviour of birds in such a way that it exacerbates the spread of the flu.
- These birds are forced to move into new territories and mix with species that they usually don't interact with, which possibly boosts the chances for the virus to spread even further.
  - Higher sea surface temperatures might also be at play.
  - E.g., warmer sea temperatures near northern Chile have led to a fall in the forage fish population and that has made sea lions weaker and more susceptible to disease.

## • Spread of H5N1 to people

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 Almost all cases of H5N1 infection in people have been associated with close contact with infected

- live or dead birds, or H5N1-contaminated environments.
- The virus does not infect humans easily, and spread from person to person appears to be unusual.

#### Cause of concern

- H5N1 infection in humans can cause severe disease and has a high mortality rate.
- If the H5N1 virus were to change and become easily transmissible from person to person while retaining its capacity to cause severe disease, the consequences for public health could be very serious.

## **GRAVITATIONAL LENSING**

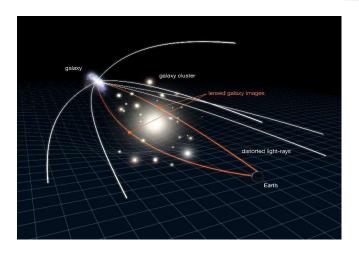
- Gravitational Lensing is an effect on light from a background source that arises as a result of the curvature of spacetime, the three dimensions of space and time united into a single entity, caused by mass.
- Gravitational Lensing causes the light to bend, distort, and magnify as it passes around the massive object.

## Gravitational Lensing Theory:

- Gravitational Lensing was first predicted in 1915 by Albert Einstein, which involves the bending of light by objects of great mass.
- According to Einstein's general theory of relativity, time and space are fused together in a quantity known as spacetime.
- Within this theory, massive objects
   cause spacetime to
   curve, and gravity is simply
   the curvature of spacetime.
- As light travels through spacetime, the theory predicts that the path taken by the

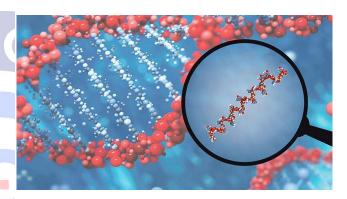
# light will also be curved by an object's mass.

- Gravitational Lensing is a dramatic and observable example of Einstein's theory in action.
- The effect is most observable when light from a bright background source, like a star, a quasar, or an entire galaxy, passes a very massive object like another galaxy or a cluster of galaxies, described as a lensing object or just a gravitational lens.
- This can have several results; it can make an object shift its apparent position in the sky over Earth, or it can cause a single object to appear at multiple points in the sky, occasionally giving rise to spectacular formations like rings and crosses made from the same object.
- More than this, Gravitational Lensing can actually cause the light from a background object to be amplified.
- That means that astronomers can use the Gravitational Lensing arising from galactic clusters as natural cosmic magnifying glasses.
- This has made it an important tool for the investigation of the universe when it was in its infancy, making light from the earliest galaxies that would usually be too faint to see observable by instruments like the James Webb Space Telescope and the Hubble Space Telescope.



# MICRORNAS (MIRNAS)

- Definition MicroRNAs (miRNAs) are small, non-coding RNA molecules, typically around 20-22 nucleotides long, that play a crucial role in regulating gene expression at the posttranscriptional level.
- Unlike messenger RNAs (mRNAs), which serve as templates for protein synthesis, miRNAs do not encode proteins. Instead, they influence gene expression by interacting with mRNAs.



#### Functions:

- miRNAs attach to complementary mRNA sequences, leading to the suppression of protein production.
- They regulate gene expression with high precision, particularly during development and in various physiological processes.
- **Gene Suppression Mechanism**: miRNAs decrease protein synthesis by either promoting the degradation of mRNA or preventing its translation.
- Applications: miRNAs have significant potential in the fields of diagnostics and therapeutics, particularly for conditions like cancer, genetic disorders, and other diseases.

# **OSTEOPOROSIS**



- A bone disease characterized by decreased bone mineral density, mass, and structural strength, increasing the risk of fractures.
- Nature: Known as a "silent" disease with no symptoms until a bone fracture occurs.
- Common Fracture Sites: Hip, vertebrae (spine), and wrist.

#### **Causes and Risk Factors**

- Non-modifiable Risk Factors:
  - Sex: Women are at greater risk due to lower peak bone mass.
  - Age: Bone loss accelerates with age, increasing risk after 70.
  - Body Size: Slender, thin-boned individuals are more vulnerable.
  - Race: Highest risk in non-Hispanic white and Asian women; white men are at higher risk than African American and Mexican American men.
  - Family History: Parental history of osteoporosis or hip fracture increases risk.
  - Hormonal Changes:
    - Women: Low estrogen levels post-menopause or due to hormonal disorders.
    - Men: Low testosterone, especially with specific medical conditions.

#### Modifiable Risk Factors:

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 Diet: Low calcium, vitamin D, or protein intake increases risk.  Lifestyle: Smoking, excessive alcohol consumption, and inactivity raise risk.

#### o Medical Conditions:

- Endocrine and hormonal disorders.
- Gastrointestinal diseases, rheumatoid arthritis, anorexia nervosa.
- Certain cancers and HIV/AIDS.

#### • Medications:

- Glucocorticoids and ACTH: For asthma and rheumatoid arthritis.
- Antiepileptics: For seizures.
- Cancer medications: Hormonal treatments for breast and prostate cancer.
- Proton Pump Inhibitors: For lowering stomach acid.
- o **SSRIs**: For depression and anxiety.
- Thiazolidinediones: For type II diabetes.

## **Symptoms of Osteoporosis**

#### Common Symptoms:

- Severe back pain, loss of height, and kyphosis (hunched posture) from vertebral fractures.
- Fragile bones prone to fractures from minor falls or normal stresses like bending or coughing.

## **Prevention and Management**

## Lifestyle Measures:

- Engage in weight-bearing exercises (e.g., walking).
- Moderate alcohol consumption and avoid smoking.

#### Dietary Recommendations:

 Consume a calcium and vitamin Drich diet.

#### Medications:

 Adhere to prescribed osteoporosis medications to prevent fractures.

# POLARIS DAWN PROJECT



- The Polaris Dawn project is an ambitious private space mission, spearheaded by SpaceX and was launched on 26th August 2024.
- This mission is the first in a series of three under the Polaris Program, aimed at pushing the boundaries of private space exploration.
- It has multifaceted objectives: it plans to achieve the highest Earth orbit ever flown by a crewed spacecraft, attempt the first commercial spacewalk, and conduct crucial research to advance human spaceflight.
- The crew will conduct experiments on space radiation, human health, and the effects of space on the human body, providing valuable data for future longduration missions, including those to the Moon and Mars.
- The mission's success could pave the way for more extensive private and commercial involvement in space exploration, revolutionizing how humanity approaches space travel.

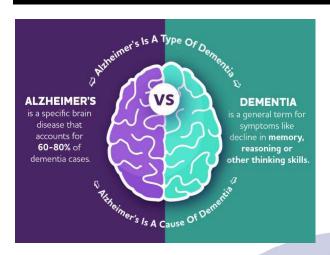
# Hyperspectral Imaging Satellite

- These satellites are uniquely designed to beam down data in hundreds of wavelengths to detect problems that are invisible to today's satellites.
- The constellation is designed to provide global coverage at a revisit of every 24 hours.
- Hyperspectral imaging (HSI) is a technique that analyses a wide spectrum of light instead of just assigning primary colours (red, green, blue) to each pixel, effectively spectrally fingerprinting the Earth to provide more information on what is imaged.
- The collected spectra are used to form an image in a way that each image pixel includes a complete spectrum.

## Firefly' constellation

- It is India's first commercial satellite constellation.
- It offers six times sharper resolution than the standard 30-meter resolution of existing hyperspectral satellites, achieving an unprecedented five-meter resolution.
- This capability allows it to capture intricate details previously invisible to conventional systems.
- The satellites' advanced sensors, capable of capturing data across more than 150 spectral bands, enable the detection of subtle changes in chemical compositions, vegetation health, water quality, and atmospheric conditions.

## **D**EMENTIA



- Dementia is a term used to describe a group of symptoms affecting memory, thinking and social abilities severely enough to interfere with your daily life.
- Dementia is a clinical syndrome caused by a range of diseases or injuries to the brain.
- Worldwide, 47.5 million people have dementia. Given the dramatic growth of the population of older people, the number of people living with dementia worldwide is expected to double every 20 years, going up to 135.5 million by 2050.

#### **Common Cause**

- The **most common cause** of dementia is **Alzheimer's disease**.
- It is implicated in **up to 70% of dementia diagnoses.**

#### **Symptoms**

- Early symptoms include absentmindedness, difficulty recalling names and words, difficulty retaining new information, disorientation in unfamiliar surroundings, and reduced social engagement.
- More atypical symptoms include impairment in recognising visually presented objects (visual agnosia) despite a normal visual field, acuity and colour

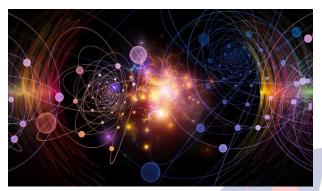
- vision. Some might also experience word-finding difficulties (anomic aphasia).
- As the disease progresses, there is marked memory loss and loss of other cognitive skills, including a reduced vocabulary and less complex speech patterns.
- This may be accompanied by mood swings, apathy, a decline in social skills, and the emergence of psychotic phenomena.
- Advanced disease is characterised by monosyllabic speech, psychotic symptoms, behavioural disturbance, loss of bladder and bowel control, and reduced mobility.

#### Prevention

- The WHO has identified preventing Alzheimer's disease to be a key element in the strategy to fight the world's dementia epidemic.
- Prevention programmes usually focus on lifestyle risk factors – such as sedentary behaviour, unhealthy diet, smoking, and excessive alcohol use – together with mental wellbeing and risk of cardiovascular diseases.
- Current smokers have a 50% higher risk of developing dementia relative to those who have never smoked.
- **Regular exercise** helps offset cardiovascular, and in fact broader, health risks.
- In addition, there is a robust link between depression in late life and the incidence of sporadic dementia. Having depression increases the risk of developing dementia by nearly twofold.
- Higher educational and occupational attainments have consistently been implicated as protecting against developing dementia later in life. One recent study reported that those who attain higher education have a 40% lower risk.

# **QUANTUM COMPUTING**

**Context:** As the Quantum Computing technology is evolving, opportunities and challenges arise hand in hand.



## **About Quantum Computing**

- Quantum computing/technology refers to a class of technologies that leverage the principles of quantum mechanics to perform computations and achieve capabilities not possible with traditional technology.
- Conventional computing processes information in "bits," which represent either a 1 or a 0 at any given time, operating under the principles of classical physics.
- Quantum computers operate using "qubits" (quantum bits), which determine the behavior of matter at the atomic scale.
- They use electrons instead of transistors to encode information
- These exhibit probabilistic behavior, enabling them to achieve tasks beyond the scope of traditional technologies, while classical systems follow deterministic laws.

## **Key Features:**

- Superposition: Qubits can exist in a state of quantum superposition, meaning they can represent both 1 and 0 simultaneously.
- This unique property allows quantum computers, in theory, to perform computations as if multiple classical computers are working in parallel.

- For instance, a coin in mid-air represents both heads and tails simultaneously until it lands. Similarly, an electron can exist in a quantum superposition until measured.
- **Entanglement:** Entanglement occurs when two qubits exist in a shared quantum state, such that a change in the state of one qubit instantaneously affects the other, regardless of the distance between them.
- Albert Einstein referred to this phenomenon as "spooky action at a distance."
- **Decoherence:** Decoherence is the process in which quantum particles and systems can decay, collapse or change, converting into single states measurable by classical physics.
- **Interference**: Quantum interference allows particles (such as qubits) to be in multiple positions simultaneously due to superposition.
- A single particle, like a photon, can interfere with its own trajectory, altering its path predictably.

#### What is Quantum Mechanics?

- Quantum mechanics is a fundamental theory in physics that describes the behavior of matter and energy at very small scales, such as atoms and subatomic particles.
- It differs significantly from classical physics, which governs the behavior of objects at macroscopic scales.
- Quantum mechanics provides the framework for understanding phenomena that cannot be explained by classical physics.

#### **National Quantum Mission**

 The National Quantum Mission (NQM) is a visionary initiative (2023) led by the Department of Science and Technology (DST)to fortify India's research and development in the quantum domain.

- Over the next eight years (2023-2031), the mission aims to pioneer the development of intermediate-scale quantum computers with 50-1000 physical qubits using cutting-edge platforms like superconducting and photonic technology.
- Quantum communication: The mission seeks to establish satellite-based secure quantum communications spanning a range of 2000 km within India and extending to other countries.
- It also helps to develop highly sensitive magnetometers in atomic systems and precision atomic clocks for timing, communications, and navigation.
- Moreover, the mission will provide crucial support for the design and synthesis of quantum materials such as superconductors, novel semiconductor and topological materials to fabricate advanced quantum devices.
- Thematic Hubs (T-Hubs): To catalyze research and development, four T-Hubs will be instituted in premier academic and national research and development institutes, with a focus on igniting new knowledge through fundamental and applied research, as well as driving R&D activities forward.
- Applications: The extensive applications of the mission will find utility across diverse sectors including healthcare, diagnostics, defence, energy, and data security.

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# **PLANET PARADE**



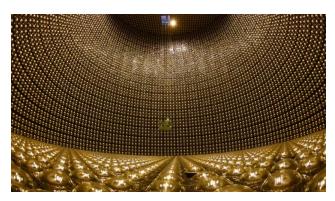
- It refers to a situation when **several planets** in our solar system are **visible in the night sky**, at the same time.
- This planetary meet-up, also known as a conjunction, makes the two planets appear close together or even touch in the Earth's night sky.
- This phenomenon is more an illusion of perspective rather than the planets being in a perfect line in space.
- Planets have different motions in the sky.
   They move at different rates compared to the other stars.
- Not all of them are visible in the sky everyday, but sometimes a position comes about so that many or all the planets are visible at the same time, or within a few hours of each other.
- According to NASA, such events, especially those involving four or more planets, are noteworthy and do not occur annually.

# **DARK OXYGEN**



- It is the oxygen that is being produced thousands of feet below the ocean surface, without any light or photosynthesis.
- Why is the discovery important?
  - Until now, it was thought that oxygen was created only through photosynthesis, a process that requires sunlight.
  - Oceanic plankton, drifting plants, algae, and some bacteria are the primary elements attributed to the production of oxygen in the ocean. All these organisms are capable of photosynthesis.
  - The production of oxygen at such depths is thought to be impossible because there isn't enough sunlight for plants to do photosynthesis.
  - However, in this case, oxygen is not being produced by plants.
  - The oxygen comes out of Polymetallic nodules that are similar in resemblance to lumps of coal.
  - These nodules, made up of metals like manganese, iron, cobalt, nickel, copper, and lithium, can generate oxygen through electrochemical activity even in the absence of light.
  - They are splitting H2O molecules into hydrogen and oxygen.

# **GHOST PARTICLES**



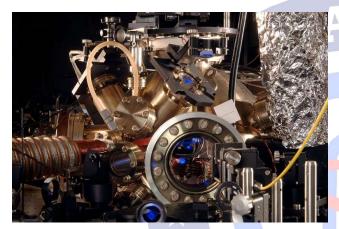
 Astronomers analysing data from the IceCube Neutrino Observatory in

- Antarctica have potentially detected the first evidence for **astrophysical tau neutrinos**, nicknamed "ghost particles" **due to their elusive nature**.
- These subatomic particles interact minimally with matter, allowing them to travel vast distances without disturbance, making them valuable for tracing their origins in the universe.
- Astrophysical neutrinos, including tau neutrinos, originate from distant cosmic sources and are challenging to detect.
- Neutrinos are tiny subatomic particles, often called 'ghost particles' because they barely interact with anything else.
- Neutrinos come from all kinds of different sources and are often the product of heavy particles turning into lighter ones, a process called "decay."
- Neutrinos are denoted by the Greek symbol
   v, or nu (pronounced "new").
- They belong to the family of particles known as leptons.
- There are three main leptons, namely electrons, muons and tau particles, and each one has an associated neutrino and anti-neutrino.
- A neutrino is very similar to an electron, but has no electrical charge and a very small mass.
- They are the most common particle in the universe. Approximately 100 trillion neutrinos pass completely harmlessly through our body every second.
- They are extraordinarily difficult to detect, as they rarely collide with atoms.
- Of the four fundamental forces in the universe, neutrinos only interact with two
   gravity and the weak force.
- But not all neutrinos are the same.
- They come in different types and can be thought of in terms of flavors, masses, and energies.

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# **ATOMIC CLOCK**

- It is a device that measures time using the vibrations of atoms.
- It specifically uses the **oscillations of the electrons in atoms** to keep time.
- It is the most accurate time-keeping device available, with a margin of error of just a few billionths of a second per day.
- It is far more precise than conventional clocks because atomic oscillations have a much higher frequency and are much more stable.



## Working

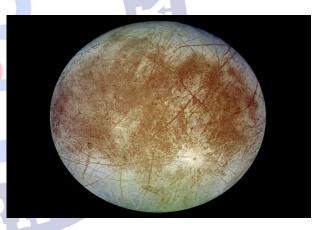
- Atomic clocks work by using a type of atom called a "cesium atom".
- Cesium atoms are very stable and have a very specific frequency at which their electrons vibrate. This frequency is used as the basis for the atomic clock's timekeeping.
- To measure time using cesium atoms, an atomic clock uses a device called a "microwave cavity". The microwave cavity is a chamber that is filled with cesium vapor.
- A microwave signal is then sent into the cavity, which causes the cesium atoms to vibrate. As the cesium atoms vibrate, they emit radiation at a very specific frequency.
- This frequency is then detected by a detector, which compares it to a standard frequency.

 The difference between the two frequencies is used to adjust the clock's timekeeping.

## **Applications**

- GPS systems: GPS systems use atomic clocks to measure the time it takes for a signal to travel from a satellite to a receiver on Earth. This allows GPS systems to calculate the receiver's location with great accuracy.
- Telecommunications networks:
  Telecommunications networks use atomic
  clocks to synchronize the timing of signals
  that are sent over long distances.
- Scientific research: Atomic clocks are used in many scientific experiments that require precise timing, such as studies of the behavior of atoms and molecules.

## **EUROPA**



- It is the smallest and second nearest of the four large moons (Galilean satellites) discovered around Jupiter by the Italian astronomer Galileo in 1610.
- Europa is a rocky object covered with an extremely smooth, elaborately patterned surface of ice.
- Europa has a diameter of 3,130 km (1,940 miles), which makes it a little smaller than Earth's Moon.
- Europa may be one of the most promising places in our solar system to find present-

day environments suitable for some form of life beyond Earth.

- Scientists believe a saltwater ocean lies beneath its icy shell, holding twice as much water as Earth's global ocean.
- It also may have the chemical elements that are key ingredients to life.
   Europa was first observed at close range in 1979 by the Voyager 1 and 2 spacecraft and then by the Galileo orbiter beginning in the mid-1990s.
- NASA launched Europa Clipper on Oct. 14, 2024, to determine whether there are places below Europa's surface that could support life.

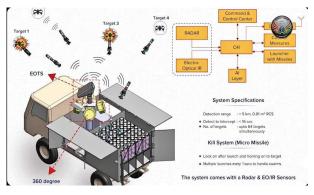
# **BHARGAVASTRA**

- India has successfully conducted tests of its first indigenous micro-missile system named Bhargavastra.
- The Bhargavastra is India's first domestically developed micro-missile system designed to combat swarm drone threats.
- Developed by: **Economic Explosives Ltd**

#### **Features**

- It is a counter-drone system capable of detecting small aerial vehicles at over 6 km range and neutralizing them using guided micro munitions.
- The system can launch over 64 micro missiles simultaneously.
- It is capable of rapid deployment on a mobile platform and can engage targets at distances exceeding 2.5 km.
- It has been designed for operations in diverse terrains, including high-altitude regions, the system meets specific military operational requirements.

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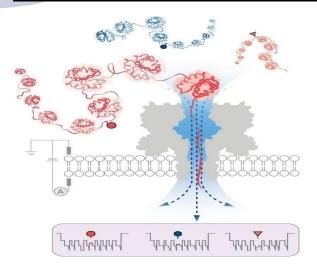
## **Importance**

- The system provides an economical solution for the Indian Army to counter large-scale drone attacks.
- It also offers a reliable defense against small drones in swarm attacks.

#### **Swarm Drones**

- Swarm drones are groups of drones that operate together to perform tasks without direct human control.
- They use advanced algorithms and communication technologies to coordinate their actions, similar to natural swarms like flocks of birds or schools of fish.
- Swarm drones can efficiently carry out missions while minimizing danger to personnel.
- They can search out, overwhelm, and destroy enemy defenses, paving the way for manned aircraft.

# NANOPORE TECHNOLOGY



- Nanopore technology refers to nano-scale holes embedded in a thin membrane structure to detect the potential change when charged biological molecules smaller than nanopores pass through the hole.
- It has the potential to sense and analyze single-molecule amino acids, DNA, RNA, etc.
- It is a cutting-edge method for sequencing DNA and RNA by detecting changes in electrical conductivity as molecules pass through a nanopore.
- In contrast to other sequencing technologies, nanopore-based sequencing is cheaper, very easy to use, does not require much computational and lab infrastructure, and only needs a small amount of DNA in a test sample.
- It is the only sequencing technology that offers real-time analysis in fully scalable formats, from pocket to population scale, that can analyze native DNA or RNA and sequence any length of fragment to achieve short to ultra-long read lengths.
- It can also undertake targeted sequencing with a focus on specific genes/regions.

## **TWIGSTATS**

- Twigstats is a tool that helps researchers analyze ancient DNA to understand genetic history and human migration patterns
- It is a time-stratified ancestry analysis tool that boosts the statistical power of existing methods by a magnitude and reduces statistical errors.
- It has determined more precisely than ever individual-level ancestry at a very high resolution.
- It is coded in C++ and employs the statistical language R.
- Twigstats allows researchers to focus on a specific period in history with more finegrained analysis than previously possible.

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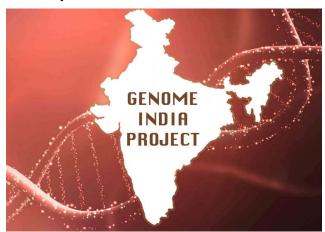
**Techniques used for Genetic analysis** 

- Single Nucleotide Polymorphisms (SNPs): This method has been extensively used to reconstruct genetic histories and ancestry models using ancient genetic material (aDNA).
- The analysis of SNPs is a powerful technique when the task is to understand populations, but it's restricted by the need for high quality DNA samples and its inability to resolve the histories of groups with closely related ancestors.
- Haplotypes Method: This method captures information from haplotypesharing or identity-by-descent and a rare variant simultaneously includes timeresolved information about genetic ancestry, and provides comprehensive insights into how individuals 'share' their ancestors.
- Genealogical tree inference method:
  Researchers have applied this to modern
  and ancient genomes to understand their
  population structure, demographics,
  locations of ancestors, etc.

# GENOME INDIA PROJECT

**Context:** India released the genome India database recently

## **About the Project:**



- It is a pan-India initiative focused on the whole genome sequencing of representative populations across India.
- The genome represents the entirety of an organism's hereditary information, serving as a biological instruction manual inherited from parents.
- Composed of four nucleotide bases: adenine (A), cytosine (C), guanine (G), and thymine (T), the genome contains approximately 3 billion base pairs in humans.
- This complex sequence encodes essential information governing an individual's physical characteristics, susceptibility to diseases, and other biological traits.
- Genome sequencing is the process of determining the precise order of nucleotides within an organism's genome.
- Whole genome sequencing is a laboratory procedure that determines the order of all four bases in the genome of an organism in one process.
- Goal: The goal of the project is to start with and execute whole genome sequencing and subsequent data analysis of 10,000 individuals representing the country's diverse population.
- It is led by the Centre for Brain Research at the Indian Institute of Science, Bengaluru, and involves collaboration with 20 institutions.

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- This is a mission-mode, multi-institution consortium project, the first of its kind in India, supported and funded by the Department of Biotechnology, Government of India.
- The specific aims of the project are:
  - Create an exhaustive catalog of genetic variations (common, low frequency, rare, single nucleotide polymorphisms, or SNPs, and structural variations) in Indians.
  - Create a reference haplotype structure for Indians. This reference panel can be used for imputing missing genetic variation in future studies.
  - Design genome-wide arrays for research and diagnostics at an affordable cost.
  - Establish a biobank for DNA and plasma collected for future use in research.

## Significance:

- An India-specific genetic database is crucial because mutations like MYBPC3, linked to early cardiac arrest, are more prevalent locally than globally, affecting 4.5% of the Indian population.
- India, boasting the world's largest genetic laboratory, plays a pivotal role in driving the country's burgeoning biology sector, which has seen exponential growth from USD 10 billion in 2014 to over USD 130 billion in 2024, shaping India's future trajectory.

# **PRALAY MISSILE**

**Context:** India's first quasi-ballistic missile Pralay will be showcased at the Republic Day parade.



## **About Pralay missile:**

- It is an indigenously developed shortrange, quasi-ballistic surface-to-surface missile.
- It has been developed by the Defence Research and Development Organisation (DRDO) based on the Prithvi Defence Vehicle from the Indian ballistic missile programme.
- It has been developed for deployment along the Line of Actual Control (LAC) and Line of Control (LoC).

#### Features:

- It is powered by a solid-propellant rocket motor.
- The missile has a **range of 150-500 km** and can be launched from a mobile launcher.
- It has a **payload capacity** of **500-1,000 kg**.
- The missile is capable of carrying conventional warheads.
- It is equipped with guidance systems that provide a Circular Error Probable (CEP) of less than 10 meters.

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- The missile reaches terminal speeds of Mach
   6.1 and can engage targets such as radar installations, command centers, and airstrips.
- It has the ability to change its path after covering a certain range midair.

## **D**EEPFAKE

- Deepfakes are synthetic media, including images, videos, and audio, generated by artificial intelligence (AI) technology that portray something that does not exist in reality or events that have never occurred.
- The term deepfake combines deep, taken from AI deep-learning technology (a type of machine learning that involves multiple levels of processing), and fake, addressing that the content is not real.
- It can create people who do not exist, and it can fake real people saying and doing things they did not say or do.

**Background:** The origin of the word "deepfake" can be traced back to 2017, when a Reddit user with the username "deepfakes", posted explicit videos of celebrities.

#### Working:

- They are created by machine learning models, which use neural networks to manipulate images and videos.
- To make a deepfake video of someone, a creator would first train a neural network on many hours of real video footage of the person to give it a realistic "understanding" of what he or she looks like from many angles and under different lighting.
- Then they'd combine the trained network with computer-graphics techniques to superimpose a copy of the person onto a different actor.
- Deepfake technology is now being used for nefarious purposes like scams and hoaxes, celebrity pornography, election manipulation,

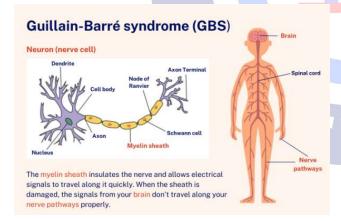
- social engineering, automated disinformation attacks, identity theft, and financial fraud.
- Deep fakes differ from other forms of false information by being very difficult to identify as false.

# **GUILLAIN BARRE SYNDROME**

**Context:** A central team has been deployed to Pune after the death of a man suspected to have contracted the Guillain Barre Syndrome.

## About Guillain Barre Syndrome (GBS):

- GBS is a serious autoimmune disorder that affects the peripheral nervous system.
- It initially presents **weakness**, **tingling**, **and numbness in the limbs**, which can progress to **paralysis** lasting 6-12 months or longer.
- The syndrome affects the nerves responsible for muscle movement, pain, temperature, and touch sensations.
- While more common in adults and males,
   GBS can occur in individuals of all ages.



#### Cause:

- The exact cause of GBS is unknown, but as per the World Health Organization (WHO), GBS is often preceded by an infection.
- This could be a bacterial or viral infection.
- This leads the immune system to attack the body itself.
- In rare cases, vaccinations and surgery may slightly increase the risk of developing GBS,

- but the likelihood of this happening is very low.
- Studies have shown that the risk of getting GBS from infections like the flu is much higher than the risk from vaccines, such as the flu vaccine.

#### Treatment:

 GBS treatment involves procedures like plasmapheresis, which removes plasma and replaces it with other fluids.

# **BRAHMOS MISSILE**

**Context:** Negotiations are ongoing between India and Indonesia for the sale of the BrahMos missile system.



#### **About BrahMos Missile:**

- It is a supersonic cruise missile.
- It is a joint venture between the Defence Research and Development Organisation (DRDO) of India and NPOM of Russia.
- It is named after the rivers **Brahmaputra** and **Moskva**.

#### Features:

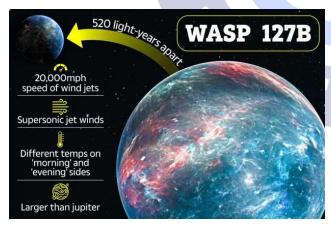
- It is a **two-stage missile** with a solid propellant engine in the first stage and a liquid ramjet in the second.
- It is a multiplatform missile i.e., it can be launched from land, air, and sea and multi capability missile with pinpoint accuracy that works in both day and night irrespective of the weather conditions.
- Brahmos is one of the fastest cruise missiles currently operationally deployed with the

speed of Mach 2.8, which is nearly 3 times more than the speed of sound.

- It has a launch weight of 2,200-3,000 kg.
- It operates on the 'Fire and Forget' principle, i.e, it does not require further guidance after launch.
- BrahMos is equipped with stealth technology designed to make it less visible to radar and other detection methods.
- It has an inertial navigation system (INS) for use against ship targets, and an INS/Global Positioning System for use against land targets.

# **WASP-127**B

- WASP-127b is a gas giant exoplanet with supersonic winds that orbit a star in the Milky Way galaxy.
- It was discovered in 2016.
- It is about 30% larger in diameter than Jupiter, but only has about 16% of its mass.
- WASP-127b is a **low-density planet**, making it one of the "puffiest" planets ever observed.
- It has supersonic winds that can reach speeds of up to 33,000 km/h.



An Exoplanet is any planet beyond our solar system. Most of them orbit other stars, but some free-floating exoplanets, called Rogue Planets.

# **DEEP SEEK AI**

**Context:** A disruptive Chinese AI advancement called DeepSeek is sending shockwaves to US AI company stocks.



#### **About Deep Seek AI**

- DeepSeek is a Chinese artificial intelligence
   (AI) company that has recently garnered significant attention for its innovative and cost-effective AI models.
- Founded in 2023 by Liang Wenfeng, DeepSeek is based in Hangzhou, Zhejiang, China, and operates under the ownership of the hedge fund High-Flyer.

## **Key Features of DeepSeek AI**

- Open-Source Technology: Its AI models, like the new releases DeepSeek-V3 and DeepSeek-R1, are made open-source, so their source code can be accessed for free by developers and researchers to share ideas and make improvements within the AI community. Open-source models can create faster breakthroughs through users contributing improvement and adaptations.
- **Cost Efficiency:** DeepSeek's AI models have been recognized for their efficiency, requiring significantly fewer resources compared to their peers. For instance, while leading AI companies often train their models using supercomputers with as many as 16,000 graphics processing units (GPUs), DeepSeek claims to have utilized

only about 2,000 GPUs, specifically the Nvidia H800 series chips.

- The training process was completed in approximately 55 days at a cost of around \$5.58 million, which is roughly ten times less than the expenditure by U.S. tech giant Meta for similar AI technology.
- **Performance Capabilities:** Reports are saying that DeepSeek-V3 is benchmarked to the top-performing models, demonstrating strong performance across mathematics, programming, and natural language processing.
- Strategic Development Amid Restrictions: Many AI companies have faced challenges in the geopolitical landscape, especially those dependent on high-end hardware from U.S. manufacturers.
- DeepSeek has responded to U.S. sanctions that limit access to high-performance chips like Nvidia's A100 series by using a combination of high-performance chips and more affordable alternatives.

## **Market Impact and Reactions**

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- The rise of DeepSeek has made a huge impact on the technology sector and has evoked significant stock market reactions.
   In fact, for instance, Nvidia shares plummeted as DeepSeek gained popularity.
- This reaction illustrates broader concerns about the dominance of American companies in the field of AI and how competition from Chinese companies is likely to shift the dynamics in the market.

# **AXIOM MISSION 4**



- Axiom Mission 4 is an upcoming private spaceflight mission to the ISS operated by Axiom Space (US-based space-infra development company), using the SpaceX Crew Dragon.
- The SpaceX Crew Dragon is a reusable spacecraft that carries astronauts to and from the ISS.
- It is the fourth flight by Axiom in collaboration with NASA, following Axiom Missions 1, 2, and 3.

### **Mission Objectives:**

- Commercial Space Initiatives: It focuses on enabling commercial activities like space tourism in Low Earth Orbit (LEO). It aims to demonstrate the feasibility of commercial space stations as platforms for business and research.
- International Collaboration: It features a diverse multinational crew, emphasizing global cooperation in space exploration. It aims to strengthen global partnerships and joint efforts in space science.
- Research & Development: It supports scientific experiments and tech advancements in areas such as materials science, biology, and Earth observation.

#### **Key Features:**

- Spacecraft and Crew: It will deploy a SpaceX Dragon spacecraft launched by a Falcon 9 rocket, carrying professional astronauts, researchers, and private individuals.
- Mission Duration and Activities: With an expected duration of 14 days, the crew will conduct experiments, technology demonstrations, and educational outreach aboard the ISS.
- Commercial Space Station
   Development: Axiom-4 is part of Axiom
   Space's vision to establish the first
   commercial space station, transitioning
   from ISS operations to an independent
   orbital platform.

## Significance for India:

- The Ax-4 marks a pivotal collaboration between the ISRO and NASA, highlighting India's growing presence in space exploration.
- This mission will facilitate Indian astronauts' participation in activities aboard the ISS, enhancing India's capabilities in human spaceflight and global cooperation in space science.

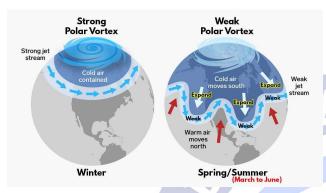




# Places in News and Geography

# **POLAR VORTEX**

 The United States is facing severe winter storms as the polar vortex is expanding southward from the Arctic and driving temperatures as low as -50°C (-60°F).



#### **About Polar Vortex**

- The polar vortex is a band of fast-moving air that traps cold Arctic air within the Polar Regions.
- It is a natural atmospheric phenomenon, typically spinning in a counter-clockwise direction around the North Pole.
- Wind speeds in the polar vortex can reach up to 250 km/h (155 mph).
- Stable State: Under normal conditions, the polar vortex remains strong and wellcontained within the Arctic Circle, keeping frigid air confined to the Polar Regions.

#### Weakened State:

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- The vortex weakens when rising warm air from the lower atmosphere disrupts its circular flow, allowing Arctic air to spill southward.
- Factors contributing to a weakened state include: Significant weather patterns (e.g., powerful winds in mountainous regions);
- Changes in tropical climate systems or sea surface temperatures.

Climate change causing uneven warming, especially at the poles.

#### **Types**

#### Tropospheric Polar Vortex:

 It occurs in the lowest atmospheric layer (troposphere) where most weather phenomena take place.
 Typically results in milder weather across northern latitudes.

## • Stratospheric Polar Vortex:

- Forms 16–48 km above the Earth's surface in the Stratosphere.
- Stronger and more stable but can weaken due to disruptions, leading to southward extensions of Arctic air.
- It emerges in autumn and dissipates by spring each year.

# **MUD VOLCANO**



- It is a small volcano-shaped cone of mud and clay, of height usually less than a few meters and often a few decimeters.
- The craters are usually shallow and may intermittently erupt mud.
- These **eruptions continuously rebuild the cones**, which are eroded relatively easily.
- Some mud volcanoes are created by hot spring activity where large amounts of gas

and small amounts of water react chemically with the surrounding rocks and form boiling mud.

- Variations are the porridge pot (a basin of boiling mud that erodes chunks of the surrounding rock) and the paint pot (a basin of boiling mud that is tinted yellow, green, or blue by minerals from the surrounding rocks).
- Other mud volcanoes, entirely of a non igneous origin, occur only in oil-field regions that are relatively young and have soft, unconsolidated formations.
  - Under compactional stress, methane and related hydrocarbon gases mixed with mud force their way upward and burst through to the surface, spewing mud into a conelike shape.
  - Because of the compactional stress and the depth from which the mixture comes, the mud is often hot and may have an accompanying steam cloud.
- Mud volcanoes are not real volcanoes and are not as hazardous as real volcanoes since they can only emit warm mud and only very locally (a few hundred meters around them).
- The largest mud volcanoes actually do pose hazards, but not of the usual volcanic kind. Instead, the sheer volume of mud erupted can flood the landscape, displace people, and bury infrastructure and agriculture.
- Approximately 1,000 mud volcanoes have been identified on land and in shallow water.
  - In Europe and Asia, mud volcanoes are known to exist in southeastern Ukraine, Italy, Romania, Azerbaijan, Iran, Pakistan, Indonesia, and China.
  - In North and South America, mud volcanoes have been documented in Alaska, California, the Island of Trinidad, Venezuela, and Colombia.

# HYDROCLIMATE WHIPLASH

 It is a rare meteorological condition wherein an extremely wet season is succeeded by an extremely dry season.

#### How does it occur?

- It's kind of this paradox that as the atmosphere gets warmer, both the amount of water vapour in the atmosphere can increase, and the deficit of water vapour in the atmosphere can also increase exponentially.
- Consequently, as the atmosphere warms, it is able to hold much more water – for a longer period – before it is eventually released as precipitation.
- It is this relationship between global warming and the atmosphere which leads to the extended periods of dry spells and more intense rainfall when it eventually occurs.

## **Impacts**

- Increases the number of droughts and floods.
- Fires created by the dry condition exacerbate respiratory and cardiovascular diseases through their polluting smoke.
- Human health: Flooding creates conditions for waterborne illnesses such as cholera, leptospirosis.
- Such 'hydroclimate whiplash' conditions have increased by 31-66 per cent in threemonth periods (sub-seasonal) and by 8-31 per cent in 12-month periods (interannual) across the world since the middle of the 20th century.

## **COLOMBIA**



- Colombia is a country primarily located in South America, with some of its islands located off the coast of North America.
- It is bordered by the Caribbean Sea to the north, Venezuela to the east and northeast, Brazil to the southeast, Peru and Ecuador to the south and southwest, the Pacific Ocean to the west, and Panama to the northwest.
- The capital of **Bogota** is its largest city and its financial and cultural hub.
- Its **rich cultural heritage** fuses cultural elements brought by colonization and immigration from Europe and the Middle East with those brought by the African diaspora, as well as with those of the various indigenous civilizations.
- From the 1960s, the country has suffered from armed conflicts and political violence, both of which escalated in the 1990s. Since 2005, there has been a major improvement in security, stability, and rule of law, as well as unprecedented economic growth and development.
- It is one of the **world's 17 mega-diverse countries** and has the highest level of biodiversity per square km in the world and the 2<sup>nd</sup>-highest overall.

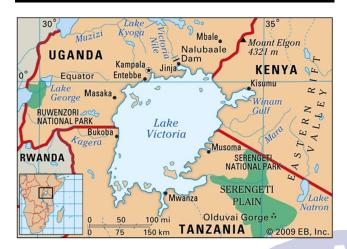
• Its territory encompasses Amazon rainforest, highlands, grasslands and deserts. It is the only country in South America with coastlines along both the Atlantic and Pacific oceans.

## DHANAURI WETLAND



- The National Green Tribunal (NGT) directed the Uttar Pradesh govt to inform it of the progress made regarding the notification of the Dhanauri Wetland as a wetland under the Ramsar Convention.
- It is in the Dhanauri village in Uttar Pradesh. It is nestled within the floodplains of Yamuna Basin.
- It hosts more **than 217 bird species**, including over 150 Sarus Cranes, the state bird of Uttar Pradesh.
- It has **over 20,000 waterfowl,** and supports 23 species of birds that are endangered or critically endangered.
- It has been recognized as an Important Bird Area by Bird Life International. The wetland fulfills two key Ramsar site criteria:
  - Hosts >1% of the biogeographic Sarus crane population.
  - Serves as a congregation site for 20,000+ waterfowls and various other species.

# LAKE VICTORIA



- It is the world's **second-largest freshwater** lake located in East Africa.
- Bordering countries: It is bordered by Tanzania, Uganda, and Kenya.
- It is also called Victoria Nyanza in Kenya, Nalubaale in Uganda, and Ukerewe in Tanzania.
- It is a **source of the White Nile River** which flows northward and eventually **joins the Blue Nile in Sudan to form the Nile River.**
- The lake supports the largest freshwater fishery in the world, producing 1 million tons of fish per year and employing 200,000 people in supporting the livelihoods of 4 million people.
- Recently. an international team of researchers from North America and Kenya has completed a genetic survey of cyanobacteria in the Winam Gulf of Lake Victoria, Kenya.

#### Cyanobacteria

- Cyanobacteria, formerly known as bluegreen algae, are photosynthetic microscopic organisms that are technically bacteria.
- They were originally called blue-green algae because dense growths often turn the water green, blue-green or brownish-green.
- **Habitat:** These algae are found in all lakes and are a natural part of the lake ecosystem.
- High nutrient concentrations can promote a population explosion of these organisms and

result in algal blooms, especially during warm weather.

# ASAN WETLAND



- The Asan Wetland recently hosted the Asian Waterbird Census.
- It is situated in **Dehradun district, Uttarakhand,** at the confluence of the Asan
  River and the Eastern Yamuna Canal. It lies
  near the borders of Uttarakhand and
  Himachal Pradesh.
- It was **created by the damming of the Asan River** at the Asan Barrage (Dhalipur Lake) in 1967.
- It was declared as **Uttarakhand's first Ramsar site** in 2020.
- It is home to 330 bird species, including critically endangered white-rumped vulture, red-headed vulture, and Baer's pochard.

Asian Waterbird Census (AWC) is coordinated by the NGO Wetlands International, as part of the global International Waterbird Census (IWC). It is held annually in January to coincide with the migration season of waterbirds.

# PALAMAU TIGER RESERVE



- Jharkhand Forest Dept. initiated a study to revive the dwindling population of Bison (also known as Gaur) at Palamau Tiger Reserve.
- It is located in the western part of the Chotanagpur plateau, and it is the only tiger reserve in Jharkhand. It forms a part of Betla National Park.
- It has an undulating topography with valleys, hills and plains. Three rivers that flow through the valleys include North Koyal, Auranga and Burha. The area is draught drone with Burha being the only perennial river.
- The geological formations here consist of gneiss, granite and limestone. The area is also very rich in bauxite and coal.
- Flora: Sal forests, mixed deciduous forests and bamboo groves.
- Fauna: Tiger, Leopard, Sambar Deer, Pangolin, Indian Ratel, Cheetal, Wolf, Elephant, Mouse Deer, Indian Otter.
- Palamau has corridor connectivity with other nearby tiger habitats such as Bandhavgarh, Sanjay-Dubri, Kanha and Achanakmar Tiger Reserves.

## CUBA



- India has extended humanitarian assistance to Cuba in the wake of Hurricane Rafael, providing essential materials, antibiotics and painkillers.
- Cuba is an island country, comprising the island of Cuba (largest island) and >4,000 smaller islands surrounding the main island. It is located where the Caribbean Sea, Gulf of Mexico, and Atlantic Ocean meet.
- It is located east of the Yucatán Peninsula (Mexico), south of both Florida (USA) and the Bahamas, west of Haiti and the Dominican Republic, and north of Jamaica and the Cayman Islands.
- Havana is the largest city and capital.
- It is the 3<sup>rd</sup>-most populous country in the Caribbean after Haiti and the Dominican Republic. It is the largest country in the Caribbean by area.
- Cuba is a socialist state, in which the role of the Communist Party is enshrined in the Constitution. Cuba has an authoritarian govt. where political opposition is not permitted.
- Cuba is a founding member of the UN & the Non-Aligned Movement (NAM).

- It has one of the world's few planned economies, and its economy is dominated by tourism and exports of labour, sugar, tobacco, and coffee.
- Cuba has performed better than other countries in the region on several socioeconomic indicators pertaining to health and education.

# **RAFAH CROSSING**



- 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 only two other border crossings in and out of Gaza:
  - Erez is located in the north and is used by people in Israel.
  - Kerem Shalom, in the south, which is exclusively for commercial goods.
- Both Erez and Kerem Shalom are controlled by Israel.

# **DIEGO GARCIA ISLAND**



- Indian fishermen from Tamil Nadu, were detained near Diego Garcia for crossing the maritime boundary.
- Diego Garcia is a part of the British Indian
   Ocean Territory (BIOT). It is situated just south of the equator.
- It is located approx. **1,796 km south of India** and **4,723** km east of Africa.
- It is part of the **Chagos archipelago**, which was colonized by France. it was inhabited by descendants of African and Indian laborers brought by the French colonists. It became a **British colony in 1814 following the Napoleonic Wars.**

## **Political Significance:**

- It houses a large **US military base,** established under a 1966 UK-US agreement. It plays a critical role in military operations, particularly in the Middle East and Asia-Pacific.
- It serves as a base for long-range bombers, intelligence-gathering operations, and logistical support.
- The sovereignty of Diego Garcia is disputed by Mauritius, which claims it as part of its territory.
- In 2019, the International Court of Justice (ICJ) advised the UK to return the Chagos Archipelago, including Diego Garcia, to Mauritius. In October 2024, the UK announced it would hand over

**sovereignty of the Chagos Islands to Mauritius** subject to finalization of a treaty.

## ROOPKUND LAKE



- Roopkund Lake is situated at an altitude of 5,029 meters in the Chamoli district of Uttarakhand.
- The lake is commonly referred to as the "Skeleton Lake" due to the hundreds of ancient human skeletons found around its edges. These skeletons date back to the 9th century AD, believed to be from a group of travelers or pilgrims. Studies suggest they died due to a sudden hailstorm.
- Roopkund is a shallow, high-altitude lake, typically around 2 meters deep, although its size fluctuates with seasonal melting and freezing.
- Roopkund is a glacial lake, meaning it was formed by glacial activities, with water revealing the bones during the summer months when the ice melts.
- It holds cultural importance for the local communities, who believe it is associated with Goddess Nanda Devi. A Nanda Devi Raj Jat pilgrimage occurs every 12 years, during which devotees travel through this region.

## CHAD



- Chad is a landlocked country located at the crossroads of North and Central Africa.
   It is part of both the Sahara Desert as well as the Sahel region.
- It is named after Lake Chad a shallow, freshwater lake located in the Sahel region.
   Once one of Africa's largest lakes, it has dramatically shrunk in size over the past few decades due to climate change, overuse of water for irrigation, and reduced inflow from rivers.
- Borders: Libya to the north, Sudan to the east, the Central African Republic and Cameroon to the south, & Nigeria and Niger to the west.
- France conquered the region by 1920 and it was part of French Equatorial Africa.
   In 1960, Chad gained its independence.
   But since then, it has been affected by civil wars, military coups and spillover effects from other armed conflicts in the region.
- After President Idriss Déby was killed by rebel groups in April 2021, the Transitional Military Council led by his son assumed control and dissolved the Assembly. Chad has been under military rule since.

- It ranks the 4<sup>th</sup> lowest in the Human Development Index (189<sup>th</sup>) and is regarded as one of the poorest and most corrupt countries in the world.
- Most of its population live in poverty as subsistence herders and farmers.
- Chad has a poor human rights record, with arbitrary imprisonment, extrajudicial killings, and limits on civil liberties by both security forces and armed militias.

## **VENEZUELA**



- Nicolas Maduro was sworn in as President of Venezuela for his third consecutive term, despite allegations of voter fraud and election rigging.
- Venezuela is a country located on the northern coast of South America along the Caribbean Sea (Atlantic Ocean).
   It shares land borders with Colombia to the west, Guyana to the east and Brazil to the south.
- Caracas, the capital and the largest city, is located in northern Venezuela.
- A physio-graphically diverse country, Venezuela incorporates the northern
   Andean Mountains and interior highlands, the main portions of the Orinoco River basin with its expansive Llanos (plains), Lake Maracaibo, which is the largest lake in South America, and the Angel Falls, the world's highest waterfall.

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- Its economy is strongly dependent on hydrocarbons, as well as on loans from China & Russia.
- Traditionally, petroleum represents
   >85% of Venezuela's exports.

# ARALAM WILDLIFE SANCTUARY



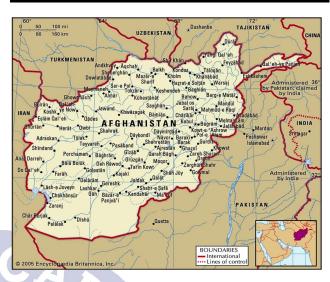
- **Location:** It is located on the western slopes of Western Ghats and it is the northernmost wildlife sanctuary of Kerala.
- It is contiguous with Wayanad-Brahmagiri, Wayanad northern slopes and the Protected Areas of Karnataka State namely the Brahmagiri Wildlife Sanctuary and also the forests of Coorg.
- Rivers: The Cheenkannipuzha river forms the main drainage system on the southern side. Other rivers Narikkadavu thodu, Kurukkathodu and Meenumuttithodu.
- Vegetation: It includes West Coast tropical evergreen forest, west coast semievergreen forests, South Indian moist deciduous forest, Southern hilltop evergreen forest and plantations.
- It is the only protected area of the West Coast Tropical Evergreen Forest of Dipterocarpus-Mesua- Palaquium type.
- Highest peak of this sanctuary is Katti Betta.
- **Flora:** The major tree species are Artiocarpus heterophyllus, Bishofia javanica, Calophyllum elatum, Cannarium

- strictum, Cullenia exarillita, Dipterocarpus sp, Drypetes elata, Dysoxylum malabaricum, Elaeocarpus tuberculatus etc.
- Fauna: Elephant, Gaur, Tiger, Panther, Sambar, spotted deer, Barking deer, Wild boar, Sloth bear, Nilgiri langur, Bonnet macaque, Common langur, Wild dog, common otter, Malabar giant squirrel etc are the major mammals.

# **KONKAN COAST**

- The Konkan extends throughout the western coasts of Maharashtra, Goa and Karnataka
- It is bounded by the Western Ghats Mountain range (also known as Sahyadri) in the east, the Arabian Sea in the west, the Daman Ganga River in the north and the River Aghanashini in the south.
- The Gangavalli flows in the district of Uttara Kannadain present-day Karnataka.
   Its northern bank constitutes the southernmost portion of Konkan.
- The towns of Karwar, Ankola, Kumta, Honavar and Bhatkal fall within the Konkan coast.
- The largest city on the Konkan coast is Mumbai, the state capital of Maharashtra.
- Tribal communities include the Katkari, Thakar, Konkana, Warli and Mahadev Koli, mainly found in the northern and central parts of Konkan.

## **AFGHANISTAN**



- It is a landlocked country at the cross-roads of Central Asia & South Asia.
- Borders: Pakistan to the east & south, Iran to the west, Turkmenistan to the north, Uzbekistan to the north, Tajikistan to the east, and China to the east. It shares a small border with India, in the region of Pakistan-Occupied-Kashmir (POK).
- It is **predominantly mountainous** with plains in the north and the southwest, which are separated by the **Hindu Kush Mountain range**.
- Kabul is its capital and largest city.
- **Popularly referred to as the graveyard of empires**, it has witnessed campaigns by
  the Persians, Alexander the Great, the
  Mauryans, the Arabs, the Mongols, the
  British, the USSR, and the USA.
  - with the **Durrani Empire in the 18**<sup>th</sup> **century**. Afghanistan became a **buffer state in the Great Game** between the British Empire and the Russian Empire. Following the **3**<sup>rd</sup> **Anglo-Afghan War in 1919**, Afghanistan became an independent kingdom in 1926. This monarchy was overthrown in 1973 and the Republic of Afghanistan was created.
- Since the 1970s, Afghanistan has seen coups, invasions, insurgencies, and civil

wars. It was invaded by the USSR in 1979, which led to the USA funding the Mujahideen to tackle the USSR. In the 1990s, the Mujahideen was replaced by the Taliban. It was overthrown in 2001 after the US invasion of Afghanistan. The Taliban returned to power in 2021.

- Afghanistan is rich in natural resources, including lithium, iron, zinc, & copper.
- It is a member of SAARC and is a founding member of the Organization of Islamic Cooperation.
- It is among the world's least developed countries, ranking 182<sup>nd</sup> on the Human Development Index. Per capita, its GDP is among the lowest of any country as of 2020.

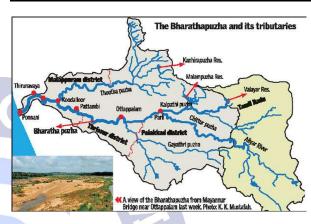
# **Z-MORH TUNNEL**



- The Z-Morh Tunnel will be inaugurated by PM Narendra Modi on 26<sup>th</sup> January (Republic Day)
- Z-Morh Tunnel is a 6.4 km tunnel located near Gagangir village, connecting Sonamarg and Kangan in central Kashmir.
- It is part of the larger Zojila tunnel project, providing all-weather connectivity between Srinagar and Ladakh, vital for military access.
- Situated at over 8,500 feet, the tunnel bypasses snow-prone regions, ensuring year-round access.
- It was semi-opened in February 2024, with full completion delayed due to the

- Model Code of Conduct (MCC) for J&K elections.
- It provides crucial connectivity for Indian defence forces to border areas like Siachen Glacier and Eastern Ladakh, especially given ongoing tensions with China and Pakistan.

# BHARATAPUZHA RIVER



- The Bharathapuzha River, also called the Nila River or Ponnani River.
- With a length of 209 km, it is the second longest river that flows through Kerala after the Periyar
- The river originates from the Anaimalai Hills in Tamil Nadu and flows westward through the Palakkad Gap in the Western Ghats.
- The river flows through Kerala and Tamil
   Nadu before emptying into the Arabian
   Sea.
- Major Tributaries: Kannadipuzha, Kalpathipuzha, Gayathripuzha, and Thuthapuzha.
- The Malampuzha Dam, built across the river, is the largest reservoir in Kerala, serving irrigation and hydroelectric purposes.
- The fertile Thrissur-Ponnani Kole Wetlands lie on its banks.

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## **CANARY ISLANDS**



- A migrant boat which set off from West Africa, carrying dozens of Pakistanis to Europe, capsized near the Canary Islands.
- The Canary Islands is an archipelago in the Atlantic Ocean, located about 1,300 km south of mainland Spain and 115 km west of the African coast (Morocco). It is a semi-autonomous region which is part of Spain.
- They were formed by volcanic eruptions millions of years ago, giving them a unique landscape.
- They have a subtropical climate, characterized by warm temperatures and minimal seasonal variation.
- The Canary Islands are a major tourist destination, with over 16 million visitors in 2023. This is due to their beaches, subtropical climate, and important natural attractions
- The Canary Current, a cold ocean current flowing along Africa's northwest coast, contributes to the dry climate in the region and the hazardous conditions at sea.
- Because of their location, the Canary Islands have historically been considered a link between the four continents of

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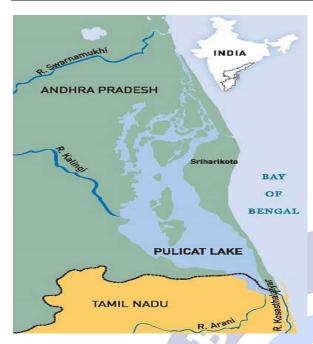
Africa, North America, South America, and Europe.



- Siachen Glacier is a piedmont glacier located in the Karakoram Range of the Himalayas.
- It lies between Saltoro Ridge to the west and the main Karakoram range to the east.
- It is the world's second longest non-polar glacier, after Fedchenko
   Glacier in Tajikistan.
- Siachen glacier is also known as the **Third Pole** as it contains more fresh water than is found anywhere else on Earth except for the polar ice caps.
- It is the **major source** of the Nubra River, a major tributary of the Shyok River.
  - The Siachen Glacier is considered the **world's highest battleground** as India and Pakistan have fought for control of the Siachen Glacier.
    - o In 1984, India took control of the glaciers under **Operation Meghdoot.**
- Studies suggest an increased rate of melting of Siachen Glacier in recent times due to climate change, heavy military presence, dumping of large amount of nonbiodegradable wastes.

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## **PULICAT LAKE**



- It is the **second-largest brackish water ecosystem** in the country after the Chilika Lake (Odisha).
- It is located on the border of Andhra Pradesh and Tamil Nadu. It lies majorly in Andhra Pradesh.
- The large varieties of birds like grey pelicans, painted storks, visit the site annually.
- Grey Pelican and Painted Stork both are near-threatened species under IUCN Red List of Threatened Species.
- The Pulicat lake supports rich biodiversity and high biomass of fishes and planktons which is utilised as food resources by visiting birds.
- Thus about 75 aquatic and terrestrial bird species visit the sanctuary every year.

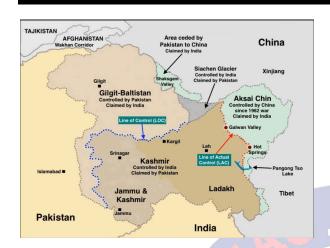
# **Q**ATAR



- External Affairs Minister S. Jaishankar is on an official visit to Qatar.
- Qatar is a country in Western Asia. It occupies the small Qatar Peninsula on the northeastern coast of the Arabian Peninsula.
- Following centuries of Ottoman rule, Qatar became a British protectorate in 1916 & got its independence in 1971.
- It shares its sole land border with Saudi Arabia to the south, with the rest of its territory surrounded by the Persian Gulf.
- The **Gulf of Bahrain**, an inlet of the Persian Gulf, separates Qatar from nearby Bahrain.
- The **capital is Doha**, home to over 80% of the country's inhabitants.
- Most of the land area is made up of flat, low-lying desert.
- The country has the **fourth-highest GDP per capita** in the world. It ranks **42**<sup>nd</sup> in **the Human Development Index (HDI)**, the third-highest HDI in the Arab world.
- It is a high-income economy, backed by the world's third-largest natural gas reserves and oil reserves.
- Qatar is one of the world's largest exporters of liquefied natural gas and the world's largest emitter of carbon dioxide per capita.
- Its economy has risen rapidly through its resource-wealth and its geo-political

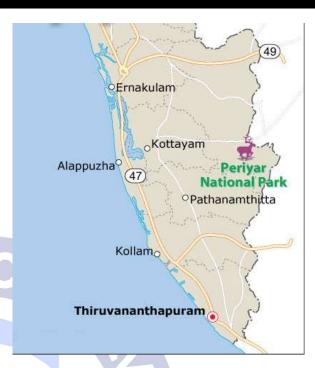
power has risen through its media group, the **Al Jazeera Network**.

# **PANGONG TSO**



- The Indian Army has installed a statue of Chhatrapati Shivaji on the banks of Pangong Tso Lake.
- It is an endorheic lake (a body of water that does not flow into an ocean or sea) located in eastern Ladakh.
- It derives its name from the Tibetan word, "Pangong Tso", which means "high grassland lake".
- It lies partly in India's Ladakh region and partly in China's Tibet province.
- It is the world's highest saltwater lake.
- The Karakoram Mountain range which crosses Tajikistan, Afghanistan, Pakistan, China and India – ends at the north bank of Pangong Tso.
- Pangong Tso is also known to change colors, appearing blue, green and red at different times of a day.
- The 19<sup>th</sup> century Dogra general Zorawar Singh is said to have trained his soldiers and horses on the frozen Pangong Tso before invading Tibet.

# PERIYAR TIGER RESERVE



- It falls in the districts of Idukki and Pathanamthitta in Kerala (in the southern part of the Western Ghats).
- Declared a Sanctuary during 1950 and declared as Tiger Reserve during 1978. It gets its name from the River Periyar which has its origin deep inside the reserve.
- The major rivers through the reserve are Mullayar and Periyar.
- The sanctuary comprises tropical evergreen, semi evergreen, moist deciduous forests and grasslands.
- About **1966 species of flowering plants** grow in this protected area. Of this, about 516 are endemic to the Western Ghats.
- The sanctuary is a repository of medicinal plants, numbering to about 300. Many are endemic to the region.
- Fauna:
  - o **Mammals:** Tiger, Elephant, Liontailed macaque, Tiger etc.
  - Birds: Darters, Cormorants, Kingfishers, the Great Malabar Hornbill, etc.

- Reptiles: Monitor Lizards, Python, King Cobra etc.
- There are six tribal communities nestled inside the reserve such as Mannans, Paliyans, Malayarayans, Mala Pandarams, Uralis and Ulladans.
- According to the 5th cycle of Management Effectiveness Evaluation (MEE) carried out by the Union Govt. alongside the Tiger Census of 2022, the Periyar Tiger Reserve is the best-maintained of all tiger reserves in India.

The Tiger Census is conducted every four years by the National Tiger Conservation Authority (NTCA), a statutory body under the Wildlife Protection Act of 1972. The first census was conducted in 2006 and the fifth census was conducted in 2022. The current tiger population in India is 3,167 (up from 2,967 in 2018).

# **NORTH SEA**

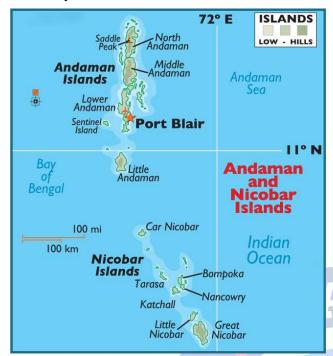


- It is a sea in northern Europe and is part of the Atlantic ocean.
- Borders: It is bordered by the United Kingdom and Norway to the west, Denmark to the south, Germany, the Netherlands, Belgium, and France
  - to the east, and the **Faroe Islands** and **Norway's Svalbard archipelago** to the north.
- The North Sea connects to the Atlantic
   Ocean via the English Channel in the

- southwest and the **Baltic Sea in the east via the Kattegat and Skagerrak straits**.
- The Kiel Canal, one of the world's busiest artificial waterways, connects the North Sea with the Baltic.
- Area: It covers an area of approximately 570,000 square miles).
- Depth:
  - o It is a **relatively shallow sea** with an **average depth of 90 meters**.
  - The sea's deepest part is the Norwegian trench which is 725 meters deep.
  - The shallowest area is the Dogger Bank, which is only 12 metres deep.
- Climate:
  - It experiences an oceanic temperate maritime climate characterized by slightly high temperatures.
  - Winters are long but cool, while summers are short and mild.
- Rivers: Major rivers that drain into the North Sea include the Forth, Elbe, the Weser, the Ems, the Rhine and Meuse, the Scheldt, the Thames, and the Humber.
- Ports: It has several major ports located along its coasts, such as Rotterdam, the busiest port in Europe, Antwerp, Hamburg, Bremerhaven and Felixstowe, all busy container seaports, as well as the Port of Bruges-Zeebrugge, Europe's leading RoRo port.

# **GREAT NICOBAR ISLAND**

- GNI, with an area of 910 sq.km is one of the largest islands of the Andaman & Nicobar archipelago.
  - The Andaman and Nicobar Islands are a group of 836 islands on the Bay of Bengal.



- **Location:** It is located in the southernmost tip of the Nicobar group of islands (520 km from Port Blair).
  - The Indira Point, earlier known as Pygmalion Point, lies at the tip of the GNI and is the southernmost point of the country.
- Headquarter: Campbell Bay
- Ecological Characteristics:

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- Tropical wet evergreen forests, mountain ranges reaching a height of 642 m (Mt. Thullier) and coastal plains.
- Fauna: Crab-eating Macaque, Nicobar Tree Shrew, Dugong, Nicobar Megapode, Serpent Eagle, salt water crocodile, marine turtles etc.
- Flora: Cyathea albosetacea (tree fern),
   Phalaenopsis speciosa(orchid),
   gymnosperms, bryophytes and lichens etc.
- Ecological Landscape: Great Nicobar Biosphere reserve, Campbell Bay National Park and Galathea National Park.
- O GNI was included in the World Network of Biosphere Reserves as part of the Man and Biosphere Programme of UNESCO in 2013.

- Socio-Economics Characteristics:
  - Important Tribes: Mongoloid (Shompen, Nicobarese).
  - The settlers and mainlanders, which number over 8 000, live along the southeast coast of the island, practising agriculture, horticulture and fishing.



- Burkina Faso, a landlocked country in West Africa, was once a French colony and now faces political instability, poverty, and growing insecurity.
- Capital Ouagadougou: The largest city and administrative centre
- Geography:
  - o **Location**: West Africa, landlocked.
  - Bordering countries: Mali (northwest), Niger (northeast), Benin (southeast), Togo and Ghana (south), and Ivory Coast (southwest).
  - Terrain: Dominated by a savanna plateau with fields, scattered trees, and brush.
  - Highest Point: Ténakourou (749 meters).
  - Rivers: Includes the Mouhoun (Black Volta), Nakambe (White Volta), and Nazinon (Red Volta).
  - Climate: Ranges from semi-arid in the north (Sahel region) to tropical in the south.
- History and Name:
  - Colonial Past: Formerly a French colony known as Upper Volta.

- Renaming: Became Burkina Faso in 1984 under President Thomas Sankara
- People and Culture:
  - Languages: Official language is French, with about 70 languages spoken, including Moore, Dioula, and Fula.
  - **Ethnic Groups**: Mossi is the largest ethnic group.

## **PHILIPPINES**

- Philippines is an archipelago in South East Asia, bordered by Philippine Sea to the east, South China Sea to the west & Celebes Sea to the south.
- It consists of 7,641 islands, with Luzon and Mindanao the largest.
- Capital: Manila (on Luzon Island).
- **Mount Apo** (2,954 m) is the highest peak, and it is an active volcano.
- Philippines is part of the Pacific Ring of Fire, which makes it geologically active. It has >20 active volcanoes, including Mayon (recently erupted in 2023), Taal, and Mount Pinatubo.



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# TEESTA RIVER

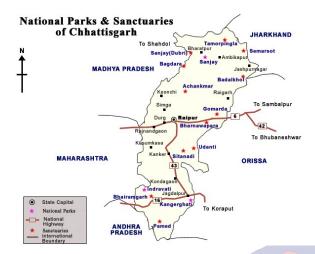
- Teesta river is a tributary of the Brahmaputra (known as Jamuna in Bangladesh), flowing through India and Bangladesh.
- It originates in the Himalayas near Chunthang,
   Sikkim and flows to the south through West
   Bengal before entering Bangladesh.
- Originally, the river continued southward to empty directly into the Padma River (main channel of Ganga in Bangladesh) but around 1787 the river changed its course to flow eastward to join the Jamuna River.
- The Teesta Barrage dam helps to provide irrigation for the plains between the upper Padma and the Jamuna.

## The major tributaries of Teesta River:

- Left-bank Tributaries: Lachung Chhu, Chakung Chhu, Dik Chhu, Rani Khola, Rangpo Chhu.
- **Right-bank Tributaries:** Zemu Chhu, Rangyong Chhu, Rangeet River.



# **UDANTI SITANADI TIGER RESERVE**



- It is located in Dhamtari District of Chhattisgarh.
- It was established by joining the regions represented by Sitanadi and Udanti wildlife sanctuaries.
- The Udanti and Sitanadi wildlife sanctuaries derive their names from the rivers Udanti and Sitanadi, which flow through the respective sanctuaries.
- The location of the reserve is strategic since it also connects with the Kanker and North Kondagaon forest divisions, forming a contiguous forest corridor to Indravati Tiger Reserve in the Bastar region.
- Total Area: 1872 sq.km.
- Vegetation: Mixed vegetation is present in the reserve. Dry deciduous forests, tropical and sub-tropical vegetation are also observed here, especially in the area around streams and waterways.
- Flora: It contains various types of forest crops mixed with Sal Forest. The ground is covered with a maze of grass, plants, bushes, and saplings.
- Fauna: Tiger, Chital, Wild Buffaloes, Barking Deer, Muntjac, Striped Hyena, Blue Bull, Sloth Bear, Jungle Cat, Sambhar, Gaur, Four-Horned Antelopes, Bison, Panther, etc. are some of the animals present here.
- Along with the Indravati Tiger Reserve, Udanti and Sitanadi are important refuges for the last

few herds of the highly **endangered Wild Buffalo**.

# **BALTIC SEA**



- It is one of the **seas of the Atlantic Ocean**, situated in **Northern Europe**.
- It is the youngest sea on our planet, emerging some 10,000-15,000 years ago as the glaciers retreated at the end of the last Ice Age.
- It is approximately 1,600 km long and 193 km wide, covering an area of approximately 377,000 sq.km.
- Surrounding Countries: It has a coastline of approximately 8,000 km, shared by several countries, including Sweden, Poland, Lithuania, Latvia, Finland, Estonia, Germany, Denmark, and Russia.
- It is connected to the Atlantic Ocean through the Danish Straits.
- It is connected to the White Sea via the White Sea Canal and to the North Sea's German Bight via Kiel Canal.
- The Baltic Sea contains three major gulfs: the Gulf of Bothnia to the north, the Gulf of Finland to the east, and the Gulf of Riga slightly to the south of that.

- It is often cited as the world's largest brackish inland water body.
- Its water salinity levels are lower than that of the World Oceans due to the inflow of fresh water from the surrounding land and the sea's shallowness.
- There are about sixty rivers draining into the Baltic Sea. Neva is the largest river that drains into the Baltic Sea.
- Islands: It is home to over 20 islands and archipelagos. Gotland, located off the coast of Sweden, is the largest island in the Baltic Sea.
- Algal Harmful Blooms are also one of the issues that affect the Baltic Sea.

## **RWANDA**

- It is a landlocked country located south of the equator in east-central Africa.
- It is part of the Great Rift Valley region of Africa.
- Often referred to as the "land of a thousand hills", Rwanda's landscape is mostly hilly and mountainous.
- It covers an area of 26,338 sq. km.
- Borders: Rwanda shares a border with the four nations of Burundi, Tanzania, Uganda, and the Democratic Republic of the Congo.
- Capital: Kigali
- Languages: Kinyarwanda, French, English
- Money: Rwandan franc
- Population:
  - It is one of the continent's most densely populated, with approximately a thousand people per square mile.
  - The Hutu and Tutsi ethnic groups make up most of the country's population.
  - The majority of both groups practice Christianity.

- **Government**: In 2003, Rwanda adopted a constitution mapping out a **presidential** system of government.
- Major Moutain Ranges: Albertine Rift and Virunga.
- Major Rivers:
  - Two major African rivers, the Nile and the Congo, flow through Rwanda.
  - Other major rivers are Kagera, Nyabarongo, Ruzizi, Luhwa, and Akanyaru.
  - 80% of Rwanda's rivers drain into the Nile through Lake Victoria, while the remaining 20% drain into the Congo via the Rusizi River which also has the lowest elevation in Rwanda at 950 m.

#### Lakes:

- Lakes are everywhere in Rwanda. Lake Kivu, located on the western border of the country with DRC, is the largest among them. It is one of the 20 deepest lakes in the world.
- Other notable lakes include Burera, Cohana, Ruhondo, Muhazi, Rweru, and Ihema.
- Biodiversity: It is one of the most ecologically diverse places in Africa.
- The continent's Albertine Rift region, which covers much of western Rwanda, is home to about a third of Africa's birds, 40 percent of its mammals, and 20 percent of the continent's amphibians and plants.



## THE DEMOCRATIC REPUBLIC OF CONGO



- The DRC is 2<sup>nd</sup> largest country in **Africa** and the 11<sup>th</sup> largest in the world.
- It has a small coastline with the Atlantic Ocean. DRC is bounded to the north by the Central African Republic and South Sudan; to the east by Uganda, Rwanda, Burundi, and Tanzania; to the southeast

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by Zambia; and to the southwest by Angola.

- Kinshasa, the capital of the DRC, is located on the Congo River, the only river to cross the equator twice in Africa.
- The official language is French, but other languages include Kituba, Lingala, Swahili, and Tshiluba.
- Katanga Plateau is considered to be a rich mining region, which supplies cobalt, copper, tin, radium, uranium, and diamonds.
- Recently, increasing hostilities in eastern part of Democratic Republic of the Congo (DRC) by Rwanda supported non-state armed group M23 have caused mass displacement in the region.

## KAILASH MANSAROVAR



- Mount Kailash is a diamond-shaped peak made of black rock, located in **Tibet**.
- India organizes the Kailash Mansarovar Yatra annually between June and September through the Lipulekh Pass (since 1981) in Uttarakhand and the Nathu La Pass (since 2015) in Sikkim.
- Mount Kailash stands at 6,638 meters and is considered a sacred peak by Hindus, Buddhists, Jains, and Bons (indigenous religion of Tibet).
- For Tibetans Buddhists, Kailash is the cosmic axis, or Mount Meru, connecting heaven and earth.

- In Hinduism, it is the abode of Lord Shiva and Goddess Parvati.
- In Jainism, Kailash is **Ashtapada**, where **Rishabhanath** attained enlightenment.
- Mount Kailash is considered the spiritual center of the Earth, with the Sutlej, Brahmaputra, Kamali, and Indus rivers originating from it.
- Lake Mansarovar is located at the base of the mountain.
- Mount Kailash, though lower in height than Mount Everest (8,849 meters), remains unclimbed as its ascent is prohibited due to its sacred significance.
- Recently, India and China have agreed to revive the annual Kailash Mansarovar Yatra.





• Laos, officially the Lao People's Democratic Republic (Lao PDR), is the only landlocked country in Southeast Asia. It is bordered by Myanmar and China to the northwest, Vietnam to the east, Cambodia to the southeast, and Thailand to the west and southwest.

- It is part of the **Golden Triangle** (a major opium-producing region) along with Thailand and Myanmar.
- Its capital and most populous city is Vientiane. Laos is characterized by extensive mountainous terrain.
- In 1893, Laos was colonized by France. Laos was under Japanese administration during World War II, before returning to French administration after the war. Laos gained full independence in 1953
- A civil war from 1959 to 1975 saw communist forces, supported by the USSR, come to power. The war ended with the creation of a one-party socialist state aligned with the USSR until its dissolution in 1991.
- Since then, Laos has transitioned toward market-oriented reforms, marking a new phase of development.
- Laos is **one of Southeast Asia's fastest growing economies**, with annual GDP growth averaging 7.4% since 2009, driven by expanding tourism, energy exports, & foreign investment.
- While classified as a least developed country by the UN, Laos is a member of ASEAN, WTO, and the East Asia Summit.

## **Government Schemes**

## DHARTI AABA JANJATIYA GRAM UTKARSH ABHIYAN

**Context:** Ministry of Tribal Affairs and Ministry of Health and Family Welfare organized the National Tribal Health Conclave 2025 under the Dharti Aaba Janjatiya Gram Utkarsh Abhiyan.





- It was originally called the Pradhan Mantri Janjatiya Unnat Gram Abhiyan (PM-JUGA) & was approved by the Cabinet in September 2024.
- It is **based on the learnings and success of PM-JANMAN** (PM Janjati Adivasi Nyaya Maha Abhiyan).
- Aim: Improving socio-economic condition of tribal communities, by adopting saturation coverage for tribal families in tribal-majority villages and aspirational districts.
- India has Scheduled Tribe population of 10.45 crore as per 2011 census and there are >700 tribal communities.
- Total outlay for the scheme: Rs.79,156 crore with Central Share of Rs.56,333 crore.
- Coverage: 63,000 villages benefitting more than 5 crore tribal people, covering 549 districts across 30 States/UTs.
- It comprises **25 interventions to be implemented by 17 ministries** through

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- funds allocated under Development Action Plan for Scheduled Tribes (DAPST) in next 5 years.
- Tribal villages covered will be mapped and progress will be monitored on PM Gati Shakti platform.

#### **Mission's Four Goals:**

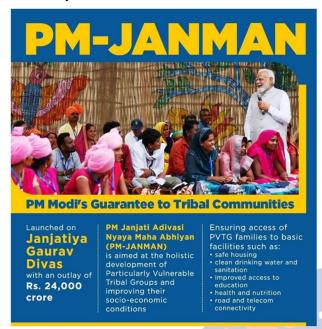
- Goal-I: Develop Infra such as Pucca houses and improving Village Infra.
- Goal-2: Promotion of Economic Empowerment through Skilling, Entrepreneurship promotion, and livelihoods (self-employment).
- Goal-3: Universalization of Access to Good Education.
- Goal-4: Healthy lives and Dignified Ageing.

## **Innovative Schemes under PM-JUGA:**

- Tribal Home Stay: To tap tribal tourism, 1000 Home stays will be promoted under Swadesh Darshan.
- Sustainable Livelihood Forest Right Holders (FRA): Special focus on 22 lakh FRA patta holders residing in forest areas for recognizing and securing forest rights.
- Improving infrastructure of Government residential Schools and Hostels on lines of PM-Shri Schools.
- Advance facilities for diagnosis of sickle cell disease.
- **Multipurpose Marketing Centre** for marketing of tribal products.

## PM JANMAN SCHEME

**Context:** The Ministry of Rural Development has sanctioned 27 roads measuring 50.13 km in Maharashtra under the connectivity component of PM-JANMAN.



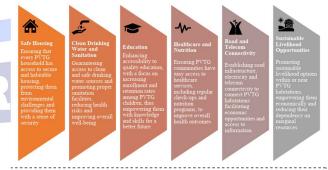
## About PM-Janjati Adivasi Nyay<mark>a Maha A</mark>bhiyan (PM-JANMAN) Scheme:

- It is an umbrella scheme comprising Central Sector and Centrally Sponsored Schemes.
- Implemented by Ministry of Tribal Affairs, in collaboration with State govts and PVTG communities.
- Focus on 11 critical interventions overseen by 9 Ministries for implementation of existing schemes in villages inhabited by PVTGs.
- Allocation of Rs. 24,104 crores for providing necessary support and connectivity to mainstream services and opportunities.
  - Of this total outlay, nearly 80% is only for the construction of houses and roads.
  - Rs 15,000 crore has been allocated for next 3 years under the Development Action Plan for STs (DAPST) to implement housing component.
- Covers all 75 PVTGs residing in 18 states and UTs, spread across 220 districts. Approx. 28 lakh people belong to these tribal groups.

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- **4.9 lakh houses** are will be built for PVTGs under PM Awas Yojana.
- It also encompasses access to clean drinking water under Jal Jeevan Mission, improved healthcare, education, nutrition, road and telecommunications connectivity, as well as livelihood opportunities.
- Plan also includes the establishment of Van Dhan Vikas Kendras for trading in forest produce, off-grid solar power systems for 1 lakh households, and solar street lights.
- Identification of gaps in its implementation will be done via physical surveys by state govts.
- Data is updated on PM Gati-Shakti
   Portal, enabling cross-verification by relevant Ministries and State Depts.
- There will be a performance evaluation via ranking of districts based on monthly incremental changes in performance indicators.
  - Top three districts & Ministries will be rewarded.

### Focus Areas of PM JANMAN:



#### **PVTGs**

- ✓ In 1973, the **Dhebar Commission** established Primitive Tribal Groups (PTGs) as a distinct category, characterized by a **declining or stagnant population, use of preagrarian technology, economic backwardness, and low literacy.**
- ✓ In 2006, Govt of India renamed the PTGs as PVTGs.

- ✓ There are 75 PVTG communities spread across 18 States and the UT of Andaman and Nicobar Islands.
- ✓ Odisha has the highest number of PVTGs (15), followed by Andhra Pradesh (12), Bihar and Jharkhand (9), Madhya Pradesh and Chhattisgarh (7), Tamil Nadu (6), and Kerala and Gujarat (5 each).

## PM Surya Ghar Muft Bijli Yojana

**Context:** Accelerating India's green transition would require a review of the PM Surya Ghar Muft Bijli Yojana.



## About PM Surva Ghar Muft Bijli Yojana:

- It is a government scheme launched on February 15, 2024, that aims to provide free electricity to households in India.
- Under the scheme, households will be provided with a subsidy to install solar panels on their roofs.
- The subsidy will cover **up to 40% of the cost of the solar panels**.
- It would help **one crore families** get **up to 300 units of free electricity** per month with savings of up to Rs 18,000 annually.
- It is estimated that the scheme will save the government Rs. 75,000 crore per year in electricity costs.
- The scheme has an outlay of Rs 75,021 crore and is to be implemented till FY 2026-27.

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- Under the scheme, DISCOMs are designated as State Implementation Agencies (SIAs) responsible for facilitating various measures, including net meter availability, timely inspection, and commissioning of installations.
- DISCOMs will receive incentives based on their achievement in the installation of additional grid-connected rooftop solar capacity beyond a baseline level.
- The total financial outlay for the 'Incentives to DISCOMs' component is Rs 4,950 crore.
- It is being implemented by the Ministry of New and Renewable Energy.

#### Benefits of the scheme:

- Free electricity for households.
- Reduced electricity costs for the government.
- Increased use of renewable energy.
- Reduced carbon emissions.

## **Eligibility**:

- The household members must be Indian citizens.
- The household **must own a house** with a roof that is suitable for installing solar panels.
- The household must have a **valid electricity connection**.
- The household must not have availed any other subsidy for solar panels.

## **SMART CITIES MISSION**

**Context:** An article in today's edition of The Hindu analyzes the status of implementation of the Smart Cities Mission.



## **About Smart Cities Mission:**

- It is a **centrally sponsored scheme** launched in June, 2015 by **Ministry of Housing and Urban Affairs**.
- It aims to promote cities that provide core infra, clean and sustainable environment and give a decent quality of life to their citizens.
- Focus is on sustainable and inclusive development by creating replicable models for other aspiring cities.

### **Coverage of Smart Cities Mission:**

- Covers 100 cities distributed among States/UTs based on a criterion that gives equal weightage to urban population of State/UT & number of statutory towns in State/UT.
- Based on this formula, each State/UT will, therefore, have a certain number of potential Smart Cities, with each State/UT having at least one.

#### **Strategy of Smart Cities Mission:**

- Comprises city improvement (retrofitting), renewal (re-development) & extension (greenfield development), in addition to a pan-city initiative.
- Area-based development that will transform existing areas, including slums, into better planned residential areas, thereby improving habitability of the whole city.

## **Division of Works Completed:**

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- Integrated Command and Control Centres (ICCC): All 100 Smart Cities have operational ICCCs, which utilize data for making informed decisions.
- Over 84,000 **CCTV surveillance cameras** have been installed in 100 Smart Cities, aiding in crime monitoring.
- 1,884 emergency call boxes, 3,000 public address systems, and traffic enforcement systems for red light violations and automatic number plate recognition have been installed.
- More than 17,026 kms of the water supply system are being monitored.
- Over 66 cities are managing solid waste with increased technology use, improving route management, efficiency of collection, and daily management.
- Over 1,740 kms of smart roads have been constructed or improved, and 713 kms of cycle tracks have been developed.
- Intelligent Transport Management System (ITMS) has been implemented in some cities and is being monitored through ICCCs.
- 9,433 **smart classrooms** and 41 **digital libraries** have been developed.
- 172 e-health centres and clinics (without beds) have been developed.

As of Dec. 2024, 9% of total projects (695 of 8,075) of the total aim are still ongoing. The majority of projects (7,380) have been completed, emphasizing the scale and financial investment involved.

## NATIONAL HEALTH MISSION

**Context:** A recent report by the Union government found that National Health Mission has significantly contributed to improving India's public health.



## **About National Health Mission (NHM):**

- NHM was launched by the government of India in 2013 subsuming the National Rural Health Mission (Launched in 2005) and the National Urban Health Mission (Launched in 2013).
- The main programmatic components include Health System Strengthening in rural and urban areas for - Reproductive-Maternal-Neonatal-Child and Adolescent Health (RMNCH+A), and Communicable and Non-Communicable Diseases.
- The NHM envisages achievement of universal access to equitable, affordable & quality health care services that are accountable and responsive to people's needs.

## **Support to States & Union Territories (UT):**

## **Health Facilities:**

 NHM support is provided to States/UTs for setting up of new facilities as per norms and upgradation of existing facilities for bridging the infrastructure gaps based on the requirement posed by them.

#### **Health Services:**

 NHM support is also provided for provision of a range of free services related to maternal health, child health, adolescent health, family planning, universal immunisation programme, and for major diseases such as Tuberculosis, vector borne diseases like Malaria, Dengue and Kala Azar, Leprosy etc.

#### **Goals of National Health Mission:**

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- o Reduce MMR to 1/1000 live births
- Reduce IMR to 25/1000 live births
- Reduce Total Fertility Rate to 2.1
- Prevention and reduction of anemia in women aged 15-49 years
- Prevent and reduce mortality and morbidity from communicable, noncommunicable, injuries, and emergency diseases
- Reduce household out-of-pocket expenditure on total health care expenditure
- Reduce annual incidence and mortality from Tuberculosis by half
- Reduce prevalence of Leprosy to <1/10000 population and incidence to zero in all districts
- Annual Malaria incidence to be <1/1000</li>
- Less than 1 percent microfilaria prevalence in all districts
- o **Kala-Azar Elimination** by 2015, <1 case per 10,000 population in all blocks

## Major Initiatives Supported Under NHM:

- 1. Janani Shishu Suraksha Karyakram (JSSK).
- 2. Rashtriya Bal Swasthya Karyakram (RBSK).
- 3. Implementation of Free Drugs and Free Diagnostics Service Initiatives.
- 4. PM National Dialysis Programme.
- 5. Implementation of National Quality
  Assurance Framework in all public health
  facilities.
- 6. Mobile Medical Units (MMUs) & Teleconsultation services are also being implemented to improve access to healthcare particularly in rural areas.
- 7. Ayushman Bharat.
- 8. Pradhan Mantri Jan Arogya Yojana (AB-PMJAY).

## BETI BACHAO BETI PADHAO (BBBP) SCHEME

**Context:** The Union Govt. recently marked the 10th year of the launch of Beti Bachao Beti Padhao scheme and the Sukanya Samriddhi Yojana.



#### About Beti Bachao Beti Padhao:

 BBBP was launched to address the declining Child Sex Ratio (CSR), prevent gender-biased sex-selective elimination, and promote the survival, protection, and education of the girl child.

## **Key Objectives:**

- Improve the Sex Ratio at Birth (SRB) by two points annually.
- Achieve a sustained institutional delivery rate of 95% or above.
- Increase the percentage of first-trimester antenatal care registrations and secondary education enrollment by 1% annually.
- Reduce **dropout rates** among girls at secondary & higher secondary levels.
- Raise awareness about safe menstrual hygiene management (MHM).

### **Target Groups:**

- Primary Groups: Young couples, expecting parents, adolescents, households, and communities.
- Secondary Groups: Anganwadis, schools, medical professionals, local government bodies, NGOs, media, and religious leaders.

#### Other Features of the Scheme:

- The BBBP scheme is now integrated with Mission Shakti, a program for women's safety and empowerment, for implementation during the 15th Finance Commission (2021-2026). It consists of two sub-schemes:
  - Sambal (Safety and Security):
     Focuses on women's safety through initiatives like One Stop Centres (OSCs), Women Helpline (181), nationwide expansion of BBBP, and Nari Adalat for grievance redressal.
    - Samarthya (Empowerment): Empowers women through Shakti Sadans (relief and rehabilitation homes), Sakhi Niwas (safe accommodation for working women), and Palna (Creche facilities).
- Under the BBBP, the PM Matru Vandana Yojana (PMMVY) now extends support for a 2nd child if it is a girl, promoting maternal health.
- SANKALP HEW (Hub for Empowerment of Women) serves as a district-level mechanism under BBBP for women to access Central and State schemes.
- BBBP is 100% funded by the Central Government in all the districts of the country under Sambal sub-scheme of Mission Shakti.
- District-level financial aid is allocated as per SRB i.e., Rs 40 lakh (SRB ≤918), Rs 30 lakh (SRB 919-952), and Rs 20 lakh (SRB >952).
- It also involved grassroots campaigns like the Yashaswini Bike Expedition, which symbolized empowerment, & the Kanya Shiksha Pravesh Utsav, which re-enrolled out-of-school girls.

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Conferences and events promoting workforce participation and skilling, like "Betivan Bane Kushal."

### **Achievements in 10 Years:**

- **SRB:** The national SRB improved from 918 in 2014-15 to 930 in 2023-24.
- **Education:** Girls' Gross Enrollment Ratio (GER) in secondary education rose from 75.51% in 2014-15 to 78% in 2023-24.
- **Institutional Deliveries**: Rose from 61% in 2014-15 to 97.3% in 2023-24.
- Awareness Nationwide **Campaigns:** campaigns like 'Selfie with Daughters' and 'Beti Janmotsav' celebrated the value of the girl child.
- **Economic Empowerment of Women:** Collaborations with the Ministry of Skill Development enhanced skilling economic participation.

## Sukanya Samriddhi Yojana (SSY):

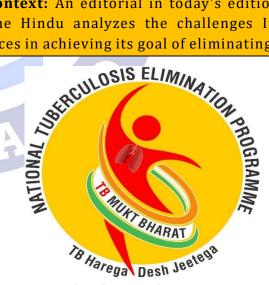
- ✓ It was launched under BBBP to provide financial security for the future of girl child through opening of bank accounts focusing on education.
- ✓ Interest on deposits is compounded annually with option for monthly interest pay-outs.
- ✓ Under Section 80C of the Income Tax Act. 1961, there will be no tax on the amount invested, amount earned as interest and amount withdrawn.
- ✓ Implemented by the **Finance Ministry**.
- ✓ Account Eligibility: The scheme is open for any resident Indian girl child, with an account being able to be opened from birth until the age of 10.
  - o A guardian can open 1 account per child, with a maximum of 2 accounts per family, except for twins, triplets, etc.
- ✓ Minimum initial deposit is Rs 250 and annual deposit limit is Rs 1,50,000. Deposits can be made for up to 15 years, with the guardian managing the account until the girl turns eighteen. The account

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- matures after 21 years from the account **opening date.** Early closure is allowed if the account holder intends to marry before maturity.
- ✓ After turning 18 or completing 10th grade, account holder can withdraw up to 50% of the balance from the previous financial year for education.
- ✓ In case of the account holder's death or reasons like severe illness or the guardian's death, the account can be prematurely closed. However, this is not allowed within the first five years of opening the account.
- ✓ Similar to other small savings schemes of the govt, interest provided for deposits are based on the market yields of various govt. securities.
- Achievements in 10 Years: As of Nov 2024, >4.1 crore Sukanya Samriddhi accounts have been opened, promoting financial discipline and encouraging long-term savings for girls' education and empowerment.

## TB MUKT BHARAT ABHIYAN

**Context:** An editorial in today's edition of The Hindu analyzes the challenges India faces in achieving its goal of eliminating TB.



#### About TB Mukt Bharat Scheme:

It's an initiative of Ministry of Health and Family Welfare (MoHFW) to accelerate the country's progress towards the aim of tuberculosis (TB) elimination by 2025.

## **Objectives:**

- Provide additional patient support to improve treatment outcomes.
- Augment community involvement to meet commitment to end TB by 2025.
- Leverage activities through use of Corporate Social Responsibility (CSR).

## **Components:**

- Ni-kshay Mitra Initiative: To ensure additional diagnostic, nutritional, and vocational support to TB patients. Ni-kshay Mitras are those who can support by adopting health facilities, blocks/wards/ districts/states to complement govt. efforts.
- Ni-kshay Digital Portal: It will provide a platform for community support for persons with TB.

### Other Indian Initiatives regarding TB:

- ✓ India's National TB Elimination

  Programme aims to meet the goal of ending
  the TB epidemic by 2025 from the country,
  five years ahead of the SDG for 2030.
- ✓ National Strategic Plan (NSP) for TB Elimination (2017-2025)
- ✓ The Nikshay Ecosystem (National TB information system)
- ✓ TB Harega Desh Jeetega Campaign to generate public awareness.
- ✓ Currently, two vaccines VPM (Vakzine Projekt Management) 1002 and MIP (Mycobacterium Indicus Pranii) have been developed and identified for TB, and are under Phase-3 clinical trial.
- ✓ **Ni-kshay Poshan Yojana:** Rs 500 support through DBT to the patients.
- ✓ **Ayushman Bharat Digital Health Mission:** Creating digital health IDs for TB patients to ensure that proper diagnostics & treatment are available.

#### **About TB:**

✓ It is an infectious disease **caused by Mycobacterium tuberculosis** and it spreads among persons via the air.

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- ✓ It commonly affects the lungs, but can also affect other parts of the body.
- ✓ It is a treatable and curable disease.
- ✓ Bacille Calmette-Guérin (BCG) is a vaccine for TB disease. It is provided under India's Universal Immunization Programme.

In 2022, India reported over 24 lakh TB cases, accounting for over 27% of world TB cases. Extrapulmonary TB occurs when TB affects organs other than the lungs, such as the lymph nodes, abdomen, bones, and joints, or the nervous system. It accounts for about 15-20% of all TB cases globally.

## VIBRANT VILLAGES PROGRAMME



- The Vibrant Villages Programme (VVP) is a centrally sponsored scheme of the Ministry of Home Affairs.
- Objective:
  - Comprehensive development of villages and blocks on the northern border, thus improving the quality of life of people living in identified border villages.
  - This will help in encouraging people to stay in their native locations in border areas and reversing the outmigration from these villages, adding to improved security of the border.
- The programmme will provide funds for the development of essential infrastructure and the creation of livelihood opportunities in 2967 villages in

- **19 Districts** and 46 Border blocks of **4 states** and **1 UT** along the northern land border of the country: **Arunachal Pradesh, Sikkim, Uttarakhand, Himachal Pradesh,** and the UT of **Ladakh**.
- The programme envisages focused areas of intervention in the select villages for the creation of opportunities for livelihood generation through promotion of tourism and cultural heritage, skill development and entrepreneurship, and development of cooperative societies, including agriculture/horticulture, cultivation of medicinal plants/herbs etc.
- Interventions also include providing road connectivity to unconnected villages, housing and village infrastructures, energy including renewable energy, television and telecom connectivity.
- Vibrant Village Action Plans will be created by the district administration with the help of Gram Panchayats, and 100 % saturation of Central and state schemes will be ensured.
- There will be no overlap with the Border Area Development Programme.

## **BHASHINI**

**Context:** The e-Shram portal, designed to provide social security and welfare benefits to unorganized workers, has now been upgraded with multilingual functionality across all 22 scheduled languages, leveraging the Bhashini initiative

### **About the platform:**

- Digital India BHASHINI, is India's Artificial Intelligence (AI)-led language translation platform.
- It seeks to enable easy access to the internet and digital services in Indian

- languages, including voice-based access, and help the creation of content in Indian languages.
- It aims to make Artificial Intelligence and Natural Language Processing (NLP) resources available in the public domain to be used by -- Indian MSMEs, startups and individual innovators.
- This will help developers to offer all Indians easy access to the internet and digital services in their native languages.
- This online platform also has a separate 'Bhasadaan' section which allows individuals to contribute to multiple crowdsourcing initiatives, and it is also accessible via respective Android and iOS apps.
- How does it work?
  - The project is available on this website:
    - https://www.bhashini.gov.in/en/ a
      nd it is aimed to build and develop
      an ecosystem where various
      stakeholders like institutions,
      industry players, research groups,
      academia and individuals can unite to
      maintain an 'ever-evolving
      repository of data, training and
      benchmark datasets, open models,
      tools and technologies.
  - The contribution can be done in four ways -- Suno India, Likho India, Bolo India and Dekho India -- where users have to type what they hear or have to validate texts transcribed by others.

#### e-Shram Portal:

- It is a flagship initiative by the Government of India to support and empower the unorganized workforce.
- It was launched by the Ministry of Labour and Employment on 26th August 2021.

- This portal is designed to create a comprehensive National Database of Unorganised Workers (NDUW).
- The Ministry of Electronics and Information Technology's (MEITY's) Bhashini project has been leveraged to upgrade the eShram portal with 22 languages.

## INDIAAI MISSION



- It was launched during the Global Partnership on Artificial Intelligence (GPAI) Summit in 2023, New Delhi, by the Prime Minister of India.
- Background: Announced to drive AI innovation and build a comprehensive AI ecosystem in line with the visions of "Making AI in India" and "Making AI Work for India."
- Aim: To create an advanced AI infrastructure supporting various sectors, boost AI innovation, enhance data quality, and promote ethical AI practices across the country.
- Nodal ministry: Ministry of Electronics and Information Technology (MeitY)
   Implementing agency: IndiaAI Independent Business Division (IBD) under the Digital India Corporation (DIC)

### **Key Components:**

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• **IndiaAI Compute Capacity:** Develop AI compute infrastructure with 10,000+ GPUs via public-private partnerships.

- IndiaAl Innovation Centre: Create Large Multimodal Models (LMMs) and sector-specific foundational Al models.
- IndiaAI Datasets Platform: Unified platform providing access to high-quality non-personal datasets for AI research and startups.
- IndiaAI Application Development Initiative: Promote AI applications addressing key challenges in sectors like healthcare, agriculture, and governance.
- IndiaAI FutureSkills: Expand AI education through new programs at various academic levels and set up Data & AI Labs in smaller cities.
- IndiaAl Startup Financing: Easier access to funding for Al startups, with Rs 2,000 crore allocated.
- Safe & Trusted AI: Ensure responsible AI practices with indigenous tools and frameworks.

## PM AWAAS YOJANA

**Context:** The Union Govt. recently launched the 'Awaas Plus 2024' mobile app to simplify the application process for beneficiaries under the PM Awaas Yojana.

PM Awaas Yojana - Gramin (PMAY-G):



#### PRADHAN MANTRI AWAAS YOJANA

• To achieve the objective of "Housing for All" by 2022, the erstwhile rural housing scheme Indira Awaas Yojana was restructured to PMAY-G in 2016.

- It is implemented by **Ministry of Rural Development**.
- Beneficiaries: SCs/STs, freed bonded labourers, widows or next-of-kin of defence personnel killed in action, exservicemen, retired paramilitary personnel, PWDs, minorities.
- Selection of Beneficiaries is based on a 3stage validation based on Socio Economic Caste Census (SECC) 2011, Gram Sabha, and geo-tagging.
- Assistance provided:
  - Rs 1.2 lakh (shared 60:40 between Union and State Govt)
  - Rs 1.3 lakh for North Eastern and Himalayan States (90:10).
- Centre had set a target of constructing 2.95 crore houses by March 2024.
- Of this 2.95 crore, 2.04 crore were to be allocated to states based on SECC data. The remaining 91 lakh houses were to be allocated based on a survey, Awaas+, which was conducted between June 2018 and March 2019.
- Of the Centre's allocation of 2.95 crore houses - till July 17 2023, 2.90 crore have been sanctioned, of which 2.31 crore have been completed.

## PM Awaas Yojana - Urban (PMAY-U):

- PMAY-U is executed under aegis of Ministry of Housing and Urban Affairs (MoHUA) & aims to tackle shortage of urban housing among economically disadvantaged segments.
- It aims to provide pucca (durable & permanent) houses to all eligible urban households by Dec 2024.
- Implemented through 4 verticals:
  - Beneficiary Led Construction/Enhancement
  - o Affordable Housing in Partnership
  - o In-situ Slum Redevelopment
  - o Credit Linked Subsidy Scheme
- Beneficiaries:

- Economically Weaker Section maximum annual family income of Rs. 3,00,00
- Low Income Group -maximum annual family income of Rs. 6,00,000
- Middle Income Groups maximum annual family income of Rs. 18,00,000
- 1.18 crore houses have been sanctioned as part of this scheme till now. Out of this total, 80.02 lakh houses have been completed.
- Total investment in the scheme now stands at ₹8.11 lakh crore.

## **Announcements in the 2024 Budget:**

- Investment of ₹10 lakh crore under the PMAY-Urban 2.0, including Central assistance of ₹2.2 lakh crore in the next five years.
- Rental housing with dormitory type accommodation for industrial workers will be facilitated in public-private partnership mode with viability gap funding support.
- 3 crore additional houses under the PMAY in rural and urban areas have been announced, for which the necessary allocations will be made.

## NATIONAL MISSION ON EDIBLE OILS - OIL PALM

**Context:** With a major spike in the import of edible oils in recent months, questions have been raised about the effectiveness of the NMEO-Oilseeds Scheme.



About National Mission on Edible Oils - Oil Palm (NMEO-OP):

- NMEO-OP is a Centrally Sponsored Scheme launched in 2021 with the following objectives:
  - Expand oil palm acreage by an extra6.5 lakh hectares by 2025-26
  - Increase palm oil production to 11.2 lakh tonnes by 2025-26 & 28 lakh tonnes by 2029-30.
  - Increase consumer awareness to maintain a consumption level of 19 kg per person per annum till 2025-26.
- Farmers will be provided financial assistance and will get remuneration under a price and viability formula.
- The Viability Formula is a Minimum Support Price-type mechanism and the govt will fix this in relation to the Crude Palm Oil (CPO) price.
- Special assistance of Rs. 250 per plant will be given to replant old gardens for their rejuvenation.
- It will have a special emphasis on India's North-Eastern states and the Andaman and Nicobar Islands due to conducive weather conditions.

#### **Edible Oil Sector in India:**

✓ India is the 3<sup>rd</sup> largest producer, 2<sup>nd</sup> largest consumer, and the largest importer of edible oilseeds.

- ✓ India imports vegetable oil worth more than USD 14 billion to meet chronic domestic shortages palm oil (57%), soybean oil (22%), sunflower oil (15%) and small quantity of mustard oil.
- ✓ In 2022-23, **15.53 million tonnes (55.76%) of total edible oil demand** was met through import likely to reach 15.6 million tonnes in 2023/24 due to falling global prices.
  - o **Palm oil** mainly from Indonesia and Malaysia,
  - o **Soyabean oil** Argentina, Brazil
  - o **Sunflower oil** Ukraine, Russia.
- ✓ Around half of all imports are from Indonesia.
- ✓ **Demand in India was 24.6 million tonnes** (MT) in 2020-21 with domestic availability of 11.1 MT (2020-21).
- ✓ Major oil palm-growing states: **Andhra Pradesh, Telangana, Kerala** (together account of 98% of India's production).

## **PM-KISAN SCHEME**

**Context**: The Centre has made it mandatory for new applicants to obtain a farmer ID for enrolment in the PM-KISAN Scheme.



About Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) Scheme:

- The scheme aims to supplement the financial needs of the farmers in procuring various inputs to ensure proper crop health and appropriate yields, commensurate with the anticipated farm income.
- Union Govt. transfers Rs 6,000 per year, in three equal instalments, directly into bank accounts of all landholding farmers irrespective of the size of their land holdings.
- It is a **Central Sector Scheme** with 100% funding from Govt of India.
- The responsibility of identification of beneficiaries rests with States/UTs.

#### **Achievements So Far:**

- Over 11 crore farmers across the country have availed the scheme.
- More than 3 crore women farmers have been included in the scheme.

## **Recent Initiatives under the Scheme:**

## • PM-KISAN Mobile App:

- Has been developed by National Informatics Centre along with the Ministry of Electronics and Information Technology.
- Farmers can view the status of their application, update or correct their Aadhaar cards and also check the history of credits to their bank accounts.

## • Facial Recognition:

- The Union Govt, has rolled out Face Authentication in PM-Kisan app to enhance efficiency and accessibility of the scheme.
- It is based on the biometric data available on UIDAI databases.

## • Integration with Bhashini

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 The scheme was integrated with the AI based Bhashini platform to provide farmers information in their mother tongue/native language.

## • Kisan Pehchan Patra (Farmer ID)

- From Jan 2025 onwards, this farmer ID is mandatory for registering new beneficiaries.
- It is a unique Aadhaar-linked identity that is connected to the state land records.
- It will include key data such as demographic details, crops cultivated and land ownership.
- The data collected will form the Farmers' Registry. This will benefit farmers by improving access to crop insurance, loans, and other govt schemes.

## Farmers excluded from PM KISAN:

- All institutional landholders.
- Former and present holders of constitutional posts.
- Former and present State/Central Ministers, MPs, MLAs; former and present Mayors, former and present Chairpersons of District Panchayats.
- All serving or retired officers and employees of Central/State Govt (Excluding Group D employees).
- All retired pensioners whose monthly pension is Rs.10,000/-or more.
- All Persons who paid Income Tax in the last assessment year.
- Professionals like Doctors, Engineers, Lawyers, Chartered Accountants, etc.

With the number of PM-Kisan beneficiaries dropping by over 20% to 8.12 crore from a peak of 10.47 crore in April-July 2022, the govt has added back 34 lakh farmers via the "saturation drive" under the Viksit Bharat Sankalp Yatra in 2023 and 2024.

## **START UP INDIA SCHEME**

**Context:** The Union Govt. recently commemorated the 9th anniversary of the

launch of the Start Up India Scheme in 2016.

## **About Start Up India Scheme:**

- It is a flagship initiative of Union Govt, intended to build a strong eco-system for nurturing innovation and Startups that will drive sustainable economic growth and generate large scale employment opportunities.
- Under this initiative, the govt. has launched
   I-MADE program to help Indian
   entrepreneurs build 10 lakh mobile app
   start-ups and PM Mudra Yojana to provide
   micro-finance, low-interest rate loans to
   entrepreneurs.
- It is being implemented by Dept. for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry.



## **Benefits under the Scheme**

- 10,000 crore startup funding pool.
- Reduction in **patent registration fees**.
- **Freedom from inspections** for first 3 years of operation.
- **Freedom from Capital Gain** Tax for first 3 years of operation.
- **Freedom from corporate tax** for first 3 years of operation.
- Self-certification compliance.

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### About the now-scrapped Angel Tax:

 Angel tax is an income tax levied at the rate of 30.6% when an unlisted company

## issues shares to an investor at a price higher than its fair market value.

- Fair market value is the price of an asset when buyer and seller have reasonable knowledge of it and are willing to trade without pressure.
   The excess funds raised at prices above fair value is treated as income, on which tax is levied.
- Initially, angel tax was applicable only to investments made by resident investors.
   The Finance Act, 2023 extended this provision to include foreign investors as well.
- This means that when a start-up raises funding from a foreign investor, it will also be counted as income and subjected to taxation.
- Angel tax essentially derives its genesis from Section 56(2)(viib) of the Income
   Tax Act, 1961. The finance act, 2012 introduced the section to impose taxes on any investment, received by any unlisted Indian company, valued above the fair market value by treating it as income.

## Status of Start-up Ecosystem in India

- ✓ >1 Lakh DPIIT-recognized startups across 763 districts as of 3<sup>rd</sup> Oct 2023.
- ✓ India is home to **111 unicorns** with a total valuation of USD 349.67 billion.
- ✓ 45 unicorns were born in 2021 and 22 unicorns were born in 2022.
- ✓ The start-up ecosystem in India ranks third after that of US and China.
- ✓ Number of cumulative start-ups has grown at 17% year-on-year since 2012 and has now crossed 1,18,000 (from roughly 400 startups in 2016).
- ✓ **States' Startup Ranking for 2022** by DPIIT: **Karnataka, Gujarat, and Kerala** recognized as best-performing states.

#### **Other Initiatives for Startups:**

- ✓ **Start-Ups Intellectual Property Protection (SIPP) scheme**: To facilitate start-ups to file applications for patents, designs and trademarks.
- ✓ **MAARG Portal:** National Mentorship Platform by Startup India to facilitate mentorship for startups across diverse sectors, functions, and stages.
- ✓ **National Startup Advisory Council:** To advise Union Govt. on measures needed to build a strong ecosystem for nurturing innovation and startups.
- ✓ Start-Up Village Entrepreneurship Program: Enable rural entrepreneurs to access banking system for receiving financial support. Implemented as a subscheme under DAY-NRLM.

A startup is defined by the DPIIT as an entity headquartered in India, opened less than 10 years ago, and has annual turnover less than ₹100 crore.

## **SVAMITVA SCHEME**



- The Survey of Villages and Mapping with Improvised Technology in Village Areas (SVAMITVA) is a central sector scheme launched in 2020.
- It was launched with a vision to enhance the economic progress of rural India by providing 'Record of Rights' to households possessing houses in inhabited areas in villages through the latest surveying drone technology.

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- The scheme seeks to achieve the following objectives
  - To bring financial stability to the citizens in rural India by enabling them to use their property as a financial asset for taking loans and other financial benefits.
  - Creation of accurate land records for rural planning.
  - Determination of property tax, which would accrue to the GPs directly in States where it is devolved or else, add to the State exchequer.
  - Creation of survey infrastructure and GIS maps that can be leveraged by any department for their use.
  - To support the preparation of a betterquality Gram Panchayat Development
     Plan (GPDP) by making use of GIS maps.
  - To reduce property related disputes and legal cases.
- Nodal Ministry: The Ministry of Panchayati
  Raj (MoPR) is the Nodal Ministry for
  implementation of the scheme.

## **PM WANI SCHEME**

**Context:** The Telecom Regulatory Authority of India (TRAI) has proposed a cap on data rates under the PM-WANI Scheme.



Prime Minister's Wi-Fi Access Network Interface

#### **About PM WANI Scheme:**

 Prime Minister Wi-Fi Access Network Interface (PM WANI) was launched by Dept. of Telecom (DoT) in December 2020 and aims to bolster the penetration of public WiFi hotspots to establish a robust digital communication infra throughout the nation, especially in rural areas.

- It enables any entity, such as a shopkeeper, a tea stall owner, etc. to set up a public Wi-Fi hotspot and provide internet service to customers.
- It aims to take forward the goal of the National Digital Communications Policy, 2018 (NDCP) of creating a robust digital communication infra.
- Nodal Agency: Ministry of Communications

## **Components of PM WANI:**

- Public Data Office (PDO): PDO is the entity that establishes, maintains, and operates the Wi-Fi hotspot and provides connectivity to users by procuring internet bandwidth from telecom/internet service providers.
- Public Data Office Aggregator (PDOA): PDOA is the entity that provides aggregation services, such as authorization and accounting, to PDOs, and facilitates them in providing services to the end users.
- App Provider: It is the entity that develops an application to register users and discover and display PM-WANI compliant Wi-Fi hotspots in proximity and also authenticate the potential users.
- Central Registry: It maintains details of App Providers, PDOAs, and PDOs. It is currently maintained by the Centre for Development of Telematics (C-DoT) under the Telecom Dept.

As of Nov 2024, the central registry had recorded 188 PDO aggregators, 109 app providers, and 11,50,394 public WiFi hotspots.

## **UDAY SCHEME**

**Context:** The Union Govt. is in the process of privatizing power distribution companies (discoms) in Union Territories

as part of the implementation of UDAY Scheme.



About Ujjwal Discom Assurance Yojana (UDAY) Scheme:

- It was launched in Nov 2015 to fix precarious financial position of state discoms. It aimed at bringing down Aggregate Technical & Commercial (AT&C) losses to 15% by 2019
- Though the main component of UDAY is debt management, other measures like raising operational efficiency were also proposed.

## **3 Components of UDAY Scheme:**

- States took over 75% of debt of their discoms and issued lower-interest bonds to service the rest of the debt.
- Discoms were given target dates (2017-19) to meet efficiency criteria.
- AT&C losses are to be reduced along with timely tariff revisions and elimination of gap between average per-unit cost of supply (ACS) and average revenue realised (ARR).

#### **Achievements of UDAY:**

- Out of the 28 states that implemented UDAY, 10 states have shown either reduced losses or profits.
- Instead of focusing on distribution only, it focused on interventions in power generation and transmission.

### Challenges of UDAY

- AT&C losses are still high: Some states have losses of >40% and only 7 states have recorded losses of less15%.
- Rising share of renewable energy (RE): A rising share of RE is displacing the low-cost coal in the distribution system, and this raises the ACS.
- Bonds are not very profitable: For example, every 1 lakh crore of UDAY bonds issued results in a loss up to Rs. 6,000 crores for banks and financial institutions that lent money to them.

AT&C losses refer to the mix of energy loss (technical loss, theft, inefficient billing) & commercial loss (late/no payment, poor collection, etc.).

## UJALA SCHEME



- In May 2015, the Indian government introduced the UJALA scheme, which is also known as the LED-based Domestic Efficient Lighting Programme (DELP), to promote energy efficiency in all households.
- The UJALA scheme is the world's largest zero-subsidy LED lamp distribution scheme.
- It is implemented by Energy Efficiency Services Limited (EESL) under the Ministry of Power.

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 Through the UJALA scheme, the government aims to save 85 lakh kWh of electricity and 15,000 tonnes of CO2 by replacing 77 crore traditional bulbs & CFLs and 3.5 crore streetlights with LEDs.

## • Eligible Households:

- Every domestic household having a metered connection from their respective Electricity Distribution Company is eligible to get the LED bulbs under the UJALA Scheme.
- The consumer can purchase the LED on EMI payment (monthly/bimonthly instalments in the electricity bill) or on upfront payment by paying the full amount.
- As part of its inclusive growth strategy to enable growth in lower-income communities, EESL has also enrolled Self-Help Groups (SHGs) for the distribution of LED bulbs under the UJALA programme.
  - The annual energy savings from the scheme stand at 47,883 million kWh, with a reduction in peak demand by 9,586 MW and an annual reduction of 3.87 crore tonnes in carbon dioxide emissions.
    - These savings were achieved through e-procurement and bulk purchasing, which allowed LED bulbs to be made affordable for millions of households.
    - UJALA succeeded in bringing down the retail price of LED bulbs from INR 300-350 per bulb to INR 70-80 per bulb.

## NATIONAL E-GOVERNANCE AWARDS SCHEME

- Recently, the Ministry of Personnel, Public Grievances & Pensions issued the scheme guidelines for the 28th National Awards for e-Governance (NAeG) 2025.
- It is recognized amongst the most competitive and prestigious digital

**governance** awards schemes in the country.

- Objective: The objective of the Scheme is to recognize and promote excellence in implementation of e-Governance initiatives.
- The NAeG Awards, 2025 will consist of:
  - o Trophy, Certificate and an incentive of Rs 10 lakh for Gold Awardees and Rs 5 Lakhs for Silver Awardees to be awarded to the District/organization for being utilized for implementation of project/programme or bridging resources gaps in any area of public welfare.
- This year 16 Awards are being conferred under the NAeG 2025. Of these 10 will be Gold Awards and 6 will be silver Awards.
- For the year 2025, there are six categories under which the National Awards for e-Governance 2026 will be conferred. These categories are
  - Government Process Reengineering by use of technology for Digital Transformation
  - Innovation by Use of AI and other new age technologies for providing Citizen-Centric Services,
  - Best e-Gov. Practices/Innovation in Cyber Security
  - Grassroot Level Initiatives for Deepening/ Widening of Service Delivery with focus on initiatives by Districts/ULBs/Gram Panchayats
  - Replication and Scaling up of Successful National Awarded Projects like NAeG, Prime Minister Awards in Excellence, Awards conferred by other Central Ministries by State/UT/ District.
  - Digital transformation by use of data analytics in digital platforms by Central Ministries/States/UTs

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Nodal Ministry: Ministry of Personnel,
 Public Grievances & Pensions

## LAKHPATI DIDI SCHEME

**Context:** The Union Ministry for Rural Development invited a group of 300 Lakhpati Didis from Self-Help Groups (SHG) to participate in the 76th Republic Day Celebrations at Kartavya Path in New Delhi.



## About Lakhpati Didi Scheme:

- It was announced by the PM in his Independence Day speech in 2023.
- It is implemented under Deendayal Antyodaya Yojana - National Rural Livelihood Mission (DAY-NRLM).
- Aim: Encourage women to start micro enterprises in their villages.
- Aims to train women in SHGs so that they can earn a minimum income of Rs 1 lakh per annum per household.
- Each SHG household is encouraged to take up multiple livelihood activities and value chain interventions.
- Women will be trained in various skills, such as plumbing, LED bulb making, drone operation and repair, and tailoring and weaving.
- By creating sustainable livelihood opportunities, it aims to not only boost incomes but also empower women to take on leadership roles within their communities.
- **Ministry of Rural Development** is adopting a whole-of-govt approach to

transform the rural economy through the creation of 'Lakhpati Didis'.

#### **About DAY-NRLM:**

- ✓ Centrally Sponsored Programme, launched by the Ministry of Rural Development in 2011.
- ✓ Aims to eliminate rural poverty through promotion of multiple livelihoods and improved access to financial services.

## Objectives:

- ✓ Mobilizing rural households into SHGs.
- ✓ Organizing one-woman member from each rural poor household into SHGs
- ✓ Providing training and capacity building to SHG members
- ✓ Providing access to financial resources from their own institutions and banks.

## Sub Programs:

- ✓ Mahila Kisan Sashaktikaran Pariyojana (MKSP): Aims to promote agroecological practices that increase women farmers' income & reduce input costs and risks.
- ✓ Start-Up Village Entrepreneurship Programme (SVEP): Aims to support entrepreneurs in rural areas to set up local enterprises.
- ✓ Aajeevika Grameen Express Yojana (AGEY): Launched in Aug 2017 to provide safe, affordable and community monitored rural transport services to connect remote villages.
- ✓ Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDUGKY): Building placement-linked skills of rural youth and placing them in higher wage employment sectors.
- ✓ Rural Self Employment Institutes (RSETIS): DAY-NRLM, in partnership with 31 banks and states, is supporting RSETIs for skilling rural youth.

Self-Help Groups (SHGs) are informal associations of people who choose to come together to find ways to improve their living conditions. It can be defined as self-governed, peer-controlled group of people with similar socio-economic background and having a desire to perform a common purpose.

## DEEP OCEAN MISSION

**Context:** The Ministry of Earth Sciences recently announced that India is set to launch its first human underwater submersible in 2025.



## **About Deep Ocean Mission (DOM):**

- India's DOM aims to explore and harness the immense potential of the ocean's depths.
- DOM will deploy an indigenous submersible with a 3-member crew to reach a depth of 6,000 meters.
- DOM is in line with India's Blue Economy Initiatives, including the **Draft Blue** Economy Policy.
- DOM is a mission under the PM's Science, Technology, and Innovation Advisory Council (PM-STIAC)
- Nodal agency: Ministry of Earth Science (MoES)

### **Deep Ocean Mission Aims:**

- Development of deep-sea mining tech and a crewed submersible for exploring depths of 6,000 m.
- Ocean climate change advisory services, involving extensive ocean observations and modelling.
- Technological innovations for deep-sea biodiversity exploration and conservation.
- Survey to identify potential sites of multimetal hydrothermal sulphides mineralization.
- Establishment of an advanced Marine Station for Ocean Biology.

## **Strategic Significance of DOM:**

- DOM aligns with 'New India 2030' vision, focusing on a blue economy as a core objective for India's growth.
- It is part of the **United Nations' 'Decade of Ocean Science'** (2021-2030).
- It involves collaborative efforts between multiple MoES Institutes:
  - Centre for Marine Living Resources and Ecology (CMLRE)
  - Indian National Centre for Ocean Information Services (INCOIS)
  - National Centre for Coastal Research (NCCR)
  - National Centre for Polar and Ocean Research (NCPOR)
  - National Institute of Ocean Technology (NIOT)

## Samudrayaan and Matsya6000:

- Launched in 2021 under DOM,
   Samudrayaan is India's flagship crewed expedition to reach a depth of 6,000 m in the Central Indian Ocean.
- The mission will utilize Matsya6000, a deep-ocean submersible designed for a three-member crew.

## **About Matsya6000:**

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- It will **initially operate at a depth of 500 meters**, with the goal of reaching a depth of 6,000 meters by next year.
- It will focus on exploring untapped underwater resources and advancing India's blue economy.
- It is being developed using 100% indigenous technology thus demonstrating India's commitment to self-reliance in advanced science and innovation.
- It aims to unlock vast underwater resources, including critical minerals, rare earth elements and undiscovered marine biodiversity.

## **SHREYAS SCHEME**

Scholarships for Higher Education for Young Achievers Scheme (SHREYAS)



- The Scholarships for Higher Education for Young Achievers Scheme (SHREYAS) has been a significant initiative by the Union Govt to support higher education for marginalized communities.
- Nodal agency: Ministry of Social Justice & Empowerment
- Recent updates reveal substantial investments and the broad reach of the scheme, reflecting its role in promoting educational advancement for SCs, OBCs and Economically Backward Classes (EBCs).
- The SHREYAS Scheme comprises two distinct programs designed to support higher education for different groups: SHREYAS for SCs and SHREYAS for OBCs and EBCs.
- Total Expenditure (2014 to 2024):

- Rs. 2708.64 crore spent for 97,928
   SC beneficiaries.
- Rs. 585.02 crore spent for 38,011
   OBC & EBC beneficiaries.
- SHREYAS for SCs: Scholarships provided to SC students for studies in 266 premier institutions like IITs, IITs, IIMs, and AIIMS.
- National Overseas Scholarship for 125 SC students to study in the top institutions abroad.
- 2000 fellowships offered annually for PhD studies in India, in addition to the regular UGC Fellowships.
- SHREYAS for OBCs and EBCs: Free Coaching provided for 3500 OBC and EBC candidates each year, aiding in competitive exams and higher education admissions.

## **TEAM INITIATIVE**



 The Ministry of Micro, Small, and Medium Enterprises (MSME) has launched the Trade Enablement and Marketing (TEAM) initiative to boost digital commerce for MSMEs.

- It aims to help MSMEs adopt digital commerce by leveraging the Open Network for Digital Commerce (ONDC).
- It has been launched under the "Raising and Accelerating MSME Productivity (RAMP)" Programme.
- Implementation Partner: National Small Industries Corporation (NSIC)

#### Aims:

- Empower MSMEs by integrating them into the digital commerce ecosystem.
- To promote inclusivity by ensuring **50%** participation of women-led businesses.
- To provide MSMEs with access to digital storefronts, payment solutions, and logistics support.

## Targets:

- Onboard 5 lakh MSMEs onto the ONDC network.
- **150+ workshops in tier 2 and 3 cities,** focusing on MSME clusters, women-led, and SC/ST-led businesses.
- The entry of China's DeepSeek model, which is cheaper and shows great efficiency in reasoning, has further complicated the AI debate.

## Reports and Indices

## **ANNUAL STATUS OF EDUCATION REPORT 2024**

Context: The ASER 2024 was recently released by Pratham NGO.

## Assessing reading levels

The table shows the percentage of children in Classes 3 and 5 able to read a Class 2 text in government schools



SOURCE: ASER(RURAL) 2024

## About Annual Status of Education Report 2024:

- ASER is a **nationwide**, **citizen-led household** survey that offers an insightful snapshot of children's schooling and learning in rural India.
- Launched in 2005. ASER tracks educational trends and challenges in rural areas, evolving in coverage, focus, and frequency.

#### **Focus Areas:**

- **Enrollment:** ASER tracks school and preschool enrollment trends, highlighting improvements and challenges by state and age group.
- **Learning Outcomes:** It assesses basic reading and arithmetic skills, children's progress at primary and secondary levels.
- **Digital Literacy:** ASER 2024 evaluates older children's smartphone skills, including tasks like setting alarms, browsing, and messaging.

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The **2024 ASER** was recently released by the Pratham Foundation.

- It is based on a 2024 survey conducted in 17,997 villages across 605 rural districts.
- It reached **649,491 children** in the 3-16 years age group, and tested the reading and arithmetic skills of over 500,000 children in the 5-16 years age group.

## **Key Findings:**

## Pre-primary (Age Group 3-5 Years):

- **Enrollment:** Enrollment in pre-primary institutions (Anganwadi, government preprimary class, or private LKG/UKG) has steadily increased since 2018.
- E.g., Enrollment of 3-year-olds rose from 68.1% in 2018 to 77.4% in 2024.
- **Institutions**: Pre-primary Anganwadi centres are the main provider of pre-primary education, enrolling over half of 3-4-year-olds, while one-third of 5-year-olds attend private schools or preschools.

## Elementary (Age Group 6-14 Years):

- **Overall Enrollment:** Enrollment dropped slightly from 98.4% in 2022 to 98.1% in 2024, with government school enrollment declining from 72.9% to 66.8%.
- Reading and Arithmetic Skills: In 2024, 23.4% of Standard (Std) III children in government schools could read Std II-level text, up from 16.3% in 2022.
- In 2024, 45.8% of Std VIII students could solve basic arithmetic problems, showing slight improvement.
- Arithmetic abilities improved more than reading skills, with government schools **showing faster progress** than private schools.

### Older Children (Age Group 15-16 Years):

- **Enrollment:** The dropout rate for 15-16-year-olds decreased from 13.1% in 2018 to 7.9% in 2024, with girls at a higher rate of 8.1%.
- Smartphone Access and Usage (Digital Literacy):
- **Access:** Nearly 90% of 14-16-year-olds have smartphone access, with boys (85.5%) using them more than girls (79.4%).
- **Ownership:** 27% of 14-year-olds and 37.8% of 16-year-olds own smartphones.
- Use: 82.2% of children use smartphones, with 57% for education and 76% for social media.
- **Digital Safety:** 62% of children know how to block/report profiles, and 55.2% know how to make profiles private.

### **School Observations:**

- Foundational Literacy and Numeracy (FLN): Over 80% of schools implemented FLN activities, with at least one teacher in 75% of these schools receiving FLN training.
- Attendance: Student attendance increased from 72.4% in 2018 to 75.9% in 2024, and teacher attendance increased from 85.1% to 87.5%.
- School Facilities: There were slight improvements in the availability of basic school facilities:
  - Usable girls' toilets increased from 66.4% in 2018 to 72% in 2024.
  - Drinking water availability rose from 74.8% to 77.7%.
  - The use of non-textbook books (e.g., novels, short stories, folk tales) by students increased from 36.9% to 51.3%.
  - The percentage of schools with playgrounds remained stable at around 66%.

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## **FUTURE OF JOBS REPORT**



- According to the World Economic Forum's Future of Jobs Report 2025 tech advancements, demographic shifts, and the green transition, will create 170 million new jobs by 2030. This is a net increase of 78 million jobs after accounting for 92 million displaced roles.
- Fast-growing roles include AI and machine learning specialists, big data experts, and FinTech engineers.
- Clerical jobs like data entry clerks and cashiers are declining due to automation.
- Employers anticipate 39% of skills will change by 2030, with growing demand for AI proficiency, creative thinking, and resilience.
- Businesses are focusing on reskilling, with 85% investing in upskilling programs.
- Collaboration among governments, academia, and industries is vital to bridge the skills gap and align with future job demands.

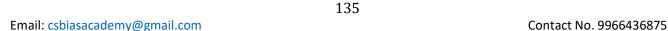
## GLOBAL INVESTMENT TRENDS MONITOR REPORT



 Recently, the Global Investment Trends Monitor Report has been released by the UN Conference on Trade and Development (UNCTAD).

- It stresses the continuous decline in international project finance.
- Global FDI has dipped by 8% in 2024, threatening international project finance which is a key driver for infra and energy investments.
- The international project finance in **developed economies saw a dip of 29%** while in developing countries, this dropped by 23% in number and 33% in value.
- Among the developed countries, the decline was widespread across all industries and countries with very few exceptions.
- Among the developing countries, Brazil, China, India, Indonesia and Mexico experienced declines in project numbers significantly larger than the global average.
- International finance in renewable energy slowed by 16% in both number and value. In finance flows for renewable energy generation, Africa was the only region to witness an increase in FDI.

- The number of SDG-related investments fell by 11% in 2024.
- A slowdown in investments was seen in three sectors: infra, agrifood systems, and water and sanitation.
- The report predicts moderate FDI growth in 2025 with improved financing conditions. However, risks are posed by geopolitical tensions and global economic instability.





## **Terms in News**

## **DEEP STATE**



- It is a network of governmental, corporate, and non-governmental elites who wield great power, control public policy, thwart the interests of common people and finally undermine elected politicians.
- It derives its name from the Turkish term
  "derin devlet", which translates to "deep
  state" in English. It refers to non-elected
  elements dominating a democratically
  elected govt.

## **Examples of the functioning of Deep State:**

- Regime Change: Missions carried out by the US on multiple continents. Eg: Removal of many democratic govts. in Latin America in the 1960s and 70s.
- Conflict and Wars: Defense companies pursue their interest and plunge nations into wars only to increase demand for their weaponry. Eg: Demand for weapons by Ukraine due to the Ukraine War.
- Economic Influence: Lobbying for market access and laws favorable to businesses from interested countries. Eg: Pressurizing countries at WTO negotiations for market access.
- **Surveillance:** Edward Snowden revealed that the US's National Security Agency

- (NSA) carried out surveillance on both US citizens and in many developing countries.
- Media and Narrative: Some media outlets misrepresent certain issues in India (e.g., communalism, Kashmir) to pressure the govt on human rights.
- Cyber Influence: Companies with influential market dominance like Google and Facebook influenced countries to ease regulations on data privacy and taxation.
- **Civil Society:** Funding NGOs in other countries to protest and thus slow down many economic projects. An Intelligence Bureau report once accused "foreignfunded" NGOs of having negatively impacted India's GDP growth by 2-3%.

## **K**URDS

- The Kurds are members of a large, predominantly Muslim ethnic group.
- They speak a language related to Farsi and live mostly in a mountainous region straddling the borders of Armenia, Iraq, Iran, Syria and Turkey.
- Treaty of Sèvres: After World War I, Western powers promised Kurds their own homeland in the agreement known as the Treaty of Sèvres.
- Treaty of Lausanne: But later the Treaty of Lausanne, ratified in 1924, divided the Kurds among the new nations of the Middle East.
- Today, there are more than 30 million Kurds living across the region, with about half of them in Turkey.
- Iraq is the only country in the region to have established an autonomous Kurdish region, known as Iraqi Kurdistan. Its parliament was founded in 1992.

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## **SHOMPEN TRIBE**



- They are one of the most isolated tribes on Earth.
- They are one of the least studied
   Particularly Vulnerable Tribal
   Groups (PVTGs) in India.
- They reside in dense tropical rain forests of the Great Nicobar Island of Andaman and Nicobar group of Islands. Around 95% of the island is covered in rainforest.
- The Shompen habitat is also an important biological hotspot, and there are two National Parks and one Biosphere Reserve, namely Campbell Bay National Park, Galathea National Park, and Great Nicobar Biosphere Reserve.
- Population: Though according to the Census (2011), the estimated population of Shompen is 229, the exact

- population of Shompen is unknown till todav.
- Most of them remain in the forest and have little or no contact with outsiders.
- They are semi-nomadic huntergatherers and their main sources of livelihood are hunting, gathering, fishing, and a little bit of horticultural activities in a rudimentary form.
- They live in small groups, whose territories are identified by the rivers that criss-cross the rainforest.
- Being nomadic, they typically set up forest camps where they live for a few weeks or months, before moving to another site.
- They collect a wide variety of forest plants, but their staple food is the pandanus fruit, which they call larop.
- Shompen speak their own language, which has many dialects. Members of one band do not understand the dialect of the other.
- They are of short to medium stature, have a round or nearly broad head shape, narrow nose, a broad facial profile, and distinctly exhibit Mongoloid features such as light brown to yellow brown skin and oblique eye features.
- Shompen have nuclear families comprising husband, and their unmarried children.
  - A Shompen family is controlled by the eldest male member, who controls all activities of the women and kids.
  - Monogamy is the general rule, although polygamy is allowed too.

## TELECOM REGULATORY AUTHORITY OF INDIA (TRAI)

- It was established by an Act of Parliament called the Telecom Regulatory Authority of India Act, 1997.
- Purpose: To regulate telecom services, including fixation/revision of tariffs for telecom services which were earlier vested in the Central Government.
- It is responsible for framing regulations, guidelines, and policies for the telecommunications sector in India.
   This includes setting rules related to tariffs, quality of service, and the allocation of spectrum.
- Composition:
  - It consists of a Chairperson and not more than two full-time members and not more than two part-time members.
  - o The chairperson and the members of TRAI are appointed by the Central Government, and the duration for which they can hold their office is three years or until they attain the age of 65 years, whichever is earlier.
- Government Control over TRAI:
  - TRAI is not a completely independent telecom regulator.
  - Under section 25 of the Act, Central Government has the power to issue directions which are binding on TRAI.
  - The TRAI is also funded by the Central Government.
- The recommendations made by the TRAI are not binding on the Central Government.
- Central Government has to mandatorily ask for recommendations from TRAI with respect to the need and timing of new service providers and the

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- **terms and conditions of the licence to be granted** to the service provider.
- TRAI also has the power to notify in the official gazette the rates at which telecommunication services are being provided in and outside India.

## **TINNITUS**

Researchers at the Indian Institute of Technology (IIT) Bombay have developed an affordable device to diagnose and manage tinnitus.

### **About Tinnitus:**

- It is the perception of sound that does not have an external source, meaning only the affected individual can hear it.
- Causes: It is usually caused by an underlying condition, such as age-related hearing loss, an ear injury or a problem with the circulatory system.
- Symptoms:
  - It can include sleep disturbances, depression, anxiety, irritability, and significant impacts on mental health and social life.
  - It can also cause other types of phantom noises in your ears, including: Buzzing, Roaring and Clicking etc.
- Treatment: It may include hearing aids, sound-masking devices, medicines, and ways to learn how to cope with the noise.
- The newly developed device
  - It features precise tinnitus matching, which helps identify the exact nature and frequency of the sound experienced by the patient.
  - It provides a customisable, multimodal approach to treatment, ensuring each patient receives a tailored experience suited to their unique condition.
  - The software also includes tools for tracking disease progression, enabling clinicians to

monitor patient improvement over time.

## **BELLY LANDING**

- It is also known as **gear-up landing**.
- It is an emergency landing technique that involves an aeroplane landing without extending its landing gear.
- It is a last resort for pilots who are unable to deploy their landing gear owing to a technical or mechanical malfunction.
- Belly-landings are risky and carried out only in an emergency. It results in considerable damage to the plane, its engines and wings as the aircraft skids to a stop and can leave those onboard injured.
- The friction generated by the aircraft skidding on the runway can also create sparks or result in a fire.
- A cockpit crew decides to land an aircraft on its belly in the following situations:
  - Landing gear fails to deploy.
  - A stricken aircraft cannot make it to an airport and landing is done in a field. The pilot considers skidding the aircraft to a stop safer than touching down on wheels.
  - Ditching: when an aircraft makes an emergency landing on water.
  - Any other situation a pilot considers a belly-landing safer than landing on wheels.

# WORLD AUDIO VISUAL & ENTERTAINMENT SUMMIT (WAVES)



- India is set to host the World Audio Visual Entertainment Summit (WAVES) for the first time in November 2025 in Goa.
- WAVES is an international summit organized by the Ministry of Information & Broadcasting, Government of India.
- It will take place from 20-24 November 2025 in Goa. The Entertainment Society of Goa will act as the Nodal Agency for the event.
- It is supported by the Federation of Indian Chambers of Commerce & Industry (FICCI) and Confederation of Indian Industry (CII).

## **Purpose:**

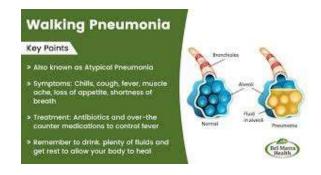
- WAVES aims to be a forum for dialogue, trade collaboration, and innovation within the evolving media and entertainment industry.
- The summit will showcase India as a hub for innovation and excellence in the media and entertainment sector, attract investments, and position India as a global leader in the entertainment business.

## Homo juluensis



- It is a new species of ancient humans with distinctively large skulls.
- The species, known as "big head people," lived 300,000 years ago and survived in small groups across eastern Asia before disappearing around 50,000 years ago.
- Homo juluensis includes mysterious groups like the Denisovans—ancient human relatives whose histories are still being uncovered.
- Fossils attributed to H. juluensis, primarily consisting of facial and jaw remains, exhibit dental characteristics reminiscent of Neanderthals.
- Initial measurements indicate that their braincases were up to 30% larger than those of Homo sapiens.
- They hunted wild horses in small groups, and made stone tools and possibly processed animal hides for survival.

## Mycoplasma Pneumoniae



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- Mycoplasma pneumoniae is a type of bacteria that causes "walking pneumonia," a mild form of pneumonia.
- It spreads through **respiratory droplets** from coughing or sneezing.

## Dangers:

- Symptoms include persistent cough, sore throat, fatigue, and fever.
- Typically mild but can lead to severe complications in individuals with compromised immunity or pre-existing conditions.

### Who is at risk:

- The bacteria can cause pneumonia in any age group, especially in children, elderly or those with weakened lungs.
- Vulnerable groups, who already have respiratory issues, are prone to developing this infection in a severe form.

#### Treatment:

• There are multiple antibiotics which effectively cure this infection.

## Dozer Push Mining Method



- The CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR) has successfully conducted the first trial blast for the Dozer Push Mining Method, integrating advanced digital technologies, for the first time in India.
- It is an unmanned, automated machinery to optimizes the mining process which ensures that vibration and flyrock are controlled within safe limits.
- It is an innovative approach developed by CSIR-CIMFR which aims to enhance safety and operational efficiency in mining processes.
- Advantages:

- It offers a viable alternative to the conventional truck-shovel mining technique or shovel-dumper and dragline methods.
- o It offers distinct advantages such as **improved efficiency by enabling faster coal recovery**, reducing delays caused by adverse weather conditions such as the monsoon season and highly cost-effective, with an estimated 7-10% reduction in operational costs compared to conventional methods.
- Additionally, it enhances productivity by improving the utilization of dragline machines and reducing unit costs.
- Moreover, the unmanned operation of the Dozer Push Mining method greatly enhances worker safety, minimizing the risks associated with manual labor and traditional mining techniques.

## BHARAT CLEANTECH MANUFACTURING PLATFORM



- Union Minister of Commerce & Industry has unveiled the Bharat Cleantech Manufacturing Platform at the Bharat Climate Forum 2025 in New Delhi. It is an initiative aimed at strengthening cleantech value chains in sectors such as solar, wind, hydrogen, and battery storage.
- It aims to position India as a global leader in sustainability and cleantech manufacturing, creating a compelling business case for international investors.
- Key features include:

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- Provides a platform for manufacturing scale-up and knowledge sharing.
- Aims to make India a compelling destination for clean-tech investors.
- Supports India's target of 500 GW of clean energy capacity by 2030.

Bharat Climate Forum 2025 was organized as a platform for policy makers and industry leaders to discuss climate action and clean energy solutions. It aims to align India's clean energy initiatives with global climate goals, particularly under the Paris Agreement.

## **MISSION MAUSAM**



- On the occasion of the 150th Foundation
   Day of the India Meteorological
   Department (IMD), PM Modi highlighted the importance of Mission Mausam.
- Mission Mausam was approved in September 2024 as a comprehensive program to modernize India's weather and climate monitoring infrastructure, focusing on advanced technologies for atmospheric observations and data analysis.
- It will be implemented by 3 institutes under the Ministry of Earth Sciences: India Meteorological Department (IMD), National Centre for Medium Range Weather Forecasting (NCMRWF), and Indian Institute of Tropical Meteorology (IITM).

#### **Key Features:**

- Advanced Infra: Deployment of latest radars, satellites, and high-performance computing systems for real-time atmospheric monitoring
- **Improved Forecasting:** Improve weather and climate prediction models with high-resolution data for accurate short and long-term forecasts.
- Monitor Air Quality: Enhanced air quality data collection for environmental interventions.
- Sectoral Benefits: Direct benefits to agriculture, disaster management, aviation, energy, defence, and health sectors.
- Vision-2047 Alignment: Complement the IMD Vision-2047 roadmap for climate adaptation and resilience.

## **MERA YUVA BHARAT**



- The Vikasit Bharat Young Leaders'
   Dialogue is being organized by the Union Govt., and this has brought focus on the role of Mera Yuva Bharat (MY Bharat).
- MY Bharat is an autonomous body established in Oct. 2023 under the Ministry of Youth Affairs and Sports.
- It aims to benefit the youth in the age group of 15-29 years, in line with the National Youth Policy.

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 National Youth Policy, 2014 reiterates the commitment of the entire nation to all-round development of its youth, so that

- they can realize their potential and aid in nation-building.
- In case of programme components specifically meant for the adolescents, the beneficiaries will be in the age group of 10-19 years.
- It will help in Setting the focus of the Government on Youth Led development and to make the Youth "active drivers" of development and not merely "passive recipients".

## **Objectives of MY Bharat:**

- The primary objective of MY Bharat is to create a whole-of-government platform for youth development.
- With access to resources and opportunities, youth would become community change agents and nation builders allowing them to act as the Yuva Setu between the Government and the citizens.

## PINK FIRE RETARDANT

- Fire retardant is a mix of chemicals used to extinguish or slow down the spread of fires.
- There are different types of fire retardant but to tackle wildfires in the US, authorities most commonly use Phos-Chek a brand of fire retardant which mostly contains an ammonium phosphate-based slurry.
- Typically, it is made of salts such as ammonium polyphosphate, which does not evaporate easily like water and stays for longer.
- Colour is usually added to the fire retardant to ensure that firefighters can see it against the landscape.
- This helps them create fire lines around the fire retardant, potentially saving lives and property.

#### What are the concerns?

- Environmental experts have said that spraying fire retardant using planes is ineffective, expensive and a growing source of pollution for rivers and streams.
- Phos-Chek "is laden with toxic metals, and estimated retardant use has released 850,000 pounds of these chemicals into the environment since 2009.
- These toxic metals include chromium and cadmium which can cause cancer, and kidney and liver diseases in humans and these toxic metals can kill aquatic life.







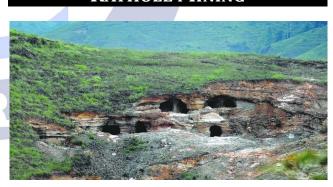
- Small Language Models (SLMs) are compact AI systems designed for specific, domain-focused tasks, requiring fewer parameters and computational resources than LLMs.
- How it works:

- o SLMs are trained on smaller datasets, focusing on specific applications, making them efficient for tasks like language translation, basic text summarization, or domain-specific problem-solving.
- Deployed efficiently on edge devices such as smartphones and IoT systems.

### Features:

- Compact Size: Reduced number of parameters compared to LLMs.
- Cost-Effective: Requires less computational power and training data.
- On-Device Deployment: Suitable for local execution without heavy cloud dependency.
- Quick Training: Faster to train and fine-tune for specific use cases.
- Energy Efficient: Lower resource consumption makes it ideal for lowinfrastructure settings.

## RATHOLE MINING



- Rat-Hole Mining is a primitive and hazardous method of mining, which involves digging small tunnels, just large enough for a person to crawl through, to extract coal.
- Rate Hole refers to the narrow pits dug into the ground, which are just large enough for one person to descend and extract coal.

- Once the pits are dug, miners descend to the coal seams using ropes or bamboo ladders.
- They, then, extract coal manually using primitive tools such as shovels, pickaxes etc.

## **Types of Rathole Mining**

- **Side Cutting:** In this type of Rat-Hole Mining, narrow tunnels are dug on the hill slopes. Workers use this tunnel to go inside until they find the coal seam.
- Box Cutting: In this type of Rat-Hole Mining, first a rectangular opening is made of a size varying from 10 to 100 sqm. That opening is, then, used to dig a vertical pit upto the depth until the coal seam is found.
- The process, then, involves digging rathole-sized tunnels horizontally through which workers can extract the coal.
- Use of this technique of coal mining is, generally, prevalent in the Northeastern states, especially Meghalaya.
- Despite several attempts by authorities to regulate or ban such practices, they have been prevalent in these regions.

## **PIG-BUTCHERING SCAM**

- The Pig-Butchering Scam, known as "sha zhu pan" in Mandarin, originated in China in 2016.
- The term translates to "killing pig game," referring to how scammers "fatten the pig" by building trust with victims before exploiting them.

#### Nature of the Scam

- Scammers typically target victims online via:
  - Social media platforms.
  - o Dating apps.
  - Messaging services.
- They groom victims through prolonged emotional manipulation, pretending to build relationships or offer lucrative investment opportunities.

#### Execution

- Victims are persuaded to invest in fake financial schemes, often mimicking cryptocurrency trading or other highreturn investments.
- Once significant sums are deposited, the scammers disappear with the money.

### Characteristics

- Personalized communication: Scammers spend weeks or months building trust.
- **Use of fake platforms**: Often mimic legitimate trading apps or websites.
- **Emotional exploitation**: Preys on loneliness, greed, or vulnerability.

## **Global Spread**

 Initially reported in China, but has since spread to other countries, including India, the US, and Southeast Asia, aided by global connectivity.

## URENGOY-POMARY-UZHGOROD PIPELINE

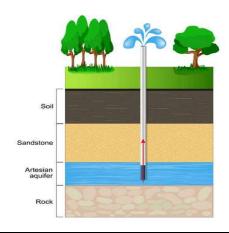


• The Urengoy-Pomary-Uzhgorod pipeline, also known as the Brotherhood pipeline, is a significant natural gas export route from Russia to Europe, primarily traversing Ukraine. The pipeline starts at the Urengoy gas field in northwest Siberia and extends southwest to Uzhhorod, Ukraine, near the Slovakian border.

- It spans approximately 4,500 kilometers (2,800 miles), with about 1,160 kilometers (720 miles) located in Ukraine.
- The pipeline was commissioned in 1984 and has been a crucial part of Russia's gas export strategy to Europe.

# ARTESIAN AQUIFER

- An artesian aquifer stores water under pressure between impermeable layers of sediment and soil below the Earth's surface.
- It is also referred to as "confined" water due to the presence of hardy materials above and below it.
- The water is confined in layers of rock or soil, creating pressure that forces it to the surface when tapped.
- Due to the underground pressure, water can flow freely from the well once it is drilled, often without the need for a pump.
- Artesian wells typically tap into deeper underground sources compared to regular wells.
- Artesian wells are formed when water from a higher elevation is trapped between two impermeable layers, and the pressure from the surrounding rock forces it upward when a hole or well is drilled.
- Artesian wells are commonly found in areas with specific geological conditions, and they can provide a steady flow of water for various uses, including irrigation and drinking water.
- Unlike regular tube wells or wells, artesian water can naturally sprout from underground due to high pressure.
- This water is located deeper below the surface and is surrounded by poorly permeable rocks that trap the pressure.
- Drilling or rupturing the confining layers releases this pressure, forcing water upward.



# RANI VELU NACHIYAR



- She was born on January 3 1730 to the Raja and Rani of the **Ramnad kingdom**.
- She was the princess of Ramanathapuram and the only child of Raja Chellamuthu vijayaragunatha Sethupathy and Rani Sakandhimuthal of the Ramnad kingdom.
- At the age of 16, she married the prince of Sivaganga, Muthuvadugananthur Udaiyathevar.
- She is known by Tamils as Veeramangai.
- She was trained in war to match weapons usage, martial arts like Valari, Silambam (fighting using the stick), horse riding and archery.
- She was skilled in the art of warfare and weaponry, Velu Nachiyar was also a scholar,

- and mastered several languages including English, French and Urdu.
- In collaboration with Hyder Ali and Gopala Nayaker, she waged a war against the British and emerged victoriously.
- She was the first queen to fight for freedom from the British in India.
- She granted powers to the Marudu brothers to administer the country in 1780.

# SAINT NARAHARI TIRTHA



- Narahari Tirtha (c. 13th century) was a prominent Dvaita Vedanta philosopher, scholar, and saint in the Madhva tradition.
- He was a disciple of Madhvacharya, the founder of Dvaita philosophy, and played a key role in spreading the doctrine in eastern India, particularly in the Kalinga region (modern Odisha and Andhra Pradesh).
- Believed to have hailed from Chikakolu town (present Srikakulam), Tirtha's ancestors were aristocrats in the Gajapati empire in what is now the Odisha state.
- Available epigraphical evidence suggests that **kings of Eastern Ganga dynasty** were assisted by the saint for three decades.
- He ensured that the king followed
   Sanatana Dharma and took care of its adherents by formulating a proper

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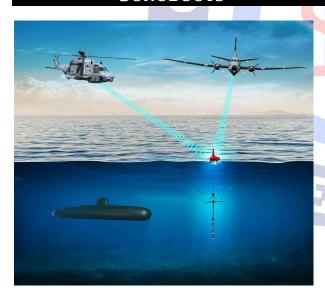
- executive system to oversee the temple administration.
- His contributions on this front are well documented in inscriptions available in the Simhachalam and Srikurmam (Srikakulam) temples.
- Some honorific prefixes being used along with the name of this saint are: 'Loka Suraksḥaṇa Ati Nipuṇaḥ', 'Yo Avati Kalinga Bhu Sambhavān'.
- As saint Ramanuja had introduced Vaiṣṇavism in the region, it was Narahari Tīrtha'sprolonged presence that resulted in Acharya's Vaiṣḥṇavism getting a firm following in this region, but in a completely non-interfering and secular manner.
- Shri Narahari wrote fifteen books, but only two of his works, Gita Bhasya and Bhavaprakasika are existing today.
- He is the first one to have composed **Devaranamas in Kannada.**
- He was instrumental in propagating two more art forms: Yakṣagana Bayalaṭa which is a form of dance-drama famous in and around coastal Karnataka; and the classical dance form that evolved in Andhra Pradesh as the famous Kuchipudi.
- The saint, upon his passing away, was consecrated near the rock adjacent to Chakratirtha at Hampi on the banks of river Tungabhadra.
- His contributions are linked to the temple traditions of Puri Jagannath, strengthening the Madhva influence in Odisha.

# BHARATPOL PORTAL

 The Union Home Minister of India launched the 'BHARATPOL' portal to enhance the efficiency of Indian investigation agencies in tracking fugitives and facilitating faster international assistance.

- It was **developed by the Central Bureau of Investigation (CBI)**, the portal allows
  central and state agencies to connect with
  the International Criminal Police
  Organization (INTERPOL) for real-time
  information sharing, replacing the
  previous system where only the CBI had
  this access.
- BHARATPOL streamlines international assistance to tackle rising transnational crimes like cybercrime, drug trafficking, and human trafficking.
- The portal will enhance the processing of Red Notices and other INTERPOL notices, making it easier for field-level police officers to address crimes.
- Capacity Building: The CBI is tasked with training states on using BHARATPOL and implementing the three new criminal laws for effective trials.

### **SONOBUOYS**



- India and the U.S. recently announced cooperation on the co-production of U.S. sonobuoys for Undersea Domain Awareness (UDA) for the Indian Navy, a high-end technology that allows tracking submarines in the deep seas and oceans.
- Sonobuoys are expendable, electromechanical acoustic sensors that relay

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- underwater sounds emitted from ships and submarines.
- They help in the detection, classification, and prosecution of adversarial ships and submarines.
- A naval helicopter or fixed-wing aircraft generally drops sonobuoys in a pattern.
- They are dropped in canisters and are deployed automatically upon impact with water.
- An inflatable system with a radio transmitter remains on the surface for communication with the ship or aircraft tracking it while sensors descend below the surface to a predetermined depth.
- It then relays acoustic information back to those monitoring them.
- A group of sonobuoys deployed in a pattern can find out the exact location of the submarine, which then can be tracked by other systems.
- Some sonobuoys are designed to be deployed in passive mode and some in active mode.
  - Active sonobuoys emit sound energy and receive the echo, based on which they transmit information back to the aircraft.
  - Passive sonobuoys, on the other hand, only listen for sounds coming from ships or submarines. They then transmit the sound back to the aircraft.
- There are also Special Purpose buoys that provide information about the environment, such as water temperature, ambient noise level, etc.
- Components: A typical sonobuoy consists
   of a cylindrical or spherical buoyant
   housing, sensors for detecting acoustic
   signals, a battery or power source, and a
   radio transmitter or other communication
   system to relay data to the host platform
   (e.g., aircraft or ship).

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 Other Applications: In addition to antisubmarine warfare, they are used for scientific research and environmental studies, including studying the behavior of whales and other marine creatures.

### **TODA TRIBES**



- It is one of the oldest ethnic groups residing in the Upper Nilgiris plateau in Tamil Nadu.
- The Todas are divided into five clans, namely: Paiki, Pekkan, Kuttan, Kenna and Todi.
- Language: They have their own language, which does not have a script.
- They live in a closed community or hamlet called mund.

#### **Society:**

- It is a patrilineage descent group whose membership is based upon a rule of patrilineal descent. Their community is divided into two endogamous groups, namely Tharthazoll and Theveioll.
- To maintain the social harmony or solidarity among the Toda tribal population of Todas are controlled for many generations by their own traditional Government called 'Noim'.
- This Noim is headed by a Toda tribal headman called Monegar. He has the full power to control the Todas and he also dispenses justice in the Toda community

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- Occupation: This tribe is largely dependent on buffalo herding and embroidery for its livelihood.
- Its members are incredibly skilled artisans known for the red-and-black embroidery on white fabrics that has even earned them a GI (geographical indication) tag.
- Festival: They celebrate 'Modhweth' festival, which is also called buffalo festival every year during the last Sunday of December or on the first Sunday of January.

# DI-AMMONIUM PHOSPHATE (DAP)

- The Union Cabinet has approved the extension of the One-time Special Package on Di-Ammonium Phosphate (DAP) beyond the Nutrient Based Subsidy (NBS) scheme.
- DAP is a two-nutrient fertilizer that contains 18% nitrogen (N) and 46% phosphorus (P) as P205.
- DAP is highly soluble in water and soil, releasing phosphate and ammonium that plants can use.
- DAP is a popular choice for farming and other industries because of its high nutrient content and physical properties. It's particularly effective in the early stages of plant development.

#### MELATONIN

- Scientists have proved that nanoof Melatonin formulation showed antioxidative improved and neuroprotective properties and could be a potential therapeutic solution Parkinson's disease (PD).
- It is a neurohormone secreted from the pineal gland of the brain in response to darkness.
- It is related to the timing and quality of our sleep and wake rhythms and determined by our internal body clock.

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- Melatonin makes us sleepy at certain times
  of the day. It starts to secrete when our
  bodies are getting ready to go to sleep and
  usually takes about 30 to 45 minutes to
  take full effect.
- Melatonin secretion is at its highest in the middle of the night and gradually starts to decrease until we are ready to wake up and start our day.

#### Key facts about Parkinson's disease

- It is a progressive neurological disorder that affects the nervous system and the parts of the body controlled by the nerves.
- It is a condition in which a patient has limited or no control over his movements and body balance.
- The risk of developing Parkinson's disease naturally increases with age, and the average age at which it starts is 60 years old.
- Many studies have suggested that men are more likely to be affected by Parkinson's than women.

#### • Cause:

- It is caused by the degeneration of nerve cells in the part of the brain called the substantia nigra, which controls movement.
- These nerve cells die or become impaired, losing the ability to produce an important chemical called dopamine.
- Dopamine operates with other neurotransmitters to help coordinate the millions of nerve and muscle cells involved in the movement.
- Lack of dopamine causes the slowed movements and tremors symptoms of Parkinson's disease.
- **Treatment:** There's no cure for this disease, but treatments can help significantly improve your symptoms.

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# United District Information System for Education (UDISE+)

- A comprehensive Management Information System under the Department of School Education and Literacy (DoSEL), Ministry of Education, Government of India.
  - Covers 14.72 lakh schools, 98.08 lakh teachers, and 24.80 crore students.
  - Functions as an online portal for school-related data like enrolment, teachers, and infrastructure.
  - School-wise data captured through
     Data Capture Format (DCF).
  - Three-stage data validation process: Block/Cluster level, District level, and State level.
  - Data certified by State Project
     Director (SPD) is considered approved.

#### Unique Features:

- Login Credentials: Each school receives a unique login ID and password for online data entry.
- Recognized as the most trusted pan-India database in school education.

# Highlights of UDISE+ Report 2023-24

#### Enrolment Trends:

- Total enrolment in 2023-24: 24.8 crore, a decline from 25.18 crore in 2022-23.
- Average enrolment (2018-2022):
   26.36 crore.
- First significant decline postpandemic: Over 1 crore drop between 2022-23 and 2023-24.

#### • Demographic Insights:

- Gender Ratio: Boys 51.9%, Girls
   48.1%.
- Minorities: 20% of total enrolment.

- Muslims: 79.6%,
  Christians: 10%, Sikhs:
  6.9%, Buddhists: 2.2%,
  Jains: 1.3%, Parsis: 0.1%.
- SC Enrolment: Declined from 4.59 crore (2022-23) to 4.47 crore (2023-24).
- OBC Enrolment: Declined from 11.45 crore (2022-23) to 11.2 crore (2023-24).

#### • Infrastructure Highlights:

- Over 90% of schools have basic amenities like electricity and gender-specific toilets.
- Gaps in advanced facilities:
  - Functional Computers: 57.2%.
  - Internet Access: 53.9%.

Ramps with Handrails: 52.3%.

# **BAANKNET PORTAL**

- It is an e-auction portal that consolidates information on all properties that are put up for eauction by public sector banks (PSBs).
- The portal is a one-stop destination for buyers and investors offering a wide range of properties.
- The listings on the new platform include residential properties such as flats, independent houses, and open plots, as well as commercial properties, industrial land and buildings, shops, vehicles, plant and machinery, and agricultural and non-agricultural land.

#### Features:

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The new portal is equipped with improved and enhanced features, including frictionless user journeys where the portal will have the entire pre-auction, auction, and post-auction journeys in a single application.

- o It includes an **automated and integrated payment gateway** alongside KYC tools, all
  built on a microservices-based
  architecture that allows for thirdparty integration through open
  application programming interface
  (API).
- Users can benefit from a dashboard feature for easy access to 'Spend Analytics' and various 'Management Information System (MIS) Reports' at the click of a button.
- Additionally, a dedicated
   helpdesk and call centre
   facility with a callback request
   option ensures customer support.
- By gathering all these details in one place, the portal simplifies the process of finding and participating in property e-auctions, making it easier for buyers and investors to identify valuable opportunities.
- It significantly aids the recovery process
  of public sector banks (PSBs), thereby
  improving the balance sheet of banks and
  enhancing credit availability to businesses
  and individuals.
- More than 122,500 properties have already been migrated to the new portal for auction.

# OPEN DATA KIT (ODK) PLATFORM

- It is a **digital platform** which allows the CAG to collect and manage data securely.
- It is used for designing, collecting, and managing data to enhance transparency in public spending and accountability in government schemes.

#### Features

 It is integrated with CAG's own operating system called OIOS.

- o It is an end-toend **encrypted** online portal.
- It is used to collect information for identifying problem areas warranting additional review.
- It also helps CAG in launching surveys in multiple languages at the same time

#### Benefits

- Beneficiary Survey is one of the sources for information for audit planning as well as for collection of audit evidence.
- ODK toolkit was deployed to ascertain patient satisfaction while gathering evidence in auditing the performance of the AIIMS at Mangalagiri in Guntur district and the AIIMS at Bibinagar in Hyderabad.

# NATIONAL TURMERIC BOARD



- The National Turmeric Board has been set up to focus on the overall development and growth of the turmeric sector in the country.
- It will be headquartered in **Nizamabad**, **Telangana**.
- The board will function under the Ministry of Commerce and Industry.

#### **Functions:**

- Focussing on the **welfare of the turmeric farmers** spread across India.
- Promoting research & development of new turmeric products and promote value addition of turmeric products for marketing abroad.
- **Creating awareness** on the essential and medical properties of turmeric
- Ensuring quality & safety standards of turmeric production and exports.
- Making efforts for increasing trade of turmeric and its products, especially given its health and wellness benefits.

#### **About Turmeric Sector in India:**

- India is the largest producer, consumer and exporter of turmeric.
- During 2023-24, India was responsible for over 70% of global turmeric production.
- There are **30 varieties of turmeric** produced in India.

# **BLOOD MONEY**

- In Islamic law, victims of crimes have a say in how criminals are to be punished. In the case of murder, this principle applies to victims' families.
- Although murder is punished via the death penalty, the victim's family (specifically, heirs) may choose to "forgive" the murderer in exchange for monetary compensation.
- This is the principle of Diyya, or, as it is commonly referred to "blood money". It can be traced to the Quran.
- Blood money is applicable in cases of unintentional homicide or accidental death, as well as in cases of bodily injury or harm caused by negligence or unintentional actions.

# **CENTRAL SUSPECT REGISTRY**

- It is an initiative to strengthen fraud risk management by creating a registry of identifiers.
- It was created based on the National Cybercrime Reporting Portal (NCRP).
- It contains data of 1.4 million cybercriminals linked to financial fraud and various cyber-crimes.
- It has been developed by the Indian Cyber Crime Coordination Centre (I4C), and can be accessed by states and UTs as well as central investigation and intelligence agencies.
- The registry was developed with collaboration from the banks/financial institutions and using it as a central-level database with consolidated data on cybercrime suspects.

#### **Indian Cyber Crime Coordination Centre (I4C)**

- It has been established under the Ministry of Home Affairs (MHA) to deal with cybercrime in the country in a coordinated and comprehensive manner.
- It focuses on tackling issues related to cybercrime for citizens, including improving coordination between various LEAs and stakeholders.
- The centre is located in **New Delhi**.
- It acts as a nodal point in the fight against cybercrime.
- It identifies the research problems and needs of LEAs and take up R&D activities in developing new technologies and forensic tools in collaboration with academia / research institutes within India and abroad.
- It prevents misuse of cyberspace for furthering the cause of extremist and terrorist groups.

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# ELECTROKINETIC MINING

 It is a novel technique which uses Electrokinetic i.e the application of a direct or alternating electric field to accelerate the migration of movable species, such as metals, water, and particles.

#### Issue with present technique:

- Currently, heavy rare earth elements (HREE) are dominantly mined from ionadsorption rare earth deposits (IADs) discovered in South China, and the regional mining produces and supports 95% of the global demand of HREEs.
- However, the conventional mining applies excessive usage of ammonium-salt-based leaching agents to recover HREEs from IADs, such technique exhibits low efficiency and devastating environmental impact on the local eco-system.

## **Advantages of Electrokinetic Mining**

- It reduces leaching agent usage by 80%, and energy consumption by 60%.
- High recovery rate: Its recovery rate exceeds 95% which marks a breakthrough in sustainable mining.
- It can simultaneously help reduce the environmental impacts and improve the recovery rate of REEs.



# EXERCISE LA PEROUSE



- It is the **fourth edition** of the multinational exercise.
- Participating organizations: This edition
  will witness participation of personnel/
  surface and sub-surface assets from various
  maritime partners including Royal
  Australian Navy, French Navy, Royal Navy,
  United States Navy, Indonesian Navy,
  Royal Malaysian Navy, Republic of Singapore
  Navy and Royal Canadian Navy.
- It aims to develop common Maritime Situational Awareness by enhancing the cooperation in the field of maritime surveillance, maritime interdiction operations and air operations along with the conduct of progressive training and information sharing.
- The exercise provides an opportunity for like-minded navies to develop closer links in planning, coordination and information sharing for enhanced tactical interoperability.
- The exercise will witness complex and advanced multi-domain exercises including surface warfare, anti-air warfare, air-defence, cross deck landings and tactical manoeuvres, as also the constabulary missions such as VBSS (Visit, Board, Search and Seizure) operations.
- Participation of the Indian Navy in the exercise showcases the high levels of synergy, coordination and interoperability between the like-minded navies and their

- commitment to a rules-based international order in the maritime domain.
- This visit is in consonance with India's vision of SAGAR (Security and Growth for All in the Region) to enhance maritime cooperation and collaboration for safer and secure Indo-Pacific Region.

# KAMPALA DECLARATION



- The African Union Summit on the Comprehensive Africa Agriculture Development Program (CAADP) concluded in Kampala, Uganda, with the adoption of the transformative Kampala Declaration.
- It aims to transform agriculture in Africa into a modern, climate-smart sector and aligns with CAADP's vision and African Union's Agenda 2063.

#### **Key Features:**

- Adoption of a ten-year agenda (2026– 2035) with implementation and monitoring strategies.
- Promotes climate-smart innovations for sustainable food production.
- Integrates agricultural policies with broader development objectives like nutrition and environmental sustainability.
- **Acknowledges global challenges** like COVID-19 and geopolitical disruptions.
- Ensures **involvement of diverse stakeholders,** including policy makers, farmers, and private sector.

 Creates monitoring frameworks for accountability and progress tracking.

# **BHARAT RANBHOOMI DARSHAN**



- The defense minister launched Bharat Ranbhoomi Darshan, a dedicated website aimed at promoting battlefield and border tourism.
- It features info about significant battlefields and border areas in India, offering virtual tours, historical narratives, and travel assistance.
- It was launched by the Ministry of Defence, in collaboration with the Ministry of Tourism.

#### Aim:

- Enhance awareness of India's military history and valor.
- Promote battlefield & border tourism.
- Drive socio-economic development in border regions.

#### Places included:

- **Galwan Valley** (Ladakh), site of the 2020 India-China clash.
- **Doklam (tri-junction** between India, Bhutan, and China).
- Sites along the Line of Control (LoC) and Line of Actual Control (LAC), including Nathu La Pass, Longewala, and locations from 1962 & 1971 wars.

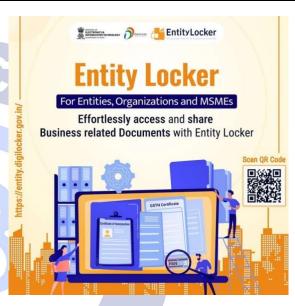
#### **Features:**

• **Virtual Tours:** Explore battlefields through interactive experiences.

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- **Travel Guidance:** Information on permits and travel arrangements.
- Collaborative Infrastructure: Joint efforts by the Indian Army and civil authorities to maintain access while preserving operational preparedness.
- Tourism Integration: Included in the Incredible India campaign to attract domestic and international tourists.

### **ENTITY LOCKER**



- Ministry of Electronics and Information Technology (MeitY) has launched Entity Locker, a digital platform aimed at easing document management for businesses and organizations in India.
- It is a secure, cloud-based platform developed by National eGovernance Division (NeGD) to simplify the storage, sharing, and verification of business documents.
- It aims to create a streamlined and efficient document management system for businesses and thus promote ease of doing business.
- Covers: Large Organizations, MSMEs, Startups, Trusts and Societies and Other Entities.

#### **Features:**

- Secure Cloud Storage: Provides 10 GB of encrypted storage for document management.
- Consent-Based Sharing: Ensures secure sharing of sensitive data with partners and stakeholders.
- Digital Signature Authentication: Enables legally valid authentication for documents.
- **Government Integration:** Seamlessly linked with the GST Network (GSTN) and the networks of the Ministry of Corporate Affairs and the Directorate General of Foreign Trade (DGFT).

# PM's Science, Technology & Innovation Advisory Council (PM-STIAC)

- The 27<sup>th</sup> PM-STIAC meeting was recently held in New Delhi.
- The PM-STIAC is an overarching council that aids the working of the Principal Scientific Advisor's (PSA) Office and appraises the PSA in specific science & tech domains, help comprehend challenges, formulate interventions, develop a futuristic roadmap and advise the Prime Minister accordingly.
- It was established in August 2018.
- The PM-STIAC aims to facilitate, through its missions, the process of collaboration and focus needed to solve complex problems in a reasonable time-frame.
- The 9-member PM-STIAC is **headed by the PSA to the Union Govt.**
- The office of the PSA was estd. by the Cabinet Secretariat in 1999. The PSA's office aims to provide pragmatic and objective advice to the PM and cabinet on matters related to science, tech, & innovation with a focus on its application in critical infra, economic and social sectors in partnership with Govt departments, institutions and industry.

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 The first PSA of India was Dr. APJ Abdul Kalam.

# DIAMOND IMPREST AUTHORIZATION (DIA) SCHEME

- Department of Commerce under the Ministry of Commerce and Industry has launched the Diamond Imprest Authorization (DIA) Scheme to bolster the global competitiveness of India's diamond sector.
- It allows duty-free import of natural cut and polished diamonds for export purposes. It aims to retain India's leadership in the global diamond industry value chain by facilitating ease of doing business.
- It will be implemented starting April 1, 2025.

#### **Features of the Scheme:**

- **Duty-Free Import:** Duty-free import of natural cut and polished diamonds of less than ¼ Carat (25 Cents).
- **Export Obligation:** Requires a minimum 10% value addition to ensure beneficiation.
- **Eligibility:** Exporters with annual exports of at least USD 15 million.
- **Support for MSMEs:** Provides a level playing field for smaller exporters, enabling them to compete globally.
- Global Beneficiation Practices: Inspired by beneficiation policies in diamondmining countries like Botswana, Namibia, and Angola, where manufacturers must establish cutting and polishing facilities.

India processes over 90% of the world's diamonds and provides jobs to approx. 5 million people. India contributes 19% of total global diamond exports.

# Mission SCOT

- Onboard SpaceX's Transporter-12 mission, Indian firm Digantara launched the SCOT (Space Camera for Object Tracking), the world's 1<sup>st</sup> commercial Space Situational Awareness (SSA) satellite.
- Transporter-12 Mission is part of SpaceX's rideshare program, aims to provide cost-effective access to space for multiple customers in a single launch.
- Mission SCOT tracks Resident Space
   Objects (RSOs) as small as 5 cm in LEO. It
   is backed by Aditya Birla Ventures and
   SIDBI.



#### India's Efforts in SSA:

- ISRO conducts proximity analyses and Collision Avoidance Manoeuvres (CAM) to prevent satellite collisions.
- Multi Object Tracking Radar at Sriharikota, but it has a limited range.
- ISRO System for Safe & Sustainable Operations Management (IS40M), releases the Indian Space Situational Assessment Report (ISSAR).
- Under the Network for Space Objects
   Tracking and Analysis (NETRA), ISRO is
   establishing a Space Surveillance and
   Tracking (SST) network with latest radars
   and telescopes to enhance threat analysis
   and protect space assets.

SSA refers to the practice of tracking and characterization of various space objects and their orbits.

# RHODAMINE-B



- Rhodamine-B is a water-soluble chemical compound and fluorescent dye which has various applications.
- It is a chemical commonly used for dyeing in the textile, paper, leather, and paints industry as a coloring agent that helps in attaining red and pink colours.
- As per the Food Safety Standards Act,
   2006 the preparation, packaging, importing, selling and serving food items with Rhodamine-B in wedding ceremonies and other public events is a punishable offence.
- Studies have shown that Rhodamine-B can cause **cell death**. In long-term use, it can cause **allergies** that can manifest in the form of irritation of the lip, tongue, eyes, cause upper respiratory allergies, damage the cerebellum tissue and brainstem, kidney, liver and increases the risk of **stomach tumour and cancer**.
- In 2024, **Tamil Nadu and Karnataka** banned the sale of cotton candy after lab analysis confirmed the presence of Rhodamine-B in many samples.

# **SHOMPEN TRIBE**



- They are one of the most isolated tribes on Earth.
- They are one of the least studied
   Particularly Vulnerable Tribal
   Groups (PVTGs) in India.
- They reside in dense tropical rain forests of the Great Nicobar Island of Andaman and Nicobar group of Islands. Around 95% of the island is covered in rainforest.
- The Shompen habitat is also an important biological hotspot, and there are two National Parks and one Biosphere Reserve, namely Campbell Bay National Park, Galathea National Park, and Great Nicobar Biosphere Reserve.
- Population: Though according to the Census (2011), the estimated population of Shompen is 229, the exact population of Shompen is unknown till today.
- Most of them remain in the forest and have little or no contact with outsiders.
- They are semi-nomadic hunter-gatherers and their main sources of livelihood are hunting, gathering, fishing, and a little bit of horticultural activities in a rudimentary form.
- They **live in small groups**, whose territories are identified by the rivers that criss-cross the rainforest.

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- Being nomadic, they typically set up forest camps where they live for a few weeks or months, before moving to another site.
- They collect a wide variety of forest plants, but their staple food is the pandanus fruit, which they call larop.
- Shompen speak their own language, which has many dialects. Members of one band do not understand the dialect of the other.
- They are of short to medium stature, have a round or nearly broad head shape, narrow nose, a broad facial profile, and distinctly exhibit Mongoloid features such as light brown to yellow brown skin and oblique eye features.
- Shompen have nuclear families comprising husband, wife, and their unmarried children.
  - A Shompen family is controlled by the eldest male member, who controls all activities of the women and kids.
  - Monogamy is the general rule, although polygamy is allowed too.

# **NICOBARESE TRIBES**



- "Nicobarese" is a general term used by outsiders to refer to an indigenous community that inhabits much of the Nicobar Islands.
- The Nicobar Islands are part of the larger Andaman and Nicobar archipelago located some 1,200 km off the east coast of India in the Bay of Bengal.
- The **Nicobar Island** constitute a land mass of 1,841 sq.km, which is about a **fourth of the**

total area of the entire Andaman and Nicobar archipelago. Of the twenty-four islands in the Nicobars, twelve are inhabited.

- The Nicobarese belong to the Southeast Asian cultural complex and speak an Austro-Asiatic language.
- However, they are far from being a homogenous group. The internal diversity among them takes the form of four distinct cultural groups. These are the islands of:
  - Car Nicobar;
  - Chowra (Chaura), Bompoka
     (Bompooka) and Teressa;
  - Katchal (Katchall), Nancowry,
     Kamorta (Camorta) and Trinket;
  - Little Nicobar, Kondul, Pulo Milo (Pilomillow), and Great Nicobar.
- According to the 2011 census the indigenous Nicobarese number 23,681. The population is unevenly distributed, with nearly half the population living on Car Nicobar.
- Largely self-sufficient, the Nicobarese practice a mix of hunting-and-gathering, fishing and raising pigs.

# ETIKOPPAKA TOYS

- These are known as Etikoppaka Bommalu, the exquisite wooden toys are rooted in a 400-year-old tradition of craftsmanship.
- Origin: These are originating in Etikoppaka village in Andhra
   Pradesh, the toys are renowned for their smooth contours and vibrant colours.
- These toys are made out of wood and are coloured with natural dyes derived from seeds, lacquer, bark, roots and leaves.
- The artisans mainly use the wood from **trees known as 'ankudu'** (Wrightia Tinctoria) that is soft in nature.
- These toys have no sharp edges. They are rounded on all sides.

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- In 2017, the toys received official recognition with a Geographical Indication (GI) tag, a hallmark of their authenticity and cultural significance.
- The Etikoppaka toys, with their vivid colours and timeless designs, have since gained international recognition.



# CERTIFICATES OF ORIGIN 2.0 SYSTEM



# Certificate of Origin (CO)

[(,)sər-'ti-fi-kət əv, 'or-ə-jən]

A document declaring in which country a commodity or good was manufactured.

- It is an upgrade designed to simplify the certification process for exporters and enhance trade efficiency.
- Features of Certificates of Origin 2.0

  Systems: Multi-user access, which enables exporters to authorize multiple users under a single Importer Exporter Code (IEC). Additionally, the system now supports Aadhaar-based e-

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- **signing** alongside digital signature tokens, providing greater flexibility.
- An integrated dashboard offers exporters seamless access to eCoO services, Free Trade Agreement (FTA) information, trade events, and other resources.
- The platform also introduces an in-lieu Certificate of Origin feature, allowing exporters to request corrections to previously issued certificates through an easy online application process.
- The Certificates of Origin platform processes over 7,000 eCoOs daily, including both preferential and non-preferential certificates, connecting 125 issuing agencies which includes 110 national and regional chambers of commerce & industry
- Certificates of Origin is a single access point for all exporters, for all FTAs/PTAs and for all agencies concerned.
- The platform has been designed and developed by DGFT and Regional & Multilateral Trade Relations (RMTR) Division, Department of Commerce, Ministry of Commerce and Industry.



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