



# **UPDATED CLASSROOM STUDY MATERIAL-1**

**(November 2024 to January 2025)**

# PT 365 UPDATED PART 1

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# 1. POLITY AND GOVERNANCE

## 1.1. 'SOCIALIST', 'SECULAR' IN THE PREAMBLE

### Why in the News?

Recently, Supreme Court in **Dr Balram Singh Vs Union of India (2024)** dismissed petitions challenging the inclusion of the words "socialist" and "secular" in Preamble through **42<sup>nd</sup> Amendment Act, 1976**.

### Key Observations made by SC

- **Constitution is a living document:** Addition of 'Socialist' & 'Secular' could not be invalidated merely on the ground that Preamble retained its original adoption date of November 26, 1949.
- **Dismissed retrospectivity:** Date of Preamble adoption does not curtail amending power of Parliament under Article 368.
  - **Article 368:** Permits amendment of Constitution and power to amend unquestionably rests with Parliament whose amending power extends to Preamble.
    - > **Amendment to constitution** can be challenged on various grounds, including violation of basic structure.
- **Defined Socialism and Secularism:** Court defined two terms as:
  - **Secularism:** State neither supports any religion nor penalizes the profession and practice of any faith, also the State maintains no religion of its own.
    - > It is enshrined in Articles 14, 15, and 16 along with Article 25, 26, 29 & 30.
  - **Socialism:** Reflects goal of economic and social upliftment and does not restrict private entrepreneurship and right to business and trade, a fundamental right under Article 19(1)(g).

### Judicial Pronouncements related to Preamble



#### Berubari Case

(1960): Preamble is not a part of Constitution.

**S R Bommai vs Union of India (1994) and Kesavananda Bharati v. State of Kerala:** Secularism is a basic feature of the Constitution.

#### Kesavananda Bharati v. State of Kerala (1973) and LIC of India (1995):

Preamble is part of Constitution and can be amended.

#### R C Poudyal v. Union of India:

Secularism represents nation's commitment to treat persons of all faiths equally and without discrimination.

### About Preamble

- Originally declared India a **Sovereign, Democratic and Republic**.
  - Does not grant substantive rights; **not enforceable in courts**; Signifies power vested to people.
- 42<sup>nd</sup> Amendment Act, 1976**
- **About:** Referred to as "mini-Constitution" as it amended Preamble, 40 articles, 7<sup>th</sup> Schedule and added 14 New Articles and two new parts to Constitution.
  - **Major changes made were:**
    - **Preamble:** Inserted words 'Socialist', 'Secular' and 'Integrity'.
      - > Changed 'unity of nation' to 'unity and integrity of the nation'.
    - **Changes in 7<sup>th</sup> Schedule:** Following categories were transferred from State list to Concurrent list:
      - > Education, forests, protection of wild animals and birds, weights and measures, administration of justice, constitution, and organisation of all courts-with the exception of the Supreme Court and the High Courts.

- **Emergency:** Amended Article 352 to authorize President to declare Emergency not only throughout country and but also in any part.
- **Addition of New DPSPs:**
  - > Article 39- To secure opportunities for healthy development of children.
  - > Article 39A-Equal justice and free legal aid.
  - > Article 43A-Participation of workers in management of industries.
  - > Article 48A-Protection and improvement of environment and safeguarding of forests and wildlife and
  - > **Addition of new parts- Part IV-A (Fundamental duties), Part XIV-A (Establishment of administrative tribunals).**

### 1.1.1. 75<sup>TH</sup> CONSTITUTION DAY OF INDIA

Constitution Day (Samvidhan Divas) is being celebrated on the day of **adoption of Indian Constitution i.e. 26th November 1949**. It **came into effect** on 26th January 1950.

#### About Samvidhan Divas

- It was instituted in **2015**, the 125th birth anniversary year of **Dr. B. R. Ambedkar**.
  - Dr. Ambedkar, known as '**Father of the Indian Constitution**' was the **Chairman of the Drafting Committee of the Constitution**.

#### About India's Constitution

- **Longest written Constitution.**
- **Not printed or typed** as it is **handwritten** by **Prem Behari Narain Raizada (English)** & by **Vasant Krishan Vaidya (Hindi)**.
- Pages, **artistically decorated** by artists from **Shantiniketan** under **Nandalal Bose**.

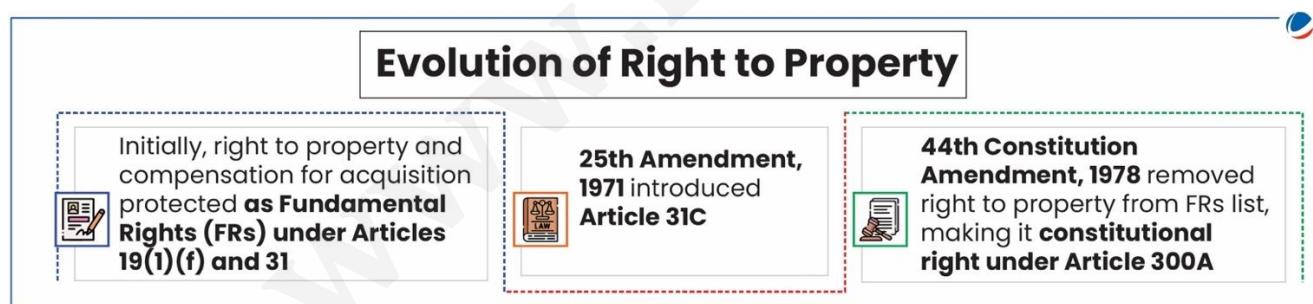
## 1.2. PROPERTY RIGHTS IN INDIA

#### Why in the News?

A nine-judge Constitution Bench of Supreme Court delivered a landmark ruling in **Property Owners Association v State of Maharashtra**, restricting state's powers to acquire private property.

#### More on the News

- Recent judgment has overruled the earlier rulings in **State of Karnataka v. Ranganatha Reddy (1978)** and **Sanjeev Coke Manufacturing Company vs. Bharat Coking Coal Ltd. and Anr. (1983)**.
- Both cases had declared private properties could be considered community resources.



#### Key highlights of judgement (**Property Owners Association v State of Maharashtra**)

- **Scope of Article 39(b):** Private property cannot automatically be classified as a "**material resource of community**" under Article 39(b).
  - Article 39B provides that ownership and control of material resources of community are so distributed as best to sub-serve the common good.

- **Authority for Property Acquisition:** Article 39(b) does not grant legislative power to state to acquire private property. It comes from sovereign power of **eminent domain and Entry 42 of List III in Seventh Schedule**.
- **Criteria for Classification:** Inclusion of private property as a "material resource" depends on **its nature, scarcity, impact on community welfare, and concentration in private hands**.
- **Validity of Article 31C:** Court ruled that Article 31C, upheld in Kesavananda Bharati case, is still valid.
  - Article 31C protected laws designed to fulfil DPSP (**Articles 39(b) and 39(c)**) from being challenged for violating FRs under Articles 14 and 19.
- **Balancing Public Welfare with Private Property Rights:** Ensuring government actions align with constitutional principles like **equality (Article 14)** and **right to property (Article 300A)**.
  - It also applied **Public Trust Doctrine**, mandating responsible resource management for public good.
- **Limits of Eminent Domain:** Court questioned broad application of **Doctrine of Eminent Domain** in land acquisition. Court clarified that not all privately owned resources qualify as material resources of community that can be appropriated for public good.

#### **Doctrine of Eminent Domain**

It provides that governments can acquire private property for public use, **balancing societal welfare with property rights**. This power is exercised by all levels of government, but fair compensation must be provided to owner.

- **Elements of Doctrine of Eminent domain:**
  - **Public Use:** Government can acquire private property for public purposes like infrastructure, but only if there's a legitimate need and no alternatives.
  - **Just Compensation:** When property is acquired, government must provide fair compensation to owner, based on market value at acquisition time.
  - **Requires Due Process:** Property owners must be notified in advance and given a chance to contest acquisition or negotiate compensation.
  - **Government Authority:** It can only be exercised by **government or authorized public agencies** with legal authority to take property for public use.
- **Important Case laws:** In **Sudharsan Charitable Trust v. Government of Tamil Nadu (2018)**, SC clarified that eminent domain is tied to state's sovereignty.
  - State can acquire private property for public interest, provided fair compensation is given. This power does not violate a person's right to livelihood or dignity.

#### **Public Trust Doctrine**

It helps protect environment by ensuring responsible management of natural resources. It was recognized as part of **Article 21** in **Th. Majra Singh v. Indian Oil Corporation and M.I. Builders v. Radley Shyam Sahu** case.

- **State as Trustee:** Under Public Trust Doctrine, State acts as a trustee, managing natural resources for public's benefit. It ensures that resources are used responsibly and not depleted or damaged.
  - In **T.N. Godavarman v. Union of India**, SC affirmed that State, as a trustee, must ensure **natural resources** are used sustainably for public good.
- **Citizens as Beneficiaries:** Citizens are beneficiaries of trust, using resources sustainably for their benefit and for future generations.

### **1.2.1. ILLEGAL DEMOLITION OF PRIVATE PROPERTY**

#### **Why in the news?**

Underlining principle of Separation of Power, SC used extraordinary powers **under Article 142** to issue pan-India guidelines to halt illegal demolition of private property.

#### **Supreme Court Guidelines**

These guidelines do not extend to encroachments into public land or unauthorized structures.

- **Prior Notice:** Demolition should be served to house owner by registered post with details of the nature of unauthorized construction, details of specific violations, etc.

- In case of unauthorized construction, **15 days' notice must be given to residents** to remove unauthorized construction or to find another place to live in.
- **Videography and Due Report:** Demolitions must be recorded on video and be produced as evidence in case of challenge to its legality. A **report** on actual demolition must also be placed before Municipal Commissioner.
- **Opportunity of Personal Hearing** must be given to the accused by designated authority.
- **Personal Liability of Officials** for violation of the Court's order.

#### **Concerns regarding illegal demolition of private property**

- **Against Principle of Natural justice, Due process of law and Rule of Law:** In case of demolition of house by state based on mere accusation.
- **Violation of Fundamental Right:** E.g. 'Right to Shelter' under Article 21.

### **1.3. MINORITY EDUCATIONAL INSTITUTION**

#### **Why in the news?**

Recently, Supreme Court overruled its **S. Azeez Basha vs. UOI (1967) judgment** which held that AMU cannot claim minority status under Article 30 (1) as it was established by a statute.

#### **More on news**

- SC in **S. Azeez Basha vs. UOI had** held that **AMU was neither established nor administered by Muslim minority**, and it is a **central university** established through AMU Act, 1920.
- Later on, Parliament through **AMU (Amendment) Act, 1981 restored AMU's minority status**.
  - However, **Allahabad High Court struck down** minority status of AMU in 2006 which has been subsequently challenged in SC in 2019.

#### **Key Highlights of Judgment**

- **No need for minority control over administration** to prove that it is a Minority Educational Institution.
- **Minority Status is not surrendered** because an institution was created by a statute or upon incorporation of university.
- **Communities that weren't a minority before Constitution** are **entitled to Article 30 (1)** protection for institutions established before independence.

#### **About Minority Educational Institutions (MEIs)**

- **Article 30(1):** Deals with right of linguistic and religious minorities to establish and administer educational institutions of their choice.
- **National Commission for Minority Educational Institutions Act (NCMEIA), 2004:** Enacted to safeguard educational rights of the minorities enshrined in Article 30(1).
  - Commission, a **quasi-judicial body with powers of a Civil Court**, decide questions relating to the status of any institution as a MEI.
- **Central Government has notified six religious minority communities** viz. Muslim, Christian, Sikh, Buddhist, Parsi and Jain. However, minorities communities is not defined in the Constitution.

#### **Special Privileges enjoyed by MEIs**

 Under Article 30(1A), if a **minority-run educational institution's property acquired, fair compensation** must be provided

 Not required to implement **reservation policy** under Section 3 of Central Educational Institute (Reservation in Admission) Act, 2006 (as amended in 2012)

 Right to Education Act, 2009 is not applicable to MEIs, aided or unaided

## 1.4. ESSENTIAL RELIGIOUS PRACTICE

### Why in the news?

Bombay HC reiterated its judgement in **Mahesh Vijay Case (2016)** where it held that **use of loudspeakers is not an essential part of any religion**.

### More in the news

- Bombay HC referred to Supreme Court judgement in **Church of God Case (2000)** which held that there is **no fundamental right to use loudspeakers under Article 19(1)(a) and Article 25 of constitution**.

### About Essential Religious Practices (ERP) test

- ERP is employed by Indian Judiciary for the adjudication of **matters of freedom of religion** and determining whether **essentiality of that religious practice**.
- ERP test was introduced by Supreme Court in **Shri Shirur Mutt Case (1954)** which extended **freedom of religion** by including **religious practices within meaning of religion** under its ambit.
  - It held that what constitutes the essential part of a religion is **primarily to be ascertained with reference to the doctrines of that religion** itself.

### Judicial Pronouncements related to Essential Religious

**Sri Adi Visheshwara Case, 1997:** Court distinguished between religious and secular functions of Temple.

**Acharya Jagadishwarananda Case, 2004:** Court held that what determines if a practice forms an essential part of religion is whether the absence of practice fundamentally alters the religion.

**Shayara Bano Case, 2017:** Held triple talaq to be against basic tenets of religion and **practice merely permitted or not prohibited** by religion **cannot be considered an essential or positive tenet** sanctioned by religion.

## 1.5. ATROCITIES AGAINST SCHEDULED CASTES

### Why in the News?

Standing Committee on Social Justice and Empowerment has raised concerns over failure of several States to establish necessary mechanisms to effectively address cases of atrocities against Scheduled Castes.

### What are Scheduled castes and their background?

- Article 366** defines the term ‘Scheduled Caste (SC)’. **Under Article 341**, President may notify SC for a state or UT after consulting State governor (of respective State). Parliament can amend this list by law.
  - Term, “**Scheduled Castes**” was first incorporated into **Government of India Act, 1935**.

### Mechanism to tackle Caste based atrocities

- Constitutional**
  - Fundamental Rights: Article 14, 15, 16, 17.**
  - DPSP: Article 46** (promotes educational and economic interests of SCs) and **Article 338** (National Commission for SCs).
- Legal**
  - Untouchability (Offences) Act in 1955:** To punish practice of untouchability. Later on, this was amended to **Protection of Civil Rights Act, 1976**.
    - Under this Act, ‘untouchability’ as a result of religious and social disabilities was made punishable.

- **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989:** Deals with offences specifically committed against members of SC/ST community in India – defined as “atrocities”.
  - > Provision of Special Courts for speedy trial.
- **Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013:** To eliminate practice of manual scavenging and rehabilitate those engaged in it.
- **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Amendment Act, 2015:** It added new crimes of sexual offences against women of SC/ST under the ambit of atrocities.

## 1.6. COMPARISON OF CONSTITUTIONAL FEATURES

### 1.6.1. USA PRESIDENTIAL ELECTION

#### Why in the News?

Recently, U.S. Presidential election was conducted through the Electoral College system.

#### US Presidential Elections vs. Indian Presidential Elections

Parameters	USA	India
<b>Composition of electoral members</b>	<ul style="list-style-type: none"> <li>Electoral College consists of <b>538 electors</b> (Senate 100 plus 3 for District of Columbia and 435 members of House of Representatives).           <ul style="list-style-type: none"> <li>○ Electoral College is an <b>intermediary body or process</b> that chooses U.S. President. In this system, voters of each State cast their ballots to choose members (or electors) of Electoral College who then vote to select President.</li> <li>○ States have varying numbers of electors based on their representation in Congress.</li> </ul> </li> <li>A majority of <b>270 electoral votes</b> is required to elect USA President.</li> </ul>	Members of an Electoral College consisting of <ul style="list-style-type: none"> <li>Elected members of both Houses of Parliament, and</li> <li>Elected members of Legislative Assemblies of States [including National Capital Territory of Delhi and Union Territory of Puducherry vide Constitution (Seventieth Amendment) Act, 1992 (Article 54)].</li> </ul> <p><b>Note:</b> Nominated members of either House of Parliament or Legislative Assemblies of State are <b>not eligible to be included in Electoral College</b>.</p>
<b>Governing Act/Rules</b>	Each state establishes its own election rules, reflecting U.S.'s decentralized system, where individual states oversee and manage their electoral processes.	<b>Presidential and Vice-Presidential Elections Act, 1952.</b>
<b>Nomination Process</b>	Candidates secure party nominations through primaries and caucuses.	Prospective Presidential candidate should get his/her nomination paper subscribed by <b>at least fifty electors as proposers and at least fifty electors as seconders</b> .
<b>Election Methods</b>	Most states follow <b>winner-take-all approach</b> , where candidate with majority in a state wins all its electoral votes, except in Maine and Nebraska. <ul style="list-style-type: none"> <li>● Candidates can win presidency without winning the popular vote.</li> <li>● Like <b>Donald Trump win in 2016</b>.</li> </ul>	System of <b>Proportional Representation by means of single transferable vote</b> and voting at such election shall be by secret ballot. <ul style="list-style-type: none"> <li>● Candidate needs to secure <b>50% of the total votes cast + 1</b> to win.</li> </ul>
<b>Vote-Counting Process</b>	Significantly prolonged largely due to <b>reliance on paper ballots and the handling of mail-in votes</b> (like our postal ballots).	Use of EVMs (Electronic Voting Machines).

<b>Frequency of election</b>	Every 4 years on a fixed schedule.	Every 5 years (except in exceptional cases).
<b>Running Mate</b>	Presidential candidate chooses a Running Mate (Vice Presidential Candidate).	<b>Separate election</b> takes place for Vice President of India.

### 1.6.1.1. CLEMENCY POWERS OF PRESIDENT OF INDIA AND USA

#### Why in the news?

**U.S. President Joe Biden** granted an unconditional pardon to his son facing sentencing for federal tax violation and gun convictions.

#### Comparison between Clemency Powers of President of India and USA

Attributes	Indian President	USA President
<b>Source of Power</b>	Article 72 of Constitution	Article II, Section 2 of Constitution
<b>Scope</b>	Power extends to not only <b>Federal/Union but also state crimes.</b>	Power extends to <b>Federal Crimes only</b> and not state crimes.
<b>Death Penalty</b>	President can <b>pardon death sentences including those by states.</b>	President can pardon only <b>federal death sentences</b> and <b>not for state crimes.</b>
<b>Role of Executive Branch</b>	Supreme Court in <b>Maru Ram v. Union of India</b> held that <b>President acts on advice of Council of Ministers</b> and cannot act on his own discretion.	<b>President can act on his own discretion.</b>
<b>Judicial Review</b>	<b>Scope of Limited judicial review</b> , courts can examine the process but generally not the decision itself.	Courts <b>can review pardons</b> in cases of suspected corruption or abuse of power.
<b>Limitations</b>	President <b>cannot pardon someone impeached by Parliament.</b>	President <b>cannot pardon someone impeached and convicted by Congress.</b>

## 1.7. 51ST CHIEF JUSTICE OF INDIA (CJI)

#### Why in the news?

Recently, Justice Sanjiv Khanna took oath as 51st Chief Justice of India (CJI) which was administered by the President of India during a ceremony at the Rashtrapati Bhavan.

#### About Appointment of CJI

- **Senior-most Supreme Court judge**, considered fit for the role, is usually appointed as CJI on the recommendation of the outgoing CJI.
  - This convention was breached in **1964, 1973, and 1977**.
- **Union Minister of Law, Justice and Company Affairs** seeks this recommendation, which is then **sent to Prime Minister**, who **advises President on appointment**.
  - Under **Article 124 (2)**, every Judge of SC be appointed by the President and shall hold office until he/she attains the age of 65 year.

## Key Role of CJI

- **First amongst the equals:** SC in **State of Rajasthan vs Prakash Chand (1997)** ruled that CJI is the **head of judiciary and holds a leadership position**, they do not hold any superior judicial authority over other SC judges.
- **Master of the Roster:** It is the **exclusive power of CJI to constitute Benches** (including Constitution benches), to hear cases.
- **Head of Collegium:** CJI heads Collegium for judicial appointments and transfers in the higher judiciary.
- **Appointment of officers and servants of SC:** It shall be made by CJI or such other Judge or officer of the Court as he may direct (Article 146).

## About Collegium System

- **Judicial Appointments:** Collegium is a system through which **judges of SC and HC are appointed by President under Article 124 and 217** of Constitution respectively.
  - It has evolved through judgments of SC, referred to as **3 Judges Cases** and pronounced in **1981, 1993, and 1998**.
- **Appointment in SC:** Collegium consists of **CJI and four other senior-most judges** of SC.
- **Appointment in HC:** Involve **recommendations by HC Collegium** (consists of Chief Justice and two senior-most judges of concerned HC) and **SC Collegium** (CJI and two senior-most judges of SC).

### Collegium system evolved with Three Judges Case

#### First Judges Case, 1981 or S P Gupta

**Case:** SC ruled that recommendation made by CJI to President can be refused for "cogent reasons", thereby giving greater say to executive.



#### Second Judges Case, 1993 (Supreme Court Advocates on Record Association (SCARA) vs Union of India)

**CJIs** only need to consult **two senior-most judges** over judicial appointments and transfers

**Third Judges Case, 1998:** CJIs should consult with **four senior-most SC judges** to form his opinion on judicial appointments and transfers.

## 1.7.1 IMPEACHMENT OF JUDGES

### Why in the news?

Recently, a motion to impeach a **Judge of Allahabad High Court** was submitted in Rajya Sabha.

### Background

- Impeachment process is aimed at ensuring **accountability** and preserving **judicial integrity**.
- None of **six attempts at impeaching a judge** since Independence have been successful.

### Constitutional Provisions Related to Impeachment of Judges

- While constitution **does not use word 'impeachment'**, it is colloquially used to refer to proceedings under **Article 124 (removal of a SC judge)** and **Article 218 (removal of a HC judge)**.
- **Grounds:** Proven misbehaviour and incapacity (Not defined in the Constitution).
- Procedure is regulated by **Judges Enquiry Act (1968)**.

### Steps in Impeachment Process

- **Initiation:** A motion must be signed by at least **100 Lok Sabha members** or **50 Rajya Sabha members**, and submitted to presiding officer of respective House.

- **Investigation:** If motion is admitted by presiding officer, then it is referred to a **three-member committee** comprising CJI or judge of SC, HC Chief Justice, and distinguished jurist.
  - Committee investigates charges and **submits report to Speaker/ Chairman** with its findings and observations. Speaker/ Chairman will then place report before Lok Sabha/ Rajya Sabha.
    - > If committee finds judge guilty, its report is **adopted by House where it was introduced**.
- **Parliamentary Approval:** Debate and voting in both Houses of Parliament **requires** special majority (**Two-thirds majority** of members present and voting and a majority of total membership).
- **Presidential Action:** If passed by both houses, motion is sent to **President** for final approval.

## 1.7.2 AD HOC JUDGE

Supreme Court (SC) proposed temporarily **appointing retired judges** on an **ad hoc basis** to clear backlog of criminal cases in High Courts (HC).

### About Ad Hoc Judge

- **Constitution:** Article 224A states that the **Chief Justice of a HC may**, with the **previous consent** of the President, request any person who has held the office of a Judge of a HC to **act** as a Judge of the HC.
- **Procedure for appointment:** Outlined in **1998 Memorandum of Procedure (MOP)**

**NOTE:** Article 127 deals with the appointment of **appointment of ad hoc Judges in SC** if the quorum is not met.

## 1.8. PRISON REFORM

### Why in the news?

Recently, Ministry of Home Affairs has **amended Model Prison Manual, 2016 rules and Model Prisons and Correctional Services Act, 2023** to address caste-based discrimination within prisons across country.

### More on news

- These amendments have been made in compliance with **Supreme Court order on caste-based discrimination of prisoners in Sukanya Santha vs. UoI & Others Case**.
- SC also directed that **reference to habitual offenders** in prison manuals should be in accordance with legislative definitions of respective State Laws.
  - Habitual offenders are individuals convicted and sentenced multiple times within five years for separate offenses, with sentences not reversed on appeal or review.
- **Key Changes Introduced**
  - Prison authorities must strictly ensure that **prisoners are not discriminated against, classified, or segregated based on their caste**, including in allocation of duties or work within prison.
    - > Discrimination based on caste is prohibited under **Article 14** (equality before law), **Article 15** (prohibition of discrimination), **Article 17** (abolition of untouchability), etc.
  - Provisions of '**Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013**' shall have a **binding effect** in Prisons and Correctional Institutions.

### About Prisons in India

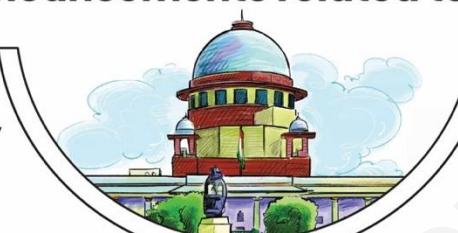
- **Constitutional Provision:** Prisons/ 'Persons detained therein' is a '**State' subject** (Entry 4). Administration and management of prisons is responsibility of respective State Governments.
- **Governance:** It is **governed by Prison Act 1894** and prison manuals of respective state governments.
  - **Prison Act 1894** was **first legislation** that governed management and administration of prisons in India.
  - Ministry of Home Affairs has prepared '**Model Prisons Act 2023**' which may **serve as a guiding document for States to reform British-era laws**.
  - Relevant provisions of '**The Prisons Act, 1894**', '**The Prisoners Act, 1900**' and '**The Transfer of Prisoners Act, 1950**' have been reviewed and assimilated in '**Model Prisons Act, 2023**'
- **Committee on Prison Reforms:** Krishna Iyer Committee, Amitava Roy Committee, Sir Alexander Cardew Committee (1919-20); Mulla Committee (1980-83).

## Salient Features of Model Prisons Act 2023

- Provisions for **grant of parole, furlough, and remission to prisoners** to encourage good conduct.
  - **Parole** is a system of **conditional release of a prisoner with suspension of the sentence** for a **specific period**.
    - > It is **not a matter of right**.
    - > Prisoners convicted of **multiple murders** or under **anti-terror UAPA** are **not eligible** for parole.
  - **Furlough** is given in cases of **long-term imprisonment**. Period of furlough granted to a prisoner is treated as remission (reduction) of his sentence.
- **Separate accommodation for women and transgender inmates** for better safety and security.
- Provision for **video conferencing with courts**, scientific and technological interventions in prisons.

Prisoners' Rights	
Right to Contest Election of Prisoners	Right to Vote of Prisoners
<ul style="list-style-type: none"><li>• A convicted person, <b>sentenced to imprisonment for 2 years, cannot contest election</b> (Section 8 (3) of RPA, 1951).</li><li>• Even if such convicted person is on bail, they cannot contest election.</li></ul>	<ul style="list-style-type: none"><li>• <b>A person confined in a prison cannot vote</b> (Section 62(5) of RPA, 1951).<ul style="list-style-type: none"><li>○ It is applicable to persons under a <b>sentence of imprisonment or transportation or is in lawful custody of police</b>.</li></ul></li><li>• <b>A person under preventive detention</b> is <b>entitled to vote</b> in an election (Section 62(5) of RPA, 1951 and Rule 18 of Conduct of Elections Rules 1961).</li></ul>

### Judicial Pronouncements related to Prisoners' Rights



**Prem Shankar vs Delhi Administration, 1980:** SC held there is no compulsive need to fetter (Chained) a person's limbs.

**Sheela Barse v. State of Maharashtra, 1983:** related to custodial violence to women prisoners in jails.

## 1.9. INTER-OPERABLE CRIMINAL JUSTICE SYSTEM (ICJS) 2.0

### Why in the news?

Recently, Ministry of Home Affairs asked National Crime Records Bureau (NCRB) to facilitate complete implementation of three new criminal laws in the **ICJS 2.0**.

### About Inter-operable Criminal Justice System

- It was conceptualised by e-Committee of Supreme Court of India and is being **implemented** as a project under the **Ministry of Home Affairs**.
- **Objective:** Enable **seamless transfer of data and information** among **different pillars** of the criminal justice system like Crime and Criminal Tracking Network & Systems (CCTNS) for police etc.
- **Focus:** Integration of CCTNS with **e-Courts and e-Prisons** database, and with other pillars of judiciary like Forensic Labs, Fingerprints and Prosecution.
  - It aims to achieve "**one data once entry**" across all the pillars.
  - CCTNS was launched **in 2009** as a **100 % Centrally Sponsored Scheme**.
- **Implementation:** By **NCRB** in association with National Informatics Centre (NIC).
- **Timeline:** **Phase-I** (2018-2022), **Phase-II** (2022-23 to 2025-26).

## Initiatives for leveraging Technology in Criminal Justice System



**Safe City Project** sanctioned in first phase in 8 cities to aid smart policing



**National Automated Fingerprint Identification System (NAFIS)** to facilitate rapid and accurate identification of individuals



**Strengthening of DNA Analysis Units** in Central and State Forensic Science Laboratories



**Common Integrated Police Application (CIPA)** to automate processes at police stations

### 1.9.1. E-COURTS MISSION MODE PROJECT PHASE III

#### Why in the news?

Union Cabinet approved Phase III of the e-Courts Mission Mode Project.

#### About e-Courts Project

- It is under implementation since 2007 for ICT enablement of Indian Judiciary as **part of National e-Governance Plan**.
- Its **phase I & II** were implemented during **2011-15** and **2015-23** respectively.

#### About e-Courts Phase III

- Central Sector Scheme:** For 4 years (**2023 to 2027**) with a financial outlay of **Rs.7,210 crore**.
- Aim:** Usher in a regime of **maximum ease of justice** by moving towards **digital, online and paperless courts** through digitization of the entire court records
- Objective:** To create a **unified technology platform for judiciary**, thus providing a seamless & paperless interface between courts, litigants & other stakeholders.
- Implementation: High Courts (HCs).**
  - Funds are released to HCAs by **Department of Justice** (Ministry of Law) on recommendation of **e-Committee (Supreme Court of India)**.
  - e-Committee** is responsible for **policy planning, strategic direction and guidance** for implementation of e-Courts project.

#### Components of e-Court Phase III

- S3WAAS Platform:** Supports secure and efficient data storage and access.
- e-Seva Kendra:** Offers electronic services and assistance to users.
- CLASS System:** Facilitates live audio-visual streaming incourtrooms.
- Scanning and Digitization:** The process of converting physical records into digital format
- Cloud Infrastructure:** Provides scalable storage and computing resources.
- Virtual Courts:** Enables remote court proceedings through digital platforms.

### 1.10. ELECTION COMMISSION OF INDIA (ECI)

#### Why in the news?

Election Commission of India (ECI) celebrated 75th Years of its establishment and also observed 25th January as National Voters Day.

#### About ECI

- Genesis:** ECI is a **permanent Constitutional Body** established on 25th January 1950.
- Constitutional Provision:** Part XV of Constitution entailing Articles **324 to 329**.
- Statutory provisions:** Chief Election Commissioner and other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, **2023** regulates their appointment, service conditions, tenure, etc.

- **Key role:** ECI Administers elections to
  - **Lok Sabha**
  - **Rajya Sabha**
  - **State Legislative Assemblies**
  - **Offices of the President and Vice President**
- **Composition:** Consists of **Chief Election Commissioner (CEC)** and **two Election Commissioners (EC)**.
  - Initially, the commission had only a CEC. In 1989, two Election Commissioners were appointed who served until 1st January 1990.
  - **Since 1993**, commission has **permanently included two Election Commissioners**.
- **Functions:**
  - Disqualifies candidates failing to lodge timely account of election expenses.
  - Ensures inner party democracy and grants status of National and State Parties.
  - Advisory jurisdiction on matters of post-election disqualifications.

### **Key Provisions of CEC and Other Election Commissioners Act, 2023**

2023 Act **replaces 1991 Act** and facilitates more autonomy to ECI by specifying qualification, reforming appointment process, providing security of tenure, etc.

<b>Specification</b>	<b>Details</b>
<b>Qualifications</b>	For CEC or EC the person must <ul style="list-style-type: none"> <li>● be holding or have held a <b>post equivalent to Secretary</b> to the Government of India.</li> <li>● possess <b>integrity and experience in managing and conducting elections</b>.</li> </ul>
<b>Search Committee</b>	<ul style="list-style-type: none"> <li>● <b>Composition</b> <ul style="list-style-type: none"> <li>○ Headed by the <b>Minister of Law and Justice</b>.</li> <li>○ Includes <b>two members</b> (rank of Secretary or higher).</li> </ul> </li> <li>● <b>Functions:</b> Prepares a panel of 5 candidates for selection.</li> </ul>
<b>Select Committee</b>	<ul style="list-style-type: none"> <li>● <b>Composition</b> <ul style="list-style-type: none"> <li>○ Prime Minister (Chairperson).</li> <li>○ Leader of Opposition in the House of the People (Member).</li> <li>○ Union Cabinet Minister to be nominated by the Prime Minister (Member)</li> </ul> </li> <li>● <b>Functions:</b> Recommends the eligible candidates to the President for the appointment of CEC and EC.</li> </ul>
<b>Term of Office of CEC and EC</b>	<ul style="list-style-type: none"> <li>● <b>Tenure:</b> 6 years or until 65 years of age, whichever is earlier           <ul style="list-style-type: none"> <li>○ If an EC becomes the CEC, combined tenure cannot exceed 6 years.</li> </ul> </li> <li>● <b>Reappointment:</b> Re-appointment is <b>not allowed</b>.</li> </ul>
<b>Salary and Benefits of CEC and EC</b>	<ul style="list-style-type: none"> <li>● Salary is <b>equivalent to that of a Supreme Court Judge</b>.</li> </ul>
<b>Resignation and Removal</b>	<ul style="list-style-type: none"> <li>● <b>Resignation:</b> CEC or EC can resign by writing to the President.</li> <li>● <b>Removal</b> <ul style="list-style-type: none"> <li>○ <b>CEC:</b> Can be removed like a Supreme Court Judge.</li> <li>○ <b>ECs:</b> Require the recommendation of the CEC for removal.</li> </ul> </li> </ul>
<b>Legal Protection to ECE and EC</b>	Protected from <b>civil or criminal proceedings for acts or words spoken in official capacity</b> .

## Key Initiatives of ECI

 <p><b>EVM,</b> Microcontroller-based <b>portable</b> device introduced in 1977; piloted in 1982 to modernize elections</p>	 <p><b>Systematic Voters' Education and Electoral Participation (2009)</b> to promote voter education, awareness, and literacy</p>	 <p><b>cVIGIL App (2018)</b> to let citizens report Model Code of Conduct violations</p>	 <p><b>National Electoral Roll Purification and Authentication Programme (2015)</b> to create error-free and authenticated electoral rolls</p>	 <p>ECI is <b>founding member</b> of Association of World Election Bodies, Stockholm and Commonwealth Electoral Network</p>	 <p><b>Introduction of Voter Verified Paper Audit Trail (2013)</b> for a verifiable paper trail, enhancing transparency</p>
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## 1.11. NON-GOVERNMENTAL ORGANIZATIONS (NGOS)

### Why in the News?

Ministry of Home Affairs (MHA) has instructed all **NGOs** registered under Foreign Contribution (Regulation) Act (FCRA), 2010 to **report any changes in their key office bearers and members**.

### More on the news

- This requirement still applies even if an **NGO's previous FCRA license application is still pending**.
  - NGOs may submit a new application, which will automatically replace the previous one.

### What are NGOs and how are they regulated in India?

- NGO** is a **non-profit organization, group or institution that operates independently from a government** and has humanitarian or development objectives.
- NGOs in India** are formed under-
  - Societies:** Registered under **Societies Registration Act 1860**.
  - Trusts:**
    - Private trusts** are registered under central government's **Indian Trusts Act, 1882**.
    - Public trusts** are registered under **state legislation concerned**.
  - Charitable companies:** Registered as non-profit companies under **Section 8 of Companies Act, 2013**.

### Constitutional Provisions related to NGOs



- > **7th Schedule: Trust and Charities/ Charitable institutions** fall under **Concurrent list** i.e. laws on subjects can be made by both Parliament and State Legislature.
- > **Article 19 (1) (c):** Guarantees **Right to form associations or unions**.

- NGOs receiving foreign contribution/ donation need to **mandatorily obtain prior permission for an FCRA registration license** from Ministry of Home Affairs **under FCRA, 2010**.
- Regulation of NGOs under FCRA, 2010**
  - It **regulates influx of foreign contributions** or funds given to individuals, associations or companies, including NGOs.
  - Act **restricts use of foreign funding** for purposes that may affect- nation's sovereignty and integrity; security, strategic, scientific or economic interest; public interest etc. or lead to **incitement of an offence** or **endangers the life** of any person.

### **Steps taken by Government to promote NGOs**

- **Provision of Funds:** Central Government provides funds to State Governments/UT Administrations for implementation of welfare schemes for Women and Children like Swadhar, Ujjawala, etc., through NGO's.
- **Schemes of Ministry of Culture:** Like **Cultural Function & Production Grant, Financial Assistance to Cultural organizations with National Presence etc.** maximizes participation in field of promotion and conservation of art and culture.
- **NGO Darpan:** Provides a unique ID to an NGO registered in NGO Darpan portal.

## **1.12. GOVERNANCE AND AI**

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

**India's first AI Data Bank** to boost innovation by offering researchers, startups, and developers access to diverse datasets for scalable AI solutions was launched recently.

### **More on the News**

- Data Bank will strengthen **national security** by enabling real-time analysis of **satellite, drone, and IoT data** for AI-driven disaster management and **cybersecurity**.

### **Potential of AI to transform governance in India**

- **Efficient Service Delivery:**
  - **Education:** NCERT has listed a set of 31 metadata elements to be tagged to each resource available in its NROER (National Repository of Open Educational Resources) repository.
  - **Agriculture:** **National Pest Surveillance System** utilizes AI and Machine Learning to detect crop issues, enabling timely intervention for healthier crops.
- **Inclusivity and Accessibility:** **Bhashini platform** uses AI to provide government services in regional languages.
- **Data-Driven Policymaking:** **India Urban Data Exchange** uses AI to optimize urban services like traffic management and waste disposal.
- **Judicial Efficiency:** **SUVAS** (Supreme Court Vidhik Anuvaad Software) is an AI-based translation tool that bridges language gaps in legal proceedings.
- **Disaster Management:** **RAHAT (Rapid Action for Humanitarian Assistance) app** predict natural disasters like **floods**, by providing early warnings and supporting evacuation, **search**, and **rescue operations** during emergencies.

### **Initiatives to Promote AI in India**

- **National Strategy for AI (NSAI):** NITI Aayog's #AlforAll strategy focuses on AI in sectors like healthcare, agriculture, and education.
- **India AI Program:** MeitY's initiative promotes AI innovation, skill development, and ethical practices.
- **Digital Personal Data Protection Act, 2023:** Strengthens data privacy, addressing AI-related concerns.
- **Global Partnership on AI (GPAI):** India collaborates globally to align AI strategies with international standards.
- **Skill Development:** Programs like **Responsible AI for Youth and Future Skills** expand AI education, especially Tier 2 and Tier 3 cities across.

### **1.12.1. SOVEREIGN ARTIFICIAL INTELLIGENCE (AI)**

India is aiming to develop its own sovereign AI.

#### **About Sovereign AI**

- It embodies a **nation's ability to independently develop, deploy, and govern AI technologies**.
- It aims at bolstering a nation's ability to protect and advance its interests through **strategic use of AI**.
- It is **based on digital sovereignty framework**.
  - Digital sovereignty refers to ability to have **control over own digital technologies**.

- **Six strategic pillars** guiding development of sovereign AI include digital infrastructure, workforce development, research, development and innovation, regulatory and ethical framework, stimulating AI industry and international cooperation.

## 1.13. COOPERATIVES

### Why in the news?

Union Home Minister and Minister of Cooperation and Prime Minister of India inaugurated UN International Year of Cooperatives 2025 (IYC 2025).

### About IYC 2025

- **Proclaimed by:** United Nations General Assembly in June 2024
- **Theme:** "Cooperatives Build a Better World"
- **Objectives**
  - **Raise Awareness:** Showcase cooperatives' role in sustainable development.
  - **Promote Growth:** Strengthen cooperative ecosystem.
  - **Advocate for Policies:** Support legal and policy reforms for cooperatives.
  - **Inspire Leadership:** Engage youth and foster cooperative leadership.
- **Host:** Committee for the Promotion and Advancement of Cooperatives (COPAC)



### What are Cooperatives?

- **Definition:** A cooperative is a **voluntary group** of individuals with **common needs** who unite to achieve **shared economic goals**.
- **Aim:** Supports members, with focus on **interest of poorer sections of society**, through **self-help** and **mutual aid**.
- **Resource Sharing:** Members **pool resources** and use them effectively **for mutual benefit**.
- **Cooperative Movement:** Global rise of cooperatives is partially due to work of **International Co-operative Alliance (ICA)**.
  - Founded in **1895** by **E.V. Neale** and **Edward Owen Greening**, ICA is a **global NGO** promoting **worker cooperation**.
  - In 2024, **India hosted ICA's Global Cooperative Conference** for the first time.
    - > Theme was "**Cooperatives Build Prosperity For All**", aligning with India's "**Sahkar Se Samriddhi**" vision.

### Cooperatives in India

- **Genesis:** Started with **Cooperative Credit Societies Act, 1904**.
- **Current Status:** India holds **27% of world's cooperatives**. **20% of Indians** are part of cooperatives (global average: 12%).
- **Leading States (57% of total cooperatives):** Maharashtra (constitutes **25%** of India's cooperatives), Gujarat, Telangana, Madhya Pradesh, Karnataka.
- **Constitutional Status: 97th Amendment, 2011** granted constitutional status to Cooperative Societies with following provisions-
  - **Fundamental Right:** Added "**cooperative societies**" in **Article 19(1)(c)**.
  - **Directive Principle:** Inserted **Article 43B** to promote cooperatives.
  - **New Part IXB:** Added **Articles 243ZH to 243ZT** for cooperative governance.
- **Governance Structure**
  - **Multi-State Cooperatives:** Falls under **Entry 44 of Union List of Constitution**. Governed by **Multi-State Cooperative Societies Act, 2002**.

- **State Cooperatives:** Falls under **Entry 32 of State List of Constitution**. Governed by respective **State Cooperative Societies Acts**.

#### Key Initiatives to Strengthen Cooperatives in India

Institutional Support	<ul style="list-style-type: none"> <li><b>National Cooperative Development Corporation (1963):</b> Statutory body under Ministry of Cooperation.</li> <li><b>Ministry of Cooperation (2021):</b> Established to boost cooperative development and rural prosperity.</li> <li><b>National Cooperative Policy:</b> National Level Committee constituted to draft policy under 'SAHKAR-SE-SAMRIDDHI' vision to promote cooperative growth.</li> </ul>
Legal & Governance Reforms	<ul style="list-style-type: none"> <li><b>Multi-State Co-operative Societies (Amendment) Act, 2023:</b> Strengthens governance, transparency, and electoral processes in cooperatives.</li> <li><b>Model Byelaws for Primary Agricultural Credit Societies (PACS):</b> Ensures better management, transparency, and accountability in PACS.</li> </ul>
Economic & Infrastructure Growth	<ul style="list-style-type: none"> <li><b>'World's Largest Grain Storage Plan' (Pilot Project):</b> Integrates PACS godowns into food supply chain for food security and economic growth.</li> <li><b>Margdarshika Plan:</b> Aims to establish 2 lakhs new PACS, Dairy, and Fishery Cooperatives.</li> <li><b>Standard Operating Procedures (SOPs) for 'White Revolution 2.0':</b> Focuses on women empowerment in dairy sector, aiming to increase milk procurement to 1,000 lakh kg per day by 2029.</li> </ul>
Technology & Financial Inclusion	<ul style="list-style-type: none"> <li><b>National Cooperative Database:</b> Provides data on co-operatives across states and sectors.</li> <li><b>NUCFDC (Umbrella Organization for Urban Cooperative Banks):</b> Will act as a Self-Regulatory Organization.</li> <li><b>SOPs for 'Cooperation among Cooperatives':</b> Enhances financial inclusion by facilitating bank accounts for cooperative society members.</li> </ul>

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## 1.14. MUNICIPAL CORPORATIONS IN INDIA

### Why in the News?

The report titled "**Own Sources of Revenue Generation in Municipal Corporations: Opportunities and Challenges**" was released by the RBI.

### Municipal Institutions in India

India's cities **cover just 3% of the land area** and contribute more than **60% to the country's GDP**.

- **74th Constitutional Amendment of 1992** formalized local governance in India, providing a constitutional basis for local governments.



- **Functions of Local Governments:** 74th Amendment, read with 12th Schedule, outlines 18 functions that state governments can delegate to municipalities, including **urban planning, land-use regulation, construction** etc.
- **Revenue and Fiscal Powers:**
  - **Article 243X:** Grants State governments the authority to authorize ULBs to impose **taxes, duties, and fees** and to assign certain revenue sources to ULBs.
  - **Article 243Y:** Assigns the responsibility of reviewing and recommending the devolution of taxes and grants to **State Finance Commissions**.

### Revenue Sources of Urban Local Bodies

Own sources	<ul style="list-style-type: none"><li>• <b>Tax Revenue</b>-Property tax, water benefit tax etc.</li><li>• <b>Non-tax Revenue</b>-User charges, developmental charges etc.</li><li>• <b>Other receipts</b>-lease rent, sale of rubbish etc.</li></ul>
Assigned (Shared) Revenue	Entertainment tax (subsumed under GST, except when levied by the local bodies), professional tax etc.
Grants-in-aid	Central and State Finance Commission devolution, Grants under programmes like SBM, AMRUT.
Borrowings	Loans from state and central governments, banks etc.

### Related news

#### Viksit Panchayat Karmayogi Initiative

**Ministry of Personnel, Public Grievances & Pensions** launched 'Viksit Panchayat Karmayogi' Initiative on Good Governance Day (celebrated on **25<sup>th</sup> December** to commemorate birth anniversary of Shree Atal Bihari Vajpayee).

- **Aim:** To enhance **capacity and competence of PRIs** by equipping elected representatives and officials with tools and knowledge required for effective governance and participatory planning.
- It is part of broader '**Prashasan Gaon Ki Aur**' campaign.
- Program promotes **decentralized governance** and grassroots-level decision-making.

## 1.15. TELECOMMUNICATIONS (PROCEDURES AND SAFEGUARDS FOR LAWFUL INTERCEPTION OF MESSAGES) RULES, 2024

### Why in the news?

Centre has notified **Telecommunication Rules 2024** under **Telecommunications Act, 2023**, replacing Rules 419 and 419A of the Indian Telegraph Rules, 1951.

### Key Highlights of Rules

- **Power to issue order:**
  - **Competent Authority:** Union Home Secretary (or Home Secretary at state government level) or an officer, not below the rank of Joint Secretary with proper authorization.
  - **Authorised Agency:** Any other agency authorised by Central Government.
  - **For remote areas or operational needs:** Orders could be issued by the Head or second senior most officer of the authorised agency (at Central or State level)
- **Interception Duration:** Orders are valid for 60 days and extendable up to 180 days.
- **Obligations relating to Interception:** Authorized agencies must appoint two nodal officers to communicate interception orders to the DoT nodal officer or the telecom entity's nodal officer.
- **Safeguard Mechanisms:**
  - **Review committee:** A Central Review Committee (led by the Cabinet Secretary) and State Review Committees ensure bi-monthly reviews of interception orders to ensure compliance.
  - **Destruction of records:** Interception records must be destroyed **every six months**, unless required for functional requirements or court directions.

## 1.16. NET NEUTRALITY

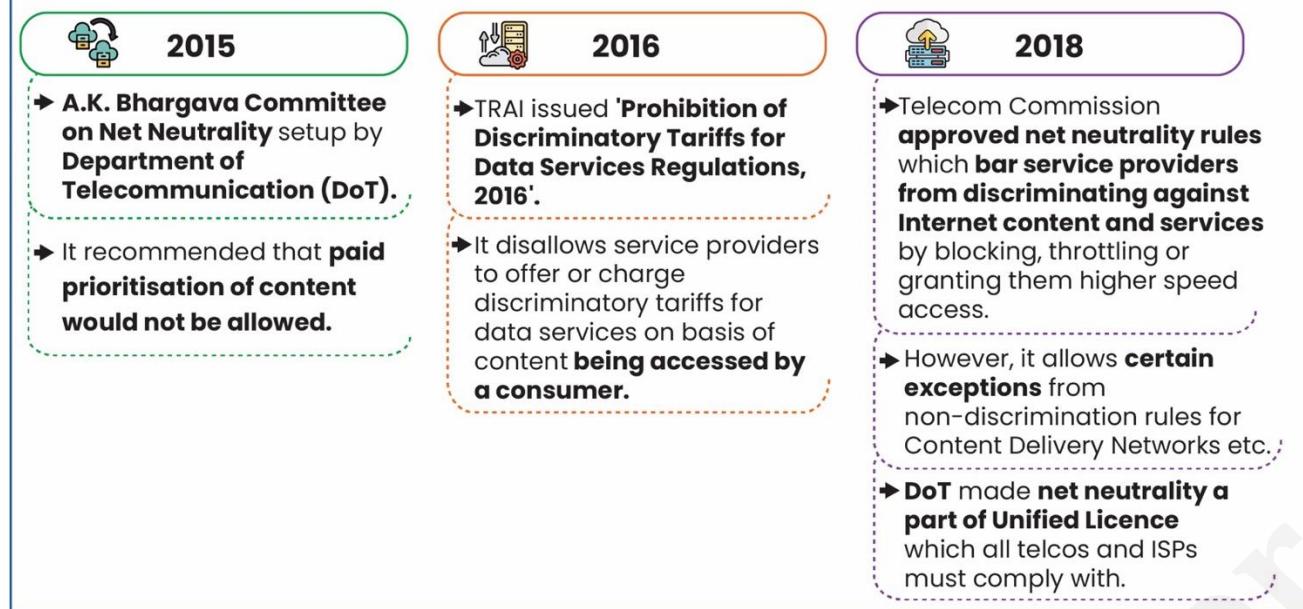
### Why in the news?

Recently, U.S. appeals court ruled that the Federal Communications Commission i.e. FCC (US's Telecom Regulator) did not have legal authority to reinstate landmark net neutrality rules.

### About Net Neutrality (NN)

- It is defined as the principle that **Internet Service Providers (ISPs) should treat all data on internet equally**, without discriminating based on user, content, platform, or application.
  - **It prohibits blocking, throttling, and paid prioritization** and ensures that **users have unrestricted access to information and services** without interference or bias.
- Term 'Net Neutrality' was **coined in 2003 by Tim Wu** (Columbia University law professor) who warned that broadband ISPs could become gatekeepers of internet access and block or charge for access to certain content.
  - **EU regulation** on open internet access gives end users the right to access and distribute lawful content and services of their choosing via their internet access service.
  - Countries like Brazil, Chile have also enacted laws or regulations to ensure net neutrality.
- **Telecom and Regulatory Authority of India (TRAI)** is an **independent regulator** in telecom sector, which mainly regulates Telecom Service Providers (TSPs) or ISPs and their licensing conditions, etc.

## Net Neutrality Regulatory Framework in India



### 1.17. BHARATIYA VAYUYAN VIDHEYAK, 2024

#### Why in the News?

Recently, President granted assent to **Bharatiya Vayuyan Vidheyak (BVV), 2024** aimed at replacing Aircraft Act, 1934 and modernise India's aviation sector, enhance **safety** measures, and align with **global standards**.

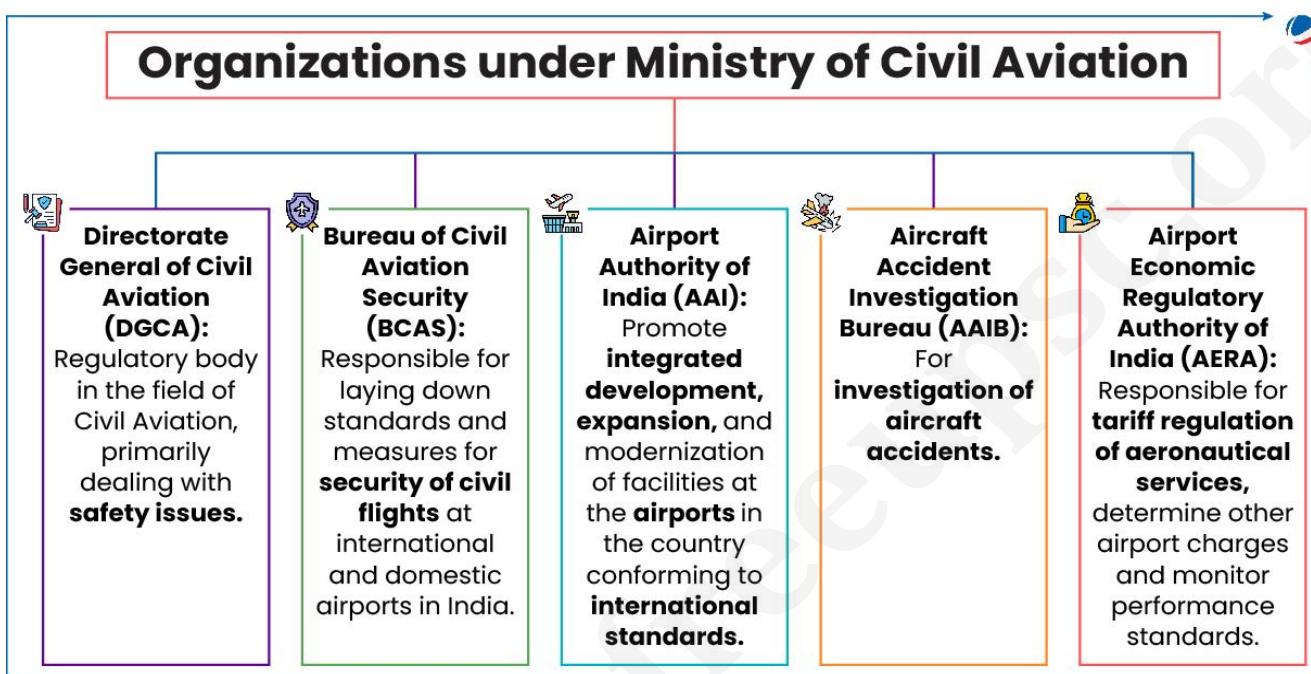
#### Key features of BVV, 2024

Parameters	Retained from Aircraft Act, 1934	Addition / Changes in Bharatiya Vayuyan Vidheyak, 2024
Regulatory Structure	<b>Act sets up 3 authorities:</b> <ul style="list-style-type: none"> <li>Directorate General of Civil Aviation (DGCA)</li> <li>Bureau of Civil Aviation Security (BCAS)</li> <li>Aircraft Accident Investigation Bureau (AAIB) <ul style="list-style-type: none"> <li><b>Central government</b> exercises overall <b>superintendence</b> over these bodies.</li> </ul> </li> </ul>	<b>Power to issue Radio Telephone Operator (Restricted) Certificate and licence transferred</b> from Department of Telecommunication to <b>DGCA</b> . <ul style="list-style-type: none"> <li>It <b>simplifies</b> licencing process by consolidation under <b>one authority, DGCA</b>.</li> </ul>
Regulation of aircraft-related activities	Act regulates activities related to aircrafts including <b>manufacturing, use, operation, and trade</b> .	It adds <b>powers to regulate design of aircrafts</b> .
Power to make Rules	Act empowers <b>central government to make Rules</b> on matters including: <ul style="list-style-type: none"> <li><b>regulation</b> of specified activities related to aircrafts and matters on <b>licensing, certification, and inspection</b>,</li> <li>regulation of <b>air transport services</b>, and</li> <li>implementation of <b>Convention on International Civil Aviation, 1944</b>.</li> </ul>	It adds that central government may make <b>Rules on radio telephone operator certificate and licenses</b> under <b>International Telecommunication Convention</b> .
Offences and Penalties	Offences punishable with <b>imprisonment up to 2 years</b> , a fine up to ₹1 crore, or both:	<b>Discretionary Penalties:</b> The Central Government has the <b>discretion</b> to

	<ul style="list-style-type: none"> <li>Violating rules on carriage of certain prohibited goods.</li> <li>Flying aircraft in a manner to cause danger to a person or property, and</li> <li>Failure to comply with directions of DGCA and BCAS.</li> </ul>	<b>specify civil or criminal penalties</b> for violation of certain Rules. E.g., implementation of international convention, protection of public health etc.
<b>Adjudication of penalties</b>	<p><b>Adjudication of penalties:</b> Central government-appointed Adjudicating Officer of the rank of Deputy Secretary or above.</p> <p><b>First Appeal:</b> Appellate Officer, who must be of a higher rank than the Adjudicating Officer.</p>	<b>Second Appeal:</b> Second Appellate Officer, must be an officer of a higher rank than the First Appellate Officer.

### Aviation Governance in India

- Aviation industry in India is governed by **Ministry of Civil Aviation (MoCA)**.
  - Its primary **responsibility** is **formulation of policy, rules, and regulations** related to civil aviation operations in the country or related to **international civil aviation operations** from the country.



- Key legislations:**
  - Aircraft Act 1934 (and Aircraft Rules, 1937):** Regulates various activities related to civil aviation, and licensing of airports.
  - Airports Economic Regulatory Authority of India (AERA) Act, 2008:** Set up an **independent authority (AERA)** to regulate tariffs for aeronautical services delivered at airports and **monitor performance standards of airports**.
  - FDI Policy:** 100% FDI is permitted in **scheduled Air Transport Service/Domestic Scheduled Passenger Airline (Automatic upto 49% and Government route beyond 49%)**.
    - However, for NRIs 100% FDI is permitted under **automatic route**.
    - 100% FDI in **Greenfield and Brownfield airport projects**.

### Key Initiatives for India's Aviation Sector

- Policies:**
  - National Civil Aviation Policy, 2016:** Aimed at making **regional air connectivity affordable and convenient**, establish an integrated eco-system promoting growth of civil aviation sector and tourism etc.

- **Vision 2040 for the Civil Aviation Industry in India:** A strategic roadmap by **Invest India** outlining the long-term goals and strategies for development of civil aviation sector.
- **Schemes/ Initiatives:**
  - **Maintenance, Repair and Operations (MRO):** Union Budget 2024-25 incentivises MRO activities in aviation.
  - **Privatization of Airports:** Privatization of 25 airports via PPP under **National Monetization Pipeline**.
  - **Technological interventions:** **NABH Nirman** (for airport capacity augmentation), **Digi Yatra** (for paperless travel) and **AirSewa** (for online grievance redressal), **GPS Aided GEO Augmented Navigation (GAGAN)** (developed by **AAI** and **ISRO** for Air Traffic Management).
- **International Cooperation:**
  - **Delhi Declaration on Civil Aviation (2024):** Adopted at **2nd Asia Pacific Ministerial Conference on Civil Aviation (APMC)**, it sets a framework for enhancing regional cooperation in civil aviation.

## 1.18. OTHER IMPORTANT NEWS

### 1.18.1. E-DAAKHIL PORTAL

**Department of Consumer Affairs** announces the nationwide implementation of the E-Daakil portal.

#### About E-Daakil portal

- It was first launched by **National Consumer Dispute Redressal Commission (NCDRC) in 2020**.
- It is an online platform that simplifies the **consumer grievance process**, allowing consumers to file complaints and track cases without the need to be physically present.
- Portal has been a key tool in **promoting consumer rights and delivering timely justice**.

### 1.18.2. AMRIT GYAAN KOSH PORTAL

**Amrit Gyaan Kosh Portal** on iGOT platform jointly developed by **Capacity Building Commission** and **Karmayogi Bharat** launched.

#### About Amrit gyan kosh Portal:

- **Purpose:** Capacity Building Commission aims to **empower educators and enhance the quality of public administration** training across India.
- This comprehensive repository **curates' best practices** from across India, **aligning with 15 of the 17 SDGs**.
- It encompasses diverse policy themes such as health, education, agriculture, and digital governance.

### 1.18.3. EDELMAN TRUST BAROMETER

Recently, annual **Edelman Trust Barometer** was released before the start of the World Economic Forum Annual Meeting.

- Released by **Edelman Trust**, it is a survey of **28 countries** that studies influence of trust across society — government, media, business, and NGOs.

#### Key Findings

- **India** slipped to **3rd position**, after China & Indonesia in terms of **people's trust** in the government, businesses, media etc. (in low-income population group).
  - Within **high income group**, **India was ranked 4<sup>th</sup>**.
- **India** ranked **13th** when it comes to **trust of people in other countries, in companies with Indian headquarters**.

### 1.18.4. ENTITY LOCKER

National eGovernance Division, under **Ministry of Electronics and Information Technology**, has developed **Entity Locker**.

#### About Entity Locker

- It is a secure, **cloud-based solution** that **simplifies storage, sharing, and verification of documents** for large organisations, corporations, micro, small, and medium Enterprises, etc.
  - It is a **critical component of India's Digital Public Infrastructure**.
- **Entity Locker offer:**
  - **Real-time access and verification** of documents through integration with government databases.
  - **Consent-based mechanisms** for secure sharing of sensitive information.
  - **Aadhaar-authenticated role-based access management** to ensure accountability.
  - **10 GB of encrypted cloud storage and Legally valid digital signatures** for authenticating documents.

### 1.18.5. INTER-STATE COUNCIL (ISC)

Inter-State Council has been reconstituted.

#### Inter-State Council (ISC)

- **About:** It is a forum through which **Centre and the state co-ordinate and co-operate** with each other.
- **Genesis:** Established under **Article 263** of Constitution through a Presidential Order in **1990** on recommendation of **Sarkaria Commission**.
- **Composition:** It consists of:
  - **Chairman:** Prime Minister
  - **Members:**
    - > CM of all States.
    - > CM of Union Territories having a **Legislative Assembly and Administrators of UTs** not having a Legislative Assembly.
    - > **6 Ministers** of Cabinet rank in Union Council of Ministers to be nominated by Prime Minister.

### 1.18.6. SUBORDINATE LEGISLATION

Recently Subordinate legislations notified under the Post Office Act, 2023 i.e. the Post Office Rules, 2024 and Post Office Regulations, 2024.

#### About Subordinate Legislation

- It is the legislation made by an authority subordinate to the legislature.
- Such legislation is to be made within the framework of the **powers so delegated by the legislature** and is, therefore, **known as delegated** or subordinate legislation.
- '**Committee on Subordinate Legislation (15 members)**' constituted in both houses ensure that executive powers are exercised within constitutional and legislative boundaries.

### 1.18.7. PARLIAMENTARY SECRETARIES IN STATE

Supreme Court stayed Himachal Pradesh High Court's direction which declared power to appoint chief parliamentary secretaries and parliamentary secretaries in the state as unconstitutional.

#### About Parliamentary Secretaries in State

- They are appointed to assist ministers with parliamentary work.
- They often **hold the rank of Minister of State** and have same entitlements and are assigned to a government department.
- Various high courts have deemed appointment of Parliamentary Secretaries as unconstitutional.
- **Issues in Appointment:** Appointment of **Parliamentary Secretaries** goes against **91st Amendment of the Indian Constitution**, which introduced Article 164(1A).
  - Article 164(1A) limits total number of ministers, including Chief Minister, **to 15% of state's legislative assembly members**.

## **1.18.8. PANCHAYAT SE PARLIAMENT 2.0**

**Lok Sabha Speaker** has inaugurated **Panchayat Se Parliament 2.0**.

### **About Panchayat Se Parliament 2.0**

- Organised by **National Commission for Women** and **Lok Sabha Secretariat** in collaboration with **Ministry of Tribal Affairs**.
- Aims to **empower elected women representatives from Scheduled Tribes from Panchayati Raj institutions** and enhance their knowledge of constitutional provisions, parliamentary procedures, and governance to foster effective leadership.

## **1.18.9. ADJOURNMENT SINE DIE**

The winter session, 2024 of Parliament (both Houses) was **adjourned sine die** recently.

### **About Adjournment sine die**

- It means **terminating a sitting of Parliament for an indefinite period**. Here, the House is adjourned **without naming a day for reassembly**.
- **Power** of adjournment sine die lies with the **Presiding Officer of the House**.
- **Presiding Officer** can also **call a sitting of the House any time** after the House has been adjourned sine die.

## **1.18.10. PRIVILEGE MOTION**

Recently, a Privilege Motion was moved in the Parliament by the opposition members.

### **About Privilege Motion**

- It is a **formal request** made by member(s) to presiding officer of the House to address an **alleged breach of Parliamentary Privileges**.
  - **Parliamentary privileges** are the **sum of the peculiar rights enjoyed by -**
    - > **each House collectively** as a constituent part of Parliament and
    - > **by members of each House individually**, without which they could not discharge their functions, efficiently and effectively, and which exceed those possessed by other bodies or individuals
- They are **not codified** and are derived from various provisions such as **Article 105, Code of Civil Procedure, 1908, Parliamentary Conventions**, etc.

## **1.18.11. SUPPLEMENTARY GRANT**

Recently, the Centre sought Parliament's approval for net additional expenditure as part of **supplementary demand for grants**.

### **About Supplementary Grants**

- Under Article 115, it is raised when the money previously authorized by Parliament for a particular service for that financial year is **found to be insufficient**.
- **Other Grants under Article 115**
  - **Additional Grant:** It is requested if **additional expenditure is needed upon some new services not contemplated** in the budget for that year.
  - **Excess Grant:** It is given when the **money has already been spent in excess** of the **amount allotted for a service in the budget for that year**.

## **1.18.12. PRIVATE MEMBERS' BILL**

17<sup>th</sup> Lok Sabha spent only 9.08 hours on Private Members' Bills.

#### About Private Members' Bill

- It is a legislative proposal **initiated by an individual Member of the Parliament, who is not a Minister.**
- **Allotment of time:** Last **two and a half hours of a sitting on Friday in Lok Sabha** is allotted for Private Members Bills.
  - In **Rajya Sabha** last **two & a half hours of a sitting on alternate Friday** is allotted.
- **Period of notice** to introduce a Bill is **1 month.**
- Till date, **only 14 Private Members' Bills** have been passed & received assent.
  - No Private Members' Bill has been passed by Parliament since 1970.

#### 1.18.13. RULE 267

Rajya Sabha Chairman expressed concerns about frequent use of Rule 267.

#### About Rule 267

- Rule 267, part of **Rules of Procedure and Conduct of Business** in Council of States (Rajya Sabha) allows for the **suspension of rules on the day's agenda to debate an urgent matter** with the Chairman's approval.
- Under the rule, **Rajya Sabha MPs can give a written notice** to suspend all listed business and discuss an issue of importance the country is facing.

#### 1.18.14. PROCESS FOR REMOVAL OF RAJYA SABHA CHAIRPERSON

Opposition has moved a **motion of No-confidence** against **Rajya Sabha (RS) Chairperson.**

- As per **Article 64**, Vice President (VP) shall be **ex officio Chairperson of RS.**

#### About Constitutional Removal Procedure

- **Notice Period:** **14-day notice** is to be given **prior** to moving a Resolution, outlining clear **intentions.**
- **Passing of a Resolution:** As per **Article 67(b)**, VP can be removed from office by a resolution passed by RS with a **majority of all its members and agreed to by Lok Sabha** with a **simple majority.**
- **Unlike** provisions for removal of **President**, the Constitution does **not specify grounds for removal of VP.**

#### 1.18.15. COMMERCIAL COURTS

The government invited comments on the draft Commercial Courts (Amendment) Bill, 2024 which aims to provide **quicker and specialized adjudication of commercial disputes.**

#### Commercial Courts

- It deals with commercial disputes arising out of ordinary transactions of merchants, bankers, export or import of merchandise or services, intellectual property rights etc.
- **Commercial Courts Act, 2015** provided for constitution of Commercial Courts, Commercial Appellate Court, Commercial Appellate Division in High Courts, etc.
- **Constitution:** It is done by the State Government, after consultation with the concerned High Court.
- **Constitution of Commercial Division of High Courts** is done by Chief Justice of High Court.

#### 1.18.16. DOCTRINE OF MERGER

Recently, Supreme Court (SC) highlighted the **Doctrine of Merger.**

#### About Doctrine of Merger

- It was explained in **Kunhayammed v. State of Kerala, (2000).**
- As per this doctrine, that there **cannot be more than one decree or operative order** governing the same subject matter at a given point in time.
- Hence, **once the superior court** disposes of a case whether by setting aside, modifying, or confirming the **lower court's decree**, the superior court's order becomes the **final, binding, and operative, merging** the lower court's decision into it.

## 1.18.17. HENDERSON DOCTRINE

In a recent case, the Supreme Court explained the **Henderson doctrine**.

### Henderson Doctrine

- **Origin:** Propounded in English case of **Henderson vs Henderson, 1843**.
- **About:** It suggests that all issues arising in the litigation out of the same subject matter must be addressed in a **single suit**. It is not a rigid rule but a flexible principle.
- **Significance:** Conducts judicial litigation in **good faith**; prevent parties from engaging in tactics that fragment or undermine litigations.

## 1.18.18. PAY COMMISSION

Union government approved the establishment of the Eighth Pay Commission.

### About Pay Commission

- **Constitution:** by **central government**
- Since **1947**, seven Pay Commissions have been constituted
  - The 7th pay commission was implemented in 2016 and is set to complete its term in 2026.
  - **Chairman** of 7th Pay Commission was: **Justice Ashok Kumar Mathur**.
- **Importance:** It plays a vital role in determining salary structures, allowances, and other benefits for government employees.

## 1.19. IMPORTANT CONSTITUTIONAL/ STATUTORY/ EXECUTIVE BODIES IN NEWS

### 1.19.1. COMPTROLLER AND AUDITOR GENERAL (CAG)

Senior IAS officer, K Sanjay Murthy appointed as next CAG of India.



#### Comptroller and Auditor General (CAG)



**About:** CAG is the **head of the Indian Audit and Accounts Department**.



#### Article 148:

- » **Appointment:** By **President of India** by warrant under his hand and seal.
- » **Salary and service condition:** Determined by **Parliament by law**, and charged on **Consolidated Fund of India**.
- » **Reappointment:** Not eligible for both central and state government.



**Article 149: Duties and powers** of CAG to be determined by **parliament**.



**Article 151: Reports of CAG shall be submitted to President**, who shall cause them to be laid before each House of Parliament.



#### CAG of India (Duties, Powers, and Conditions of Service) Act, 1971:

- » **Tenure:** 6 years or up to age of 65 years whichever is earlier.
- » **Removal:** By **President** on same grounds and in **same manner as a judge of Supreme Court**.

## 1.19.2. STATE FINANCE COMMISSION (SFC)

Recently, first of its kind finance commissions' conclave organised by Ministry of Panchayati Raj with significant emphasis was placed on strengthening State Finance Commission (SFC).

### State Finance Commission (SFCs)



**About:** Article 243I requires Governor to constitute SFC within one year from commencement of Constitution (73rd Amendment) Act, 1992.



**Tenure:** Every 5 years.



**Mandate:** SFCs to review financial position of **Panchayats (243 I) and municipalities (Article 243 Y)** and make suggestions to the **Governor** about-

- » **Distribution of taxes** between State and Local Bodies (Panchayats/Municipalities).
- » **Determination of taxes, duties, etc.,** which may be assigned to or appropriated by Local Bodies.
- » **Grants in aid** to Local Bodies by the State.

## 1.19.3. STATE PUBLIC SERVICE COMMISSION (SPSC)

Recently, Vice President addressed the **25th National Conference of Chairpersons of SPSC**.

### State Public Service Commission (SPSC)



**About:** Conducts examinations for appointments to the services of the state.



**Constitutional Body:** Article 315-323 (Part-XIV) contains provisions on Public Service Commissions for Union and States.



**Appointment:** Governor of State (Article 316).



**Term of office:** 6 years or 62 years of age whichever is earlier.



**Removal:** By **President** in same manner as members of Union Public Service Commission on grounds like:

- » Adjudged insolvent, engages in paid employment outside his office, unfit, misbehaviour (after an enquiry by Supreme Court).

## 1.19.4. NATIONAL CONSUMER DISPUTES REDRESSAL COMMISSION (NCDRC)

Supreme Court set aside the 2008 NCDRC ruling in Awaz & Others vs. RBI, which barred banks from charging over 30% interest on credit card dues, deeming it an unfair trade practice.

### National Consumer Disputes Redressal Commission (NCDRC)



**About:** Quasi-judicial commission set up in 1988 under **Consumer Protection Act, 1986**.



**Headed by:** A sitting or retired Judge of SC or a sitting or a retired Chief Justice of a High Court.

- » Appeal against the order of NCDRC lies with Supreme Court.



**Functions:**

- » Entertain complaints valued more than two crores.
- » Appellate and Revisional jurisdiction from the orders of State Commissions or the District fora.

## 1.20. ERRATA

### PT 365 Polity (April 2024 to October 2024)

1. **Article 2.4. Parliamentary Committees:** Under Cabinet Committees in table ‘Details of Committees Recently in the News’, it was incorrectly mentioned that Parliamentary Affairs Committee chaired by Home Minister.

**Correct Information:**

Parliamentary Affairs Committee **chaired by Defence Minister.**

2. **Article 8.1. Right to Information (RTI) Act, 2005:** Under Key provisions table, it was incorrectly mentioned that writ jurisdiction of Supreme Court and High Courts under Articles 32 and 225 of remains unaffected.

**Correct Information:**

Writ jurisdiction of **Supreme Court and High Courts** under **Articles 32 and 226** of remains unaffected.

The advertisement features the logos for e-VISIONIAS (INSPIRING INNOVATION), SANDHAN (A VisionIAS Personalised Test Series), and A.I.T.S (All India GS Prelims Test Series 2025). It highlights the slogan "Personalise Your UPSC Prelims Preparation". Two test series are shown: one starting in March 2025 (English Medium) and another in March 2026 (Hindi & English Medium). Below the schedule, four icons represent features: Access 25000+ questions, Choose your subject and topic, Create your test from VisionIAS or UPSC PYQs, and Performance and Progress Analysis.

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<b>2026</b>	<b>ENGLISH MEDIUM</b>	<b>हिन्दी माध्यम</b>
	<b>2 मार्च</b>	<b>2 मार्च</b>

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## 2. INTERNATIONAL RELATIONS

### 2.1. MULTILATERAL ORGANIZATIONS

#### 2.1.1. THE GROUP OF TWENTY (G20) SUMMIT

##### Why in the News?

The 18th G20 Summit was held in Rio de Janeiro, Brazil, under the theme *Building a Just World and a Sustainable Planet*.

##### About G20 Rio de Janeiro

- The Rio summit marked the first time the African Union (AU) participated as a full member.
- Hosted by Brazil, it is the **third Global South host after Indonesia (2022) and India (2023)**.
  - The next G20 Summit will be held in South Africa.
  - **Brazil, India, and South Africa** form the **troika** of G20. These countries are also part of the **IBSA (India, Brazil & South Africa)** and **BRICS groupings**.



## Global Alliance against Hunger and Poverty

 **AIM**  
Accelerate global efforts to eradicate hunger and poverty

 **GOALS**  
Reach 500 million people with cash transfer programs in low-income countries by 2030  
  
Provide high-quality school meals to 150 million additional children in vulnerable countries

 **APPROACH**  
Operates globally through voluntary partnerships and commitments

 **MEMBERS**  
92 Member countries including India

 **FUNDING**  
No dedicated fund; instead, it connects countries with donors and technical support

**HQ:** The G20 does not have a permanent secretariat or headquarters.



##### Quick Overview of G20

###### Genesis:

- ⇒ **Founded in 1999**, following **the Asian financial crisis**, as a forum for **finance ministers and Central Bank Governors** to discuss **global economic** and **financial issues**.
- ⇒ Upgraded to the level of **Heads of State/Government** in the wake of the **2007 global economic** and **financial crisis**.



**Decisions made at G20 meetings are not legally binding.**

**Members:** The G20 comprises **19 countries** (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Türkiye, the United Kingdom, and the United States) plus **the European Union**, and **since 2023, the African Union (See image)**



**Purpose:** Plays an important role in shaping and strengthening global architecture and governance on all major international economic issues.

###### Annual Summit:

- ⇒ Held annually under the leadership of a rotating Presidency.
- ⇒ The Presidency is supported by the Troika (previous, current, and incoming Presidency).



## Key Takeaways from the Summit

- **Social Inclusion and the Fight Against Hunger and Poverty:**
  - **Global Alliance against Hunger and Poverty:** Launched to eradicate poverty and hunger (refer image).
  - **Global Coalition for Local and Regional Production, Innovation, and Equitable Access:** Launched to promote access to **vaccines, diagnostics**, and other health technologies for **neglected diseases and vulnerable persons**.

**HQ:** Addis Ababa, Ethiopia



### Quick Overview of African Union (AU)



**Genesis:** Launched in 2002 as a successor to the Organisation of African Unity (OAU, 1963-1999).



**Members:** 55 member states that make up the countries of the African Continent.



**Aim:** Promoting Africa's growth and economic development by championing citizen inclusion and increased cooperation and integration of African states.



**Other key facts:** Recently, AU has suspended Niger from all its activities due to a military coup.

#### Note:

- India is also engaged with two other groups of Africa i.e. **AfCFTA** and **SACU**.
  - **The African Continental Free Trade Area Agreement (AfCFTA):** It was signed in **2018** between **55 African nations**, to create the **largest free trade area** in the world.
  - **Southern African Customs Union (SACU):** It's a **customs union** among **five** countries of Southern Africa: **Botswana, Eswatini, Lesotho, Namibia and South Africa**.
    - > Founded in **1910**, SACU is the world's oldest **customs union**.

## 2.1.2. NEW DEVELOPMENT BANK (NDB)

### Why in the News?

India has contributed **nearly \$2 billion** to the **BRICS New Development Bank (NDB)**, as per the **Ministry of Finance**.

**HQ:** Shanghai (China)



### Quick Overview of NDB

#### Establishment:

- ◆ **Agreement signed in 2014** during **the 6th BRICS Summit** in Fortaleza, Brazil, by Brazil, Russia, India, China, and South Africa (BRICS).
- ◆ Membership is open to members of the United Nations.



**Purpose:** Mobilizing resources for infrastructure and sustainable development projects in emerging markets and developing countries (EMDCs).

#### Capital:

- ◆ Initial authorized capital is \$100 billion.
- ◆ The initial subscribed capital is \$50 billion, with equal contributions from founding members.

### Other key facts on NDB

- **New Members:** In 2021, **Bangladesh, UAE, Egypt and Uruguay** were included as New NDB members.

- **Voting power:** the voting power of the founding members will not fall below 55 (fifty-five) per cent of the total voting power
- **In 2022:** NDB's India Regional Office in **Gujarat International Finance Tec-City** was established.

#### **Update on BRICS**

- Brazil (acting as the Chair of the group) announced that Indonesia has been admitted as a full member of the BRICS bloc.
- Also, Nigeria has been admitted as the 9th BRICS partner country, joining Belarus, Bolivia, Cuba, Kazakhstan, Malaysia, Thailand, Uganda, and Uzbekistan in the grouping.

To know more about BRICS, kindly refer to Article 1.6. BRICS in the PT 365 International Relations 2025.

### **2.1.3. ASIAN DEVELOPMENT BANK (ADB)**

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

India and the **Asian Development Bank (ADB)** signed a \$500 million loan to aid sustainable infrastructure projects.

**HQ:** Manila, Philippines

**Quick Overview of Asian Development Bank (ADB)**



 <b>Genesis:</b> A multilateral development finance institution established in 1966.	 <b>Aim:</b> To achieve a prosperous, inclusive, resilient, and sustainable Asia and the Pacific.
 <b>Functions:</b> Provides loans, grants, and technical assistance to member countries & focuses on sectors like infrastructure, education, health, etc.	 <b>Membership:</b> <ul style="list-style-type: none"> <li>◆ 69 members (49 from within Asia and the Pacific and 20 from outside).</li> <li>◆ India is a founding member.</li> </ul>

#### **Other key facts on ADB**

- **ADB's top shareholders (As of 2023): Japan and the US (15.6% each), China (6.4%), India (6.3%), and Australia (5.8%).**
- **Secretariat:**
  - ADB serves as a Secretariat for the SASEC.
  - Acting as **TAPI secretariat since 2003**, ADB has been instrumental in the progress of the TAPI pipeline.

### **2.1.4. COMPREHENSIVE AND PROGRESSIVE AGREEMENT FOR TRANS-PACIFIC PARTNERSHIP (CPTPP)**

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

The UK has recently become the **first European country** to join the **Indo-Pacific trade bloc, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)**.

#### **More on the News**

- Also, NITI Aayog CEO pitched for India's membership in the **Regional Comprehensive Economic Partnership (RCEP) and CPTPP**.
- India is among the few countries not part of large trade agreements like RCEP and CPTPP.

## Quick Overview of CPTPP

### Quick Overview of CPTPP

#### Genesis:

- ◆ A Free Trade Agreement across the Pacific, signed in Santiago, Chile.
- ◆ Entered into force on December 30, 2018.



#### Membership:

- ◆ **12 member nations:** UK, Japan, Australia, Canada, Malaysia, Mexico, New Zealand, Peru, Singapore, Chile, Brunei and Vietnam.
- ◆ Both India and the US are not members of CPTPP.

## Quick Overview of RCEP

### Quick Overview of RCEP



RCEP is the world's largest free trade agreement by members' GDP.



#### Composition:

- ◆ **RCEP entered into force on 1 January 2022 for ten original parties:** Australia, Brunei Darussalam, Cambodia, China, Japan, Laos, New Zealand, Singapore, Thailand and Vietnam.
- ◆ **Later joined by:** South Korea, Malaysia, Indonesia and the Philippines.

## 2.1.5. OTHER IMPORTANT ORGANIZATIONS IN NEWS

### 2.1.5.1. INTERNATIONAL COOPERATIVE ALLIANCE (ICA)

The **International Cooperative Alliance (ICA)** Global Cooperative Conference is being organized in India for the first time in the 130-year-long history of ICA.

### Quick Overview of ICA



#### About International Co-operative Alliance



**Founded:** In 1895, London.



**Role:** A global organization that unites, represents, and serves cooperatives worldwide.



**Members:** 306 member organizations across 105 countries.



**Function:** Serves as the apex body for the cooperative movement, providing a global platform for collaboration, knowledge exchange, and coordinated action.

### 2.1.5.2. U.N. PEACEBUILDING COMMISSION

India has been re-elected to the U.N. Peacebuilding Commission for the term 2025–2026.

#### Quick Overview of U.N. Peacebuilding Commission



**Genesis:** Established in 2005, it is an intergovernmental advisory body that supports peace efforts in conflict-affected countries.



#### Composition:



- ◆ 31 Member States, elected from the General Assembly, Security Council, and Economic and Social Council.
- ◆ Top financial contributing countries and troop-contributing countries to the United Nations system are also members.



#### Mandate:

- ◆ To bring together all relevant actors to marshal resources & advise on strategies for post-conflict peacebuilding.



**India's Role:** India is among the largest contributors of uniformed personnel to UN Peacekeeping, with more than 6,000 personnel currently deployed in missions worldwide.

### 2.1.5.3. UN DISENGAGEMENT OBSERVER FORCE (UNDOF)

#### Why in News?

The **UN Secretary-General** recently paid tribute to **Brigadier Amitabh Jha**, who was serving with the United Nations **Disengagement Observer Force (UNDOF)** at Golan Heights.

**HQ:** Camp Faouar (Syrian side of the Golan Heights).



#### Quick Overview of UNDOF



**Genesis:** Established by UN Security Council (UNSC) in (1974), following the 1974 Disengagement of Forces Agreement between Israel and Syria.

#### Mandate:



- ◆ Maintain the ceasefire and supervise the area of separation – a demilitarized buffer zone.
- ◆ Supervise the area of limitation – where Israeli and Syrian troops are restricted – in the Golan.
- ◆ The mandate is renewed every 6 months by the UNSC and has been renewed till June 2025.



**India's Role:** India is the third-largest military contributor to UNDOF.



**Deployment:** UNDOF is stationed along the Alpha Line (the Israeli line) and the Bravo Line (the Syrian line) in the Golan Heights.

## 2.1.5.4. UNITED NATIONS RELIEF AND WORKS AGENCY FOR PALESTINE REFUGEES IN THE NEAR EAST (UNRWA)

India recently released the **second tranche of USD 2.5 million to the UNRWA**, fulfilling its annual contribution of **USD 5 million for 2024-25**.

**HQ:** Amman (Jordan) and Gaza



### Quick Overview of UNRWA



**Genesis:** Formed by a UN General Assembly Resolution in 1949, following the 1948 Arab-Israel war, to carry out direct relief and works programmes for Palestine refugees.



**Funding:** Funded almost entirely by voluntary contributions from UN Member States.



**Mandate:** Extended until 30 June 2026.



**Area of Work:** Operates in Jordan, Lebanon, Syria, the Gaza Strip, and the West Bank, including East Jerusalem.

## 2.1.5.5. UNITED NATION INTERNAL JUSTICE COUNCIL (IJC)

Retired Supreme Court judge **Madan B. Lokur** has been appointed as **the chairperson** of the **UN Internal Justice Council (IJC)**.

### Quick Overview of UN Internal Justice Council (IJC)



**Establishment:** The General Assembly established the IJC to ensure independence and accountability in the UN's internal justice system.



**Composition:** Consists of five members.



**Appointment:** Members are appointed by the Secretary-General.

#### Functions:

- ⇒ The Council is tasked with finding suitable candidates for vacant judge positions in the UN Dispute Tribunal (UNDT) and the UN Appeals Tribunal (UNAT).
- ⇒ It also provides its views on the administration of the justice system to the General Assembly.

## 2.1.5.6. UN-HABITAT

UN-Habitat released the “*World Cities Report 2024: Cities and Climate Action*”, highlighting the critical role of cities in addressing climate change and promoting sustainable urban development.

**HQ:** Nairobi, Kenya.



### Quick Overview of UN-Habitat



**Genesis:** Established in 1978 following Habitat I, which laid the foundations for the United Nations Human Settlements Programme (UN-Habitat).



**Objective:** Mandated by the UN General Assembly to promote socially and environmentally sustainable towns and cities.



**Partners:** Collaborates with governments, intergovernmental UN agencies, civil society organizations, academic institutions, and the private sector.



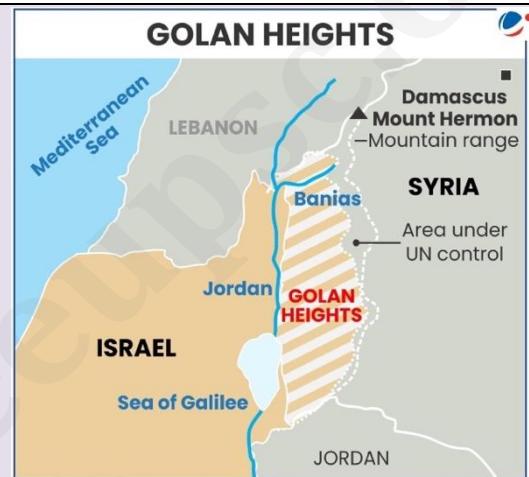
**Flagship Publications:** *State of the World's Cities*, *World Cities Report*.

## 2.2. PLACES IN NEWS

### 2.2.1. CONFLICT AFFLICTED AREAS

#### Golan Heights

- Context:** Israel plans to expand settlements in Golan Heights.
- Israel captured Golan Heights** from Syria in the **1967 Six-Day War** & annexed it in **1981** (not recognized internationally).
- About Golan Heights**
  - Location:** Located in **southwestern Syria**, Golan Heights is rocky **plateau** bordering Israel, Lebanon and Jordan.
    - > It is bounded by Jordan River & Sea of Galilee (west), Mount Hermon (north), **seasonal Wadi Al-Ruqqād** (east), Yarmūk River (south).
  - Strategic Importance:**
    - > **Monitoring Syrian movements:** Syria's capital Damascus is only 60 km (visible from Heights) from Golan Heights.
    - > **Provides a natural buffer against** any military advancement from Syria.



#### Philadelphi Corridor

- Context:** Recent **ceasefire terms between Israel and Hamas** also stipulate Israel's withdrawal from the Philadelphi Corridor.
- About Philadelphi Corridor**
  - Corridor was **originally established under the 1979 Israel-Egypt Peace Treaty**.
  - It is a **narrow strip of land along the Gaza-Egypt border**, ~14 km long and 100 meters wide.
  - It serves as a **critical border area** between the **southern Gaza Strip and Egypt's Sinai Peninsula**.



### Latakia Port

- **Context:** Recently, Israel's military struck several **key Syrian military sites**, including naval vessels at the Latakia Port.
- **About Latakia Port**
  - **Location:** It is located on the **East Mediterranean coast** on a good harbour, with an extensive agricultural hinterland in west of Syria.
  - **Other Mediterranean ports of Syria:** Tartous and Banias.



### Syria (Capital: Damascus)

- **Context:** Recently, **Hayat Tahrir al-Sham (HTS)**, a rebel militia, seized **Aleppo**, the **2nd largest city of Syria**.
- It is located on east coast of Mediterranean Sea in southwestern Asia.
- **Boundaries:** Turkey (North), Iraq (East & southeast), Jordan (South), Israel and Lebanon (South West).
- **Important cities:** Damascus (along River Barada), Homs, Palmyra.



## 2.2.2. PLACES FEATURING INTERNATIONAL DEVELOPMENTS

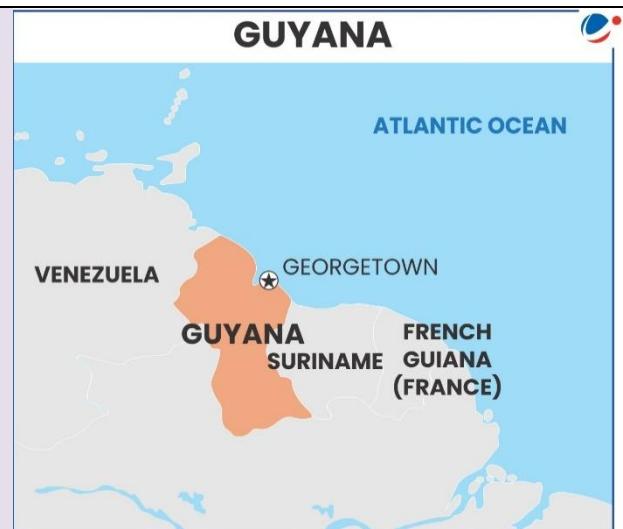
### Nicaragua (Capital: Managua)

- **Context:** India and Nicaragua signed an **umbrella agreement to implement Quick Impact Projects (QIPs)**.
- **Location:** Situated in **Central America** and largest of the Central American republics.
- **Borders:** Nicaragua is bounded by **Honduras to the north**, the **Caribbean Sea to the east**, **Costa Rica to the south**, and the **Pacific Ocean to the west**.



### **Guyana (Capital: Georgetown)**

- **Context:** The Indian Prime Minister paid a visit to Guyana and signed various agreements to strengthen bilateral ties. Guyana is a member of **CARICOM (Caribbean Community)** and the **Commonwealth of Nations**.
- **Territorial Boundaries:** East: Suriname, South and Southwest: Brazil, West: Venezuela.
- **Maritime Boundaries:** Opens into the **Atlantic Ocean** (North).



### **Dominica (Capital: Roseau)**

- **Context: Commonwealth of Dominica** Honored Prime Minister of India with 'the Dominica Award of Honour'.
- **Member of Commonwealth** since 1978.
- **The island country of the Lesser Antilles in the eastern Caribbean Sea.**
- Only island with a **relatively large and distinctive group of Carib Indians**.



### **Greenland (Capital: Nuuk)**

- **Context:** The US President had expressed interest in buying Greenland from Denmark.
- **Location:** It is the world's largest island, lying in the North Atlantic Ocean. Greenland is part of **Denmark**.
  - Two-thirds of the island lies within the Arctic Circle.
- **Surrounding Countries:** It is separated from Canada's Ellesmere Island to the north by only 16 miles.
  - The nearest European country is **Iceland**.
- **It has world's 2<sup>nd</sup> largest ice sheet after that of Antarctica.**
- **Northeast Greenland National Park** is the **world's largest national park**.
- Greenlanders experience **24 hours of sunlight in the summer**.



### Liberia (Capital: Monrovia)

- **Context:** India and Liberia hold **first foreign office consultations** to deepen and diversify bilateral ties.
- **Africa's oldest republic** and never subjected to colonial rule.
- **Land boundaries:** Sierra Leone (Northwest), Guinea (North) & Côte d'Ivoire (East)
- **Maritime Boundary:** Atlantic Ocean (South and West)
- **Other:** Dusty and dry **harmattan (desert winds) blows from Sahara** bringing relief from high relative humidity.



### Norway (Capital: Oslo)

- **Context:** India, Norway discuss investments under European Free Trade Association (EFTA) pact
- **About two-thirds of Norway is mountainous, and much off its indented coastline lie, carved by deep glacial fjords.**
- **Fjords:** Very deep glacial troughs filled with sea water and making up shorelines (in high latitudes). E.g. Sogn (Sogne) Fjord etc.



### Slovenia (Capital: Ljubljana)

- **Context:** India and Slovenia announced a five-year plan to strengthen their scientific and technological collaboration in various areas.
- **Located** in central Europe.
- **Land boundaries:** Austria (North), Hungary (far Northeast), Croatia (East, Southeast, and South), and Italy (West and Southwest).
  - It has a coastline along the **Gulf of Venice**.



### Nigeria (Capital: Abuja)

- **Context:** Indian Prime Minister conferred the **Nigerian national award - "Grand Commander of the Order of Niger"**
- **Boundaries:** Niger (North), Chad (North-east), Cameroon (East), Benin (West).
  - **Maritime Boundaries:** Opens into the **Gulf of Guinea** (South).
- **Major Lakes:** Lake Chad (freshwater lake bordering Nigeria, Chad and Niger)
- **Significance:** It is the **largest oil and gas producer in Africa** and It is the **most populous country in Africa**.



### Lesotho (Capital: Maseru)

- **Context:** India sent 1,000 metric tonnes of rice to Lesotho as humanitarian aid to support food security and nutrition.
- **A landlocked country** located entirely within South Africa. It's also known by the name **The Mountain Kingdom**.



### Triton Island

- **Context:** Recent satellite imagery reveals a significant **military buildup by China on Triton Island**.
- **About Triton Island**
- **Located in the Paracels (South China Sea) is also known as Xisha Islands in China.**
- It is effectively **controlled by China** but is also **claimed by Vietnam and Taiwan**.
- China **took control of the Paracels from South Vietnam** following a 1974 naval clash.



### South Korea (Capital: Seoul)

- **Context:** Parliament in an unanimous vote and impeached Yoon, accusing him of rebellion.
- **Location:** Located in East Asia, on the southern half of the Korean Peninsula.
- **Borders:** North Korea (along the 38th parallel, separated by the Demilitarized Zone or DMZ).
- **Water Bodies:** Bounded by the Yellow Sea (west), East Sea/Sea of Japan (east), and Korea Strait (south).
- With Strengthened military cooperation, US **deployed THAAD (Terminal High Altitude Area Defense) systems**.
- **REAIM (Responsible AI in the Military Domain) Summit 2024** held in Seoul (South Korea) announced a legally non-binding "Blueprint for Action" to govern responsible use of AI in the military.



### Kerch Strait

Recently, Russian tanker splits in storm spilling oil in Kerch Strait waterway.

- A strait is a **narrow waterway between two pieces of land** that connects two large bodies of water.

#### About Kerch Strait

- **Location:** It is located in the **eastern part of the Crimean Peninsula** connecting **Black Sea** and the **Sea of Azov**.
- **Significance:** Key route for exports of Russian grain and for exports of crude oil, fuel oil, LNG, etc.

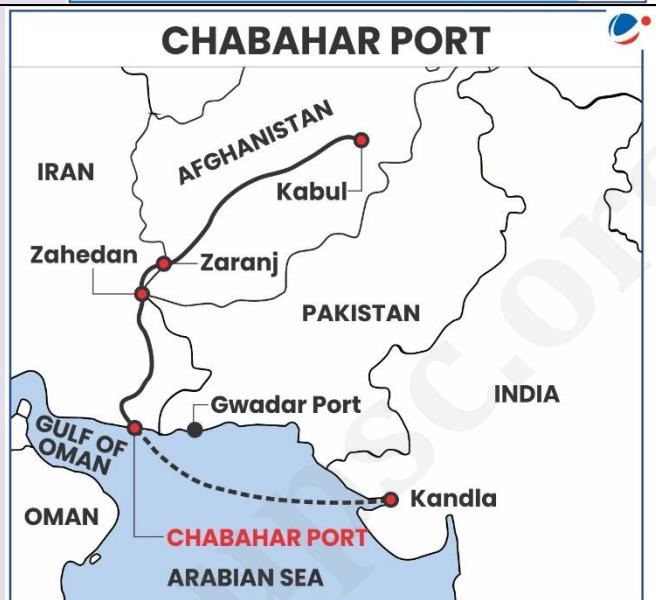


### Chabahar port

Ministry of External Affairs delegation offers Afghanistan access to Chabahar Port during meeting with Defense Minister.

#### About chabahar port

- **Location:** It sits at the mouth of the **Gulf of Oman**.
- There are two distinct ports in the Chabahar project, **Shahid Beheshti** and **Shahid Kalantari**.
- **Significance:**
  - Gives India an **alternative route** that **bypasses Pakistan**, which does not allow India land access for trade with **Afghanistan and Central Asia**.
  - Iran and India both recognise the **Chabahar port's pivotal role** in the **International North-South Transport Corridor (INSTC)** project.



### Panama Canal

U.S. President-elect Donald Trump threatened to reimpose U.S. control over the Panama Canal.

#### About Panama Canal

- It is an **82-km (51-mile) artificial waterway** that connects **Pacific & Atlantic Oceans** through Panama.
- The canal transports ships through **Gatun Lake**.
- **Significance:**
  - It is **one of the two most strategic artificial waterways** in the world, the other being the Suez Canal.
  - It **shortens the journey of ships between east and west coasts of U.S.** by 8,000 miles (around 22 days).



### Gulf of Mexico

Recently, there has been a proposal to change name of **Gulf of Mexico** to "Gulf of America".

#### About Gulf of Mexico

- **Boundaries:** United States (North), Mexico (West and South), Cuba (South-east).
- It connects to the **Atlantic Ocean** through the **Straits of Florida** and to the **Caribbean Sea via the Yucatán Channel**.
- **Draining Rivers:** Mississippi River, Rio Grande
- **Control and Ownership:** Shared by **U.S., Mexico, and Cuba**
- **Significance:** Large continental shelf, oil and natural gas extraction, fisheries etc.
- **Vulnerability:** **Prone to hurricanes and twisters** due to warm waters and atmospheric conditions.



## 2.3. BILATERAL RELATIONS

### 2.3.1. INDIA-AFGHANISTAN RELATIONS

#### Why in the news?

Recently, **1<sup>st</sup> bilateral meeting between India's foreign secretary and Afghanistan's acting foreign minister** took place in Dubai.

#### India-Afghanistan relationship: Key facts

- **Background:** India and Afghanistan shared close ties with the 1950 "Friendship Treaty."
- **Strategic Connectivity:** Afghanistan's location as the "**Heart of Asia**" is vital for India's access to Central Asia via historic routes like Khyber and Bolan.

#### Overview of Indian Projects in Afghanistan

- **Salma Dam**  
A key water resource project in Herat Province
- **Zaranj-Delaram Highway**  
An important transportation route near the Afghanistan-Iran border
- **Indira Gandhi Institute of Child Health**  
A healthcare facility contributing to child health in Kabul
- **Afghan Parliament Building**  
A significant infrastructure project in Kabul
- **Shatoot Dam**  
Another vital water management project in Kabul
- **Habibia School**  
An educational institution supporting learning in Kabul

### Afghanistan (Capital: Kabul)

#### Important Features:

- **Borders:** Shares borders with Pakistan, Iran, Turkmenistan, Uzbekistan, Tajikistan, and China.
- **Landforms:** Predominantly mountainous, with the Hindu Kush Mountain range dominating the landscape. Features include high plateaus, deserts, and fertile valleys.
- **Key Rivers:**
  - Amu Darya (forms part of the border with Central Asian states), Helmand River, Hari River etc.
- **Other Key Facts:**
  - Landlocked country.
  - The Wakhan Corridor, a narrow strip of territory, extends to the border with China.



## 2.3.2. INDIA-SRI LANKA

### Why in the News?

Sri Lankan President visited India on his first foreign tour.

### Key Announcements

- **Economic & Technological Cooperation Agreement (ETCA):** Builds on the 2000 FTA to enhance trade and investment.
- **Kankesanthurai Port:** Joint rehabilitation with Indian grant assistance.
- **Digital Identity:** Expedited implementation of India-funded Sri Lanka **Unique Digital Identity project.**
- **Double Taxation Avoidance Agreement (DTA):** Amended to align with international standards to prevent tax treaty abuse.
- **Other Initiatives:** Development of Trincomalee as industrial hub and railway signaling in **Mahodanuradhapura.**

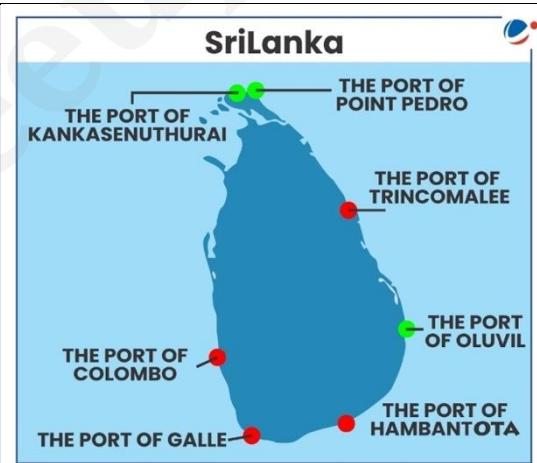
### India-Sri Lanka Relations: Key Facts

- **Energy cooperation:** Inter-grid connectivity, LNG supply, Sampur Power Project.
- **Debt Restructuring:** India's role in Sri Lanka's debt restructuring (USD 4 billion aid).
- **Economic Importance:** India is Sri Lanka's largest trade partner, top FDI contributor, and tourist source.
  - International Monetary Fund (IMF) bailout: India was among the first countries to provide financing assurances to IMF, a prerequisite for the IMF's \$2.9 billion bailout package approved in 2023.
  - **Co-chair of Official Creditors' Committee (OCC):** OCC was formed **in 2023** by **17 countries**, co-chaired by **India, Japan, France**, to discuss **Sri Lankan debt treatment.**
    - > Includes Paris Club creditors and official bilateral creditors.
- **Cultural Support:** Restoration of Thiruketheeswaram Temple.
- **Chinese Influence:** Growing presence through BRI projects like **Hambantota Port** and data collection activities.
- **13th Amendment:** Delayed implementation of power devolution to Tamil provinces.

#### Sri Lanka (Capital: Sri Jayawardenepura Kotte)

##### Important features

- **Maritime Borders:** Bay of Bengal (northeast), Indian Ocean (south and southwest), Palk Strait with India (northwest) and Gulf of Mannar (west), separating Sri Lanka from the Indian subcontinent.
- **Important Peaks:** Adam's Peak (Sri Pada), Pidurutalagala (the highest peak).



## 2.3.3. INDIA-INDONESIA

### Why in the News?

Indonesian President visited India during the **75th Anniversary of India-Indonesia Diplomatic Relations** and attended India's **76th Republic Day celebrations** as the chief guest.

### India-Indonesia Relations: Key Facts

- **Economic Engagement:** Enhanced through the India-Indonesia Economic and Financial Dialogue (EFD Dialogue, 2023).

- **Regional Partnerships:** Both are members of BRICS, IORA, IPOI, and PIF.
- **Infrastructure & Connectivity:** India's Development Partnership with the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT).
- **Trade:** Indonesia is India's 2nd largest trading partner in ASEAN.
- **Geostrategic Significance:** Development of **Sabang port** aligns with **India's SAGAR initiative**.
- **Climate Resilience:** Collaboration under the **Coalition for Disaster Resilient Infrastructure (CDRI)**.

<p><b>Indonesia (Capital: Jakarta)</b></p> <ul style="list-style-type: none"> <li>• <b>Important features:</b> Land Borders: Papua New Guinea to the east, <b>East Timor</b> to the southeast and <b>Malaysia</b> to the north (on Borneo Island).</li> <li>• <b>Maritime Borders:</b> <b>Strait of Malacca</b> west, <b>Celebes Sea</b> to the north, <b>Arafura Sea</b> and <b>Timor Sea</b> to the south, <b>Pacific Ocean</b> to the east and <b>Java Sea</b> and <b>Bali Sea</b> with surrounding smaller islands.</li> <li>• <b>Landforms:</b> An archipelago made up of over <b>17,000 islands</b>.</li> </ul>	<p>The map illustrates the strategic location of Indonesia in Southeast Asia. It shows the country's extensive archipelago, with major cities like Jakarta marked. Neighboring countries include Thailand, Vietnam, Cambodia, Brunei, and Malaysia to the north and west, and Australia to the south. The map also highlights the Pacific Ocean to the east and the Indian Ocean to the west.</p>
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### 2.3.4. INDIA-KUWAIT RELATIONS

#### Why in the News?

The Prime Minister of India visited Kuwait, marking the first trip by an Indian PM in 43 years, to strengthen bilateral ties and elevate relations to a strategic partnership.

#### Key Outcomes

- **Award Conferment:** PM received Kuwait's highest honor, 'The Order of Mubarak Al Kabeer.'
- **Strategic Partnership:** India-Kuwait relations elevated to a strategic partnership.
- **International Solar Alliance (ISA):** Kuwait joined ISA for sustainable energy cooperation.
- **Asian Cooperation Dialogue (ACD):** Highlighted regional cooperation among 35 Asian countries.
- **Other Developments:** Renewed Cultural Exchange Program (2025–2029) and India praised Kuwait for hosting the 4th Dushanbe Process on counterterrorism.
- **Energy Security:** Kuwait meets 3.5% of India's energy needs and shows interest in India's Strategic Petroleum Reserve Programme.
- **Investment:** Kuwait Investment Authority (KIA) manages a \$1 billion sovereign wealth fund, with India as a key investment destination.

### Kuwait (Capital: Kuwait City)

#### Important features:

- **Land Borders:** Iraq to the north and west, Saudi Arabia to the south.
- **Maritime Borders:** Persian Gulf to the east.
- **Landforms:** Mostly flat and arid desert terrain.
- **Key islands:** Failaka Island, Bubiyan Island (largest), and Warbah Island.



### India and Gulf Cooperation Council (GCC)

- **GCC Established:** 1981
  - **GCC Members:** Comprises six member states. Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE.
- India and GCC Relations**
- **Economic and Trade Relations:** The GCC is also one of the largest trading blocs of India's foreign trade.
    - E.g., in 2023-24, the bilateral trade between India and GCC comprised ~14% of India's total foreign trade.
  - **Energy Security:** The GCC supplies over 50% of India's crude oil and 70% of its natural gas. E.g., Qatar is India's largest supplier of liquefied natural gas (LNG).
  - **Indian Diaspora and Remittances:** The GCC hosts over 8 million Indian expatriates, making it the largest expatriate community in the region. GCC countries are the second largest source of remittances to India, after the US.
  - **Labour Migration and Social Issues:** India has raised concerns over the Kafala system migrant worker's employment and immigration status control) in GCC countries.
  - **Discriminatory "Asian Premium" on Crude Oil Pricing:** The "Asian Premium" imposed by OPEC.

## 2.3.5. INDIA-EUROPEAN UNION (EU)

#### Why in the News?

Recently, a **Meeting** was held between the **EU Trade Commissioner**, the **Indian Commerce and Industry Minister**.

#### India-EU Relations: Key Facts

- **Trade:** EU is India's largest trading partner; India is **EU's 9th-largest partner with a trade surplus (2023)**.
- **Strategic Alignment:** Joint commitment to WTO reform and clean energy (India-EU Clean Energy and Climate Partnership, 2016).
- **Connectivity:** India-EU Connectivity Partnership (2021).
- **Defence:** EU companies support India's defence modernisation (e.g., Airbus C-295 manufacturing).
- **Technology:** **India-EU Trade and Technology Council (2022)** fosters collaboration in AI and digital transformation.
- **Market Access:** The Trade and Economic Partnership Agreement (TEPA) was signed with the European Free Trade Association (EFTA) states in 2024.

#### Key Developments in Europe

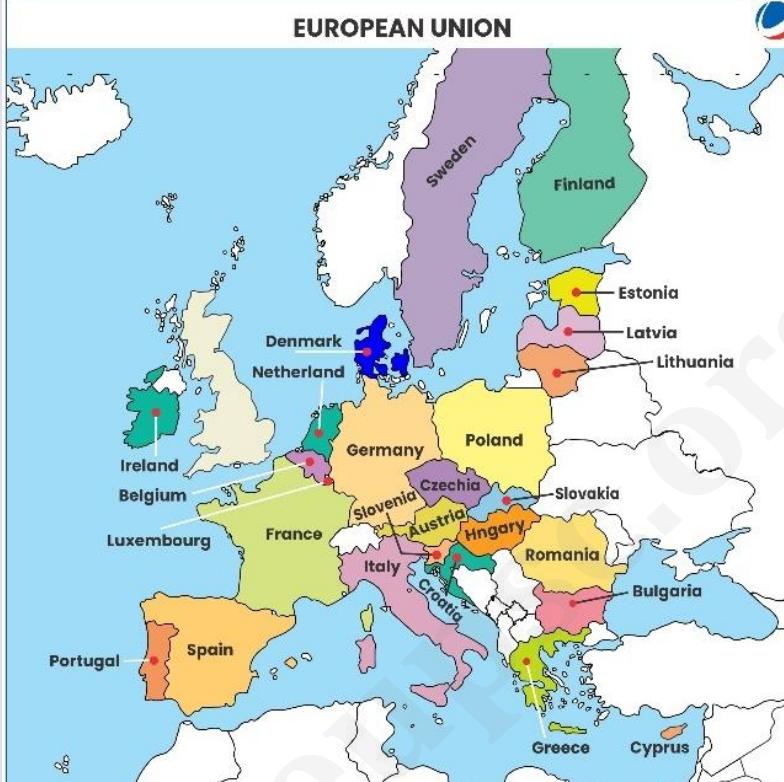
- **The Digital Services Act (DSA)**, the EU's landmark rulebook that aims to make the online environment safer, has come into effect for all online intermediaries in the European Union.
- The European Union launched a naval mission, Operation Aspides, to protect shipping in the Red Sea from Yemen's Houthi rebels.

- **The NB8 visit to India:** Eight Nordic-Baltic countries participated together at the Raisina Dialogue in New Delhi. **About NB8:**
  - **Establishment:** Formed in 1992 as a regional cooperation initiative.
  - **Objective:** To engage in informal discussions on key regional and international issues.
  - **Member Countries**
    - > **Nordic Countries:** Finland, Sweden, Norway, Iceland & Denmark
    - > **Baltic Countries:** Estonia, Latvia & Lithuania

**European Union (EU) (De facto Capital: Brussels)**

**Important Features:**

- **Member States:** A political and economic union of 27 member states (as of current date).
- **Borders:** Shares land borders with **Russia, Belarus, Ukraine, Moldova, Switzerland, Norway, United Kingdom, and several Balkan Countries.**
- **Maritime borders** span the Atlantic Ocean, Mediterranean Sea, Baltic Sea, and North Sea.
- **Mountain ranges** (Alps, Pyrenees, Carpathians) Mont Blanc (highest peak in the Alps)
- **Key Rivers and Cities:**
  - **Danube:** Flows through or near Ulm, Regensburg, Vienna, Bratislava, Budapest, Belgrade, and ending in the Black Sea.
  - **Rhine:** Flows through or near Basel, Strasbourg, Mainz, Cologne, Rotterdam, ending in the North Sea.
  - **Seine:** Flows through Paris, ending in the English Channel.



The map shows the 27 member states of the European Union, each highlighted in a different color. The states are: Ireland, Belgium, Luxembourg, France, Spain, Portugal, Andorra, Monaco, Italy, San Marino, Malta, Slovenia, Croatia, Greece, Austria, Hungary, Poland, Czechia, Slovakia, Romania, Bulgaria, and Moldova. The map also includes the United Kingdom, which is shown separately. The European Commission logo is in the top right corner.

### 2.3.6. INDIA-GERMANY RELATIONS

#### Why in the News?

The German Chancellor visited India to strengthen bilateral ties, marking the 25th anniversary of the India-Germany Strategic Partnership and the 50th anniversary of their scientific cooperation agreement.

#### Key Highlight

- **7th Inter-Governmental Consultations (IGC):** Launched the 'India-Germany Innovation and Technology Partnership Roadmap' for renewable energy, AI, quantum tech, and space exploration.

#### India-Germany Partnership: Key facts

- **Trade and Investment:** Germany is **India's largest European trade partner.**
- **Climate and Sustainability:** Germany committed €10 billion under the **Green and Sustainable Development Partnership (2022)** for solar and agro-ecology projects.
- **Technology and Innovation:** **Indo-German Science and Technology Centre (IGSTC)** supports 49 projects, including Women in Science and Engineering Research (**WISER**).

### **Germany (Capital: Berlin)**

#### **Important features**

- **Land Borders:** Denmark to the north, Poland to the east, Czech Republic to the southeast, Austria to the south, Switzerland to the southwest, France, Luxembourg and Belgium to the west and Netherlands to the northwest.
- **Maritime Borders:** North Sea to the northwest and Baltic Sea to the northeast.
- **Key Rivers:** The Rhine River, Elbe River, Danube River, and Oder River.

#### **Other Key Facts:**

- Germany is the **largest economy** in Europe and the fourth largest in the world.



### **2.3.7. INDIA-ITALY RELATIONS**

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

The Prime Ministers of India and Italy announced a Joint Strategic Action Plan (2025-2029) during a bilateral meeting on the sidelines of the G20 Summit in Rio de Janeiro.

#### **Key Highlights of the Plan**

- **Economic Cooperation:** Partnerships in automotive, semiconductors, infrastructure, and advanced manufacturing.
- **Connectivity:** Collaboration under the India-Middle East-Europe Economic Corridor (IMEC).
- **Science and Technology:** Expanded cooperation in AI, digitalization, and space (Earth observation, heliophysics, and lunar science) and **launch of the Indo-Italian Innovation and Incubation Exchange Program**.
- **Energy Transition:** Organizing "Tech Summits" and strengthening alliances like the Global Biofuels Alliance and International Solar Alliance.

#### **India-Italy Relations: Key facts**

- **Historical Connect:** Italy's port cities were key trading posts on the ancient spice route; Marco Polo visited India in the 13th century.
- **Strategic Partnership:** Became Strategic Partners in 2023, with Italy joining India-led initiatives like IPOI and IMEC.
  - Italy's exit from China's BRI in 2023 aligns with India's efforts to counter Chinese influence.
- **Economic Ties:** Italy is India's 4th largest EU trading partner.
- **Defence and Security:** Defence Cooperation Agreement (2023) enhances research, industrial cooperation, and maritime domain awareness.
- **Climate and Environment:** Italy supports India-led initiatives like ISA, CDRI, and GBA.
- **People-to-People Ties:** Migration and Mobility Agreement (2023) facilitates temporary residence for Indian students.

### **Italy (Capital: Rome)**

#### **Important features**

- **Land Borders:** France to the west, Switzerland to the north, Austria to the north and Slovenia to the east.
- **Maritime Borders:** Mediterranean Sea to the south, with access to the Tyrrhenian Sea, Ionian Sea, and Adriatic Sea and Ligurian Sea to the northwest.
- **Landforms:** The country has several islands, including Sicily and Sardinia.
- **Key Rivers:** The Po River (the longest river), Arno River, Tiber River, and Adige River.
- **Important Peaks:** Mont Blanc (the highest peak in the Alps, on the border with France), Mount Etna (an active volcano in Sicily).

#### **Other Key Facts:**

- The Vatican City (the smallest independent state in the world) located within Rome.



## **2.4. OTHER IMPORTANT NEWS**

### **2.4.1. DIGI FRAMEWORK**

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

The U.S., Japan, and South Korea signed the **Digital Infrastructure Growth Initiative for India Framework (DiGi Framework)** to advance cooperation in digital infrastructure development in partnership with India.

#### **About DiGi Framework**

- **Objective:** To enhance collaboration with the Indian private sector and support the development of digital infrastructure in India.
- **Implementation:** The framework will support projects in the information and communications technology (ICT) sector, including: 5G and Open RAN; Submarine cables and optical fiber networks; Data centres and smart, etc.

### **India's Global DPI Initiatives**



### **2.4.2. THE RIYADH DESIGN LAW TREATY (DLT)**

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

India has signed the **Final Act of the Riyadh Design Law Treaty (DLT)**, reaffirming its commitment to fostering inclusive growth and strengthening its **intellectual property (IP) ecosystem**.

#### **More on the News**

- After **nearly two decades of negotiations**, member states of the **World Intellectual Property Organization (WIPO)** adopted the **landmark DLT**.
- **Design is a category of IP** consisting of a product's ornamental aspect.

#### **About WIPO (HQ: Geneva, Switzerland)**

- A specialized United Nations agency established in 1967 to promote IP rights globally.
- Members: 193 countries, including India.

### 2.4.3. BELT AND ROAD INITIATIVE (BRI)

#### Why in the News?

Brazil has decided against joining China's Belt and Road Initiative (BRI), becoming the second BRICS member after India not to endorse the initiative.

#### More on the News

- Previously, countries like Italy and the Philippines have also announced their withdrawal from the BRI.

#### About Belt and Road Initiative (BRI)

- Genesis:** Launched in 2013 as 'One Belt One Road,' the BRI aims to connect Asia with Africa and Europe through land and maritime networks.
- Components:**
  - Silk Road Economic Belt:** A trans-continental passage linking China to Europe and the Middle East.
  - Maritime Silk Road:** A sea route connecting China to Southeast Asia, South Asia, Africa, and Europe.

#### Related News

##### BRI Cooperation Framework

- Nepal and China Signed BRI Cooperation Framework
- Framework is expected to pave the way implementing **Belt and Road Initiative (BRI)** projects in Nepal, which joined BRI in 2017.
  - Also, both countries have committed to developing the **Trans-Himalayan Connectivity Network (THMDCN)** and improving infrastructure in roads, railways, aviation, and power grids.
  - Pakistan, Bangladesh and Sri Lanka are also part of the BRI.

### 2.4.4. "CROSSROADS OF PEACE" INITIATIVE

#### Why in the news?

During a recent **trilateral consultation between India-Iran-Armenia**, the Armenian side briefed on its connectivity initiative, "**Crossroads of Peace.**"

#### About Crossroad of Peace Initiative

- It is an ambitious regional transport proposal aimed at connecting Armenia with its neighboring countries—**Turkey, Azerbaijan, Iran, and Georgia.**
- Objectives:** Seeks to revitalize and develop crucial infrastructure—roads, railways, pipelines, cables, and electricity lines—to facilitate the flow of goods, energy, and people across these nations.
- It aims to connect the **Caspian Sea to the Mediterranean Sea** and the **Persian Gulf to the Black Sea** through easier and more efficient transportation links.

### 2.4.5. FIRST TRILATERAL POWER TRANSACTION

#### Why in the news?

Inauguration of **first trilateral power transaction from Nepal to Bangladesh** through the Indian Grid took place.

#### About the Agreement

- The tripartite power sales agreement is between:** NTPC Vidyut Vyapar Nigam, Nepal Electricity Authority (NEA) and Bangladesh Power Development Board.
- Aim:** To facilitate power transaction from Nepal to Bangladesh, through Indian grid with an export of upto 40 MW of power.

## 2.4.6. CASCAIS DECLARATION

### Why in the news?

The 10th Global Forum of the United Nations Alliance of Civilizations (UNAOC) adopted the Cascais Declaration in Portugal.

#### About UNAOC:

- Established in 2005 to serve as a **soft-power political tool** of the **UN Secretary-General** for **conflict prevention** and **conflict resolution**.

#### Key Highlights of Cascais Declaration

- Objective:** To promote **principles of tolerance** and **peaceful existence** and **build bridges** between cultures.
- Recognized** the potential of artificial intelligence as a tool to promote intercultural and interreligious dialogue.
  - E.g., combat misinformation, hate speech, etc.
- Acknowledged the **central role of inclusive, quality, and transformative education** in promoting dialogue, peace, and human rights.

## 2.4.7. PHEWA DIALOGUE

### Why in the news?

Recently, **Nepal** and **China** launched the “**Phewa Dialogue**” series.

#### About Phewa Dialogue

- It derives its name from the famous **Phewa Lake** situated in **Pokhara Valley** of Nepal.
- This will be **Nepal's first official think tank forum dedicated to South Asia Regional Economic Integration**.

## 2.4.8. CARICOM

### Why in the news?

**2nd India-CARICOM Summit concluded in Guyana where** India proposed **seven key pillars** to strengthen ties between India and the **Caribbean Community (CARICOM)**.

#### About CARICOM

- It is a **regional organization** to promote economic integration and cooperation in the Caribbean Region.
- Established:** 1973.
- Secretariat:** Georgetown, Guyana.
- Enjoys **observer status in UNGA** since 1991.
- Members:** CARICOM consists of **20 countries**, of which **15 are Member States** and **5 Associated States**.
- The **first-ever India-CARICOM Summit** was held in **2019**.

## 2.5. ISSUES RELATED TO SECURITY

### 2.5.1. INTERPOL

#### Why in the News?

- INTERPOL introduced the **Silver Notice** as part of a **pilot phase involving 52 countries**, including **India**, to combat transnational organized crime by targeting criminal assets.

## About the Silver Notice

- Purpose:** Facilitates locating, identifying, and obtaining information about laundered assets like properties, vehicles, financial accounts, and businesses.
- Scope:** Targets assets linked to crimes such as fraud, corruption, drug trafficking, and environmental crime.

**HQ:** Lyon, France

**Quick Overview of International Criminal Police Organization (INTERPOL)**

**International Criminal Police Organization (INTERPOL)**

 **INTERPOL**

**Genesis:** Founded in 1923, INTERPOL is the **world's largest international police organization**.

**Member Countries:** 196

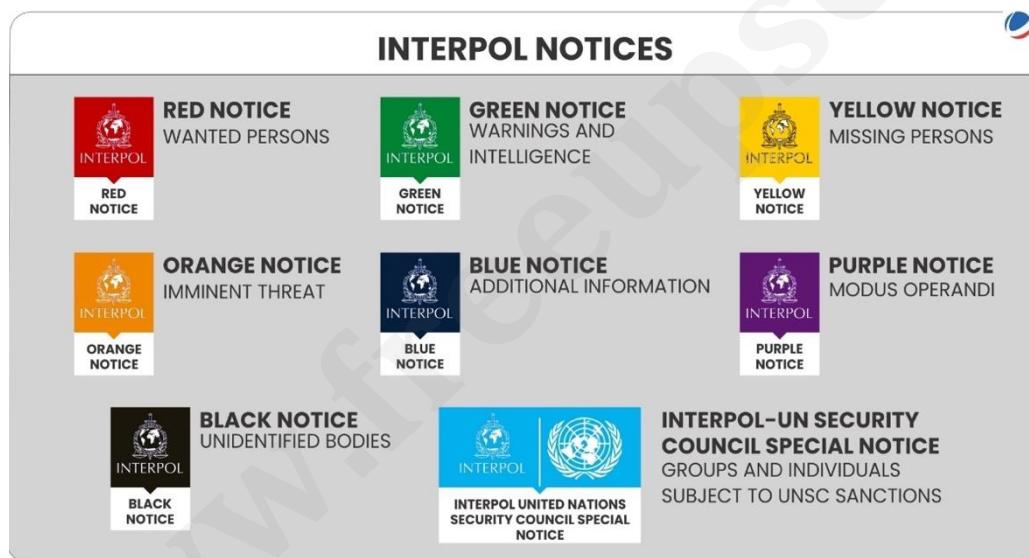
**Purpose:** Facilitates global cooperation among law enforcement agencies to combat international crime.

**Other Key Information:**

- ◆ **Interpol** facilitates communication and cooperation among law enforcement agencies **but cannot arrest or conduct investigations independently**.
- ◆ **About INTERPOL Notices:** 8 types of Notices, plus the INTERPOL-UNSC Special Notice.
- ◆ **A Red Notice** is not an international arrest warrant, but requests provisional arrest for potential extradition.

## Other Key Facts

- India joined Interpol in 1949, CBI is designated as National Central Bureau of India for ICPO-INTERPOL.**
- Important Operations:** Operation Thunderstorm, Operation Blackfin, Operation Pangea, Operation Lionfish, Operation Prey, etc.



## Related News

### BHARATPOL portal

- BHARATPOL portal**, developed by the CBI, has been launched.
- Key Features of BHARATPOL**
  - Connect:** Links all Indian law enforcement agencies to INTERPOL's NCB-New Delhi.
  - References:** Simplifies seeking and providing international investigative assistance.
  - Broadcast:** Ensures immediate access to assistance requests from 195 countries.

## 2.5.2. THE UN GENERAL ASSEMBLY ADOPTS THE CONVENTION AGAINST CYBERCRIME

### Why in the News?

193 UN Member States adopted the **first legally binding UN Convention against Cybercrime**, aimed at strengthening international cooperation to combat digital threats.

### Key Provisions

- **Domestic Legislation:** Mandates states to criminalize unauthorized breaches of information and communication systems.
- **International Cooperation:** Encourages cooperation in investigations, evidence sharing, and prosecution while respecting sovereignty and non-intervention.
- **Child Protection:** Criminalizes the production, distribution, and broadcasting of child sexual exploitation material.
- **Human Rights:** Ensures implementation aligns with international human rights law.
- **Next Steps:** The Convention will enter into **force 90 days** after **ratification by 40 signatories**.

## 2.5.3. PREVENTION OF MONEY LAUNDERING ACT (PMLA), 2002

### Why in the News?

The Supreme Court ruled that prior sanction is **mandatory** to prosecute **public servants** in **money laundering cases**.

### More on the News

- The ruling establishes a key procedural safeguard under the stringent **Prevention of Money Laundering Act (PMLA)** and adds a layer of **accountability to PMLA prosecutions**.

### About Prevention of Money Laundering Act (PMLA), 2002

- **Enactment:** The PMLA was enacted to address and **combat money laundering in India**.
- **Definition of Money Laundering (Section 3):** Anyone who **directly or indirectly** attempts to engage in or knowingly assists in any process or activity related to the proceeds of crime, projecting it as legitimate or untainted property, shall be guilty of money laundering.
- **Powers of the Enforcement Directorate (ED):** The ED is authorized to investigate money laundering cases and attach properties involved in such crimes.

## 2.5.4. OTHER IMPORTANT DEVELOPMENTS

### 2.5.4.1. UN COMMISSION ON NARCOTIC DRUGS (UNCND)

#### India to Chair UN Commission on Narcotic Drugs (UNCND)

- India has been chosen to chair the **68th Session of the UNCND** for the **first time**, marking a significant milestone in global drug control efforts.

#### About UNCND



**Origin:** Established in 1946 by the UN Economic and Social Council (ECOSOC) to supervise international drug control treaties.



**Members:** 53 member states elected by ECOSOC.



#### Functions:

- ◆ Serves as the governing body of the United Nations Office on Drugs and Crime (UNODC).
- ◆ Reviews and analyzes the global drug situation, focusing on supply and demand reduction.



## About UNCND

- **Origin:** Established in 1946 by the UN Economic and Social Council (ECOSOC) to supervise international drug control treaties.
- **Members:** 53 member states elected by ECOSOC.
- **Functions:**
  - Serves as the governing body of the **United Nations Office on Drugs and Crime (UNODC)**.
  - Reviews and analyzes the **global drug situation**, focusing on **supply and demand reduction**.

### 2.5.4.2. NATIONAL INVESTIGATION AGENCY (NIA)

The Supreme Court, in *Ankush Vipan Kapoor vs. NIA*, ruled that the **National Investigation Agency (NIA)** can investigate **non-scheduled offences** linked to **scheduled offences** under the **NIA Act**.

HQ: New Delhi



#### About NIA



**Formation:** The NIA was established in **2009** by the **National Investigation Agency Act**, following the **2008 Mumbai attacks** to counter terrorism and other national security threats.



**Objective:** The NIA's primary objective is to investigate and prosecute offenses related to terrorism, organized crime, and other offenses that threaten national security.



**Jurisdiction:** The NIA has jurisdiction over the **entire country** and is empowered to investigate cases beyond state boundaries.



**Authority:** The NIA is a **central agency**, and its investigations are authorized by the Union Ministry of Home Affairs (MHA).

↳ It has the authority to arrest, investigate, and prosecute accused individuals.

### The NIA investigates offenses under various laws, including

**UAPA**  
Provides a legal framework for addressing unlawful activities and terrorism

**Explosive Substances Act**  
Regulates the use and handling of explosive materials.

**Atomic Energy Act**  
Addresses threats related to nuclear terrorism.

**Narcotic Drugs Act**  
Controls and prevents drug-related offenses linked to terrorism.

**IPC**  
Covers a broad range of terrorist activities under Indian law.

### 2.5.4.3. INDIAN CHEMICAL COUNCIL (ICC) WINS 2024 OPCW THE HAGUE AWARD

The **Organisation for the Prohibition of Chemical Weapons (OPCW)** conferred the **2024 Hague Award** on the Indian **Chemical Council (ICC)** for its contributions to chemical safety and compliance with the Chemical Weapons Convention (CWC).

#### About the Hague Award

- Established in **2014** to honor **contributions to CWC goals**.
- First time awarded to a **chemical industry body (ICC)**.

#### **2.5.4.4. DIGITAL ARREST**

Digital arrests are the newest form of cyber fraud that have affected many in 2024.

##### **About Digital Arrest**

- A digital arrest scam is an online scam that defrauds victims of their money. The scammers intimidate the victims and falsely accuse them of illegal activities.
- They later demand money and puts them under pressure for making the payment.

#### **2.5.4.5. RUSSIA'S PRESIDENT HAS APPROVED A REVISED NUCLEAR DOCTRINE (ND)**

Russia has updated its 2020 Nuclear Doctrine, reaffirming the role of nuclear weapons in deterring enemies and expanding scenarios for their potential use.

##### **Key Changes in Russia's ND**

- **Expanded Definition of Nuclear Attack:** Any aggression by a non-nuclear state supported by a nuclear state is treated as a joint attack, justifying nuclear retaliation.
  - Targets countries allowing their territories to be used against Russia.
- **Lowered Nuclear Response Threshold:** Expanded from defending state existence to protecting sovereignty and territorial integrity.
  - Belarus formally placed under Russia's nuclear umbrella.
- **New Triggers for Nuclear Response:** Expansion of military coalitions, large-scale exercises near Russian borders, and positioning of enemy military infrastructure closer to Russia.

#### **2.5.5. LIST OF VIOLENT GROUPS**

<b>List of Violent Groups</b>	
<b>Violent Organizations</b>	<b>Area/Country</b>
M23 (March 23 movement) rebels	Democratic Republic of Congo
Hezbollah	Lebanon
Abu Sayyaf	Philippines
Al-Shabaab	Somalia
Houthi	Yemen
Boko Haram	Nigeria
ISIS (Islamic State of Iraq and Syria)	Iraq, Syria.
Jemaah Islamiyah	Indonesia, Philippines, Malaysia
Al-Qaeda	Global: particularly in Afghanistan, Pakistan, and Yemen
Ansar al-Sharia	Libya, Tunisia
PKK (Kurdistan Workers' Party)	Turkey, Iraq
Hamas	Palestinian Territories (Gaza Strip)
Arakan Rohingya Salvation Army (ARSA)	Myanmar
Kachin Independence Army (KIA)	Myanmar
Ansar Dine	Mali
FARC (Revolutionary Armed Forces of Colombia)	Colombia

## 2.5.6. EXERCISES IN NEWS



S.N.	Bilateral	Description
1	<b>Garud Shakti</b>	Indian Army participates in India-Indonesia Joint Special Forces Exercise <b>GARUD SHAKTI 24</b> .
2	<b>VINBAX 2024</b>	<b>Vietnam-India Bilateral Army Exercise (VINBAX)</b> at Ambala (Haryana).
3	<b>AUSTRAHIND</b>	Annual joint military Exercise <b>AUSTRAHIND</b> held at Pune between <b>India and Australia</b> .
4	<b>SLINEX</b>	Bilateral naval exercise ' <b>SLINEX</b> ' between <b>Sri Lanka and India</b> held.
5	<b>Harimau Shakti</b>	<b>India- Malaysia</b> Annual Joint Military Exercise 'Harimau Shakti' conducted in Malaysia.
6	<b>Exercise Shakti</b>	A joint military exercise between <b>India and France</b> .
7	<b>Agni Warrior</b>	Bilateral exercise between <b>Indian Army</b> and <b>Singapore Armed Forces</b> .
8	<b>CINBAX</b>	1st edition of Joint Tabletop Exercise, CINBAX between <b>Indian</b> and <b>Cambodian</b> conducted in Pune.
9	<b>Exercise Surya Kiran</b>	Indian Army contingent left for Nepal to take part in the <b>18<sup>th</sup> Battalion Level Joint Military Exercise, SURYA KIRAN</b> . It is an <b>annual Joint military exercise</b> between India and Nepal conducted alternatively in two countries.

Description	
Exercises	Multilateral
Desert Knight	India, France, and UAE concluded the “Desert Knight” exercise over the Arabian Sea.
La Perouse: Multilateral Exercise	Navies of nine Indo-Pacific countries, including India, participated in the multilateral exercise La Perouse, hosted by France in strategic straits between the Indian and Pacific Oceans. <b>Participating countries:</b> Australia, Canada, USA, France, India, Indonesia, Malaysia, United Kingdom, Singapore.
Humanitarian	
SAREX-24	The Indian Coast Guard conducted the 11th edition of the National Maritime Search and Rescue Exercise (SAREX-24) in Kochi under the National Maritime Search and Rescue Board.
Sanyukt Vimochan 2024	The Indian Army conducted the multilateral annual joint Humanitarian Assistance and Disaster Relief (HADR) Exercise, 'Sanyukt Vimochan 2024', in Gujarat, with participation from nine friendly foreign countries.
Internal Defence Exercises	
SEA VIGIL 24	Sea Vigil 24, a Pan-India coastal defense exercise, was conducted by the Indian Navy to strengthen coastal security.
Operation Sagar-Manthan	The Narcotics Control Bureau (NCB), in coordination with the Indian Navy and Coast Guard, seized 700 kg of Methamphetamine as part of Operation Sagar-Manthan.
Operation Sankalp	Launched by the Indian Navy to protect the maritime community from non-traditional threats in the Gulf of Aden, Arabian Sea, and off the East Coast of Somalia.
Exercise Antariksha Abhyas 2024	India's first Space Defense Exercise, conducted by the Defense Space Agency (DSA), aimed at securing national strategic objectives in space

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### 3. ECONOMY

#### 3.1. BANKING AND MONETARY POLICY

##### 3.1.1. BASEL III ENDGAME

###### Why in the news?

Consumer Bankers Association (CBA) released a White Paper, 'The Impact of the **Basel III Endgame Proposal**'.

###### Basel Norms

- **Overview:** These are a **set of measures** developed by the **Basel Committee on Banking Supervision** to strengthen the regulation, supervision, and risk management of banks.
- **Basel I (1987):** Introduced credit risk and asset risk-weighting.
- **Basel II (2004): Focused on the credit risk and risk-weighting of assets.** These norms set minimum level of capital requirements that banks should have.
- **Basel III (2010):** Released to build robust capital base for banks and **ensure sound liquidity & leverage ratios.**

###### About Basel Committee on Banking Supervision (BCBS)

- **Established in 1974, BCBS** is the primary global standard setter for the prudential regulation of banks and provides a forum for regular **cooperation on banking supervisory matters**.
- Its 45 members comprise central banks and bank supervisors from 28 jurisdictions.
- Its decisions **do not have legal force**.

###### About Basel III Endgame

- The **final set of rules of Basel III norms** has been called "Basel III Endgame."
- **Potential impact of Endgame** includes **Globally Systemically Important Banks (G-SIBs)** experiencing an increase of 21% in capital requirements.

###### New Banking Capital Requirement Parameters Introduced by Basel III

- **Capital Conservation Buffers to RWAs:** Banks have to maintain a capital conservation buffer of 2.5 %.
- **Leverage Ratio:** Banks have to maintain a leverage ratio of 3%.
- **Counter Cyclical Buffer:** A buffer ranging from 0 % to 2.5%.
- **Minimum Liquidity Coverage Ratio:** It should be  $\geq 100\%$ .
- **Minimum Net Stable Funding Ratio:** NSFR should be  $\geq 100\%$ .

###### Implementation of Basel Norms in India

- **Basel I Adoption:** RBI adopted Basel I in **1998-99** to raise **CRAR**.
- **Basel II Guidelines:** RBI announced final guidelines for **Basel II** in **2007**.
- **Basel III** was fully adopted by **October 2021**.
- **Stricter RBI Norms:** RBI's norms are **stricter and more prudent** than Basel norms.

###### Important Terminologies related to Basel Norms

- **Tier I capital (Core Capital):** It include **paid up share capital, stocks and disclosed reserve**.
- **Tier II capital (Supplementary Capital):** It includes all other capital e.g. **Undisclosed/revaluation/loss reserves; general provisions etc.**
- **Risk weighted Assets (RWA):** RWA is linked to minimum amount of capital that banks must have relative to bank's risk from its lending activities. The more the risk, the more the capital needed to protect depositors.
- **Leverage ratio:** It shows **how much of a company's capital comes from debt**, or how well it can meet its financial obligations.
- **LCR:** LCR requires banks to **maintain a buffer of easily liquefiable assets** to cover potential withdrawal demands over 30 days. It helps the bank stay afloat during a financial crisis.

- Net Stable Funding Ratio (NSFR):** It promotes resilience by creating incentives for banks to fund their activities with more stable sources.
- Countercyclical Buffer:** It is a mechanism that allows banks to **build up capital during periods of excessive credit growth** to help the absorb losses during downturns.

**Important Ratios Related with Basel Norms:**

**Leverage Ratio**  

$$= \frac{\text{Tier 1 capital}}{\text{Exposure Measure}}$$

**LCR =**  

$$\frac{\text{High quality liquid assets}}{\text{Total net cash outflow over next 30 days}}$$

**NSFR**  

$$= \frac{\text{Available Stable Funding}}{\text{Required Stable Funding}}$$

**CAR** =  $\frac{\text{Capital (Tier I and Tier II)}}{\text{Risk Weighted Assets}}$

### 3.1.2. DOMESTIC SYSTEMICALLY IMPORTANT BANKS (D-SIBs)

#### Why in the news?

Reserve Bank of India (RBI) released 2024 list of Domestic Systemically Important Banks (D-SIBs).

#### About D-SIBs

- D-SIBs** are systemically important due to their **size, cross-jurisdictional activities, complexity and lack of substitute and interconnection**.
  - It also means that **the bank is too big to fail**. If DSBs fail, essential banking services and the economy would face major disruptions.
- State Bank of India, HDFC Bank and ICICI Bank** continue to be identified as D-SIBs in the RBI's 2024 list.

#### Declaration of D-SIBs

- Based on the **D-SIBs Framework of RBI (2014)**.
  - Framework is based on **Basel Committee on Banking Supervision's (BCBS's)** framework.
  - Banks having size** as a percentage of **GDP equal to or more than 2%** are considered for D-SIB list.
- Banks are placed in **5 buckets** on the basis of **Additional Common Equity Tier 1 (CET1)** requirement as a percentage of **Risk Weighted Assets (RWAs)**.
  - Bucket 1** banks have to maintain lowest **CET1** and **Bucket 5 banks** have to maintain highest.
- In case a **foreign bank** having branch presence in India is a **Global Systemically Important Bank (G-SIB)**, it has to maintain additional CET1 capital surcharge.
  - Financial Stability Board (FSB)** releases the list of **G-SIBs**.

### 3.1.3. WPI BASE YEAR REVISION

#### Why in the News?

The Government has constituted a **Working Group** for **base revision** of the current series of **Wholesale Price Index (WPI)** from base **2011-12 to 2022-23**.

#### About the Working Group

- Working Group will be **chaired by Prof. Ramesh Chand**, Member, NITI Aayog.
- It will also suggest improvement in compilation and presentation and **recommend roadmap for switch over from WPI to Producer Price Index (PPI)**.

#### What is WPI?

- It is a measure of the **average change of prices of a fixed set of goods** at the **first point of bulk sale** in a **commercial transaction in the domestic market** over a given period of time.

- **Released by:** Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade, Union Ministry of Commerce & Industry.
- **Measurement:** Measured as weighted average of a basket of commodities.

Composition of Basket		
Comprises 697 items categorized into three major groups:		
 <b>Primary Articles</b> <b>(Weight:</b> 22.618 out of 100):	 <b>Fuel and Power</b> <b>(Lowest weight:</b> 13.152 out of 100)	 <b>Manufactured Products</b> <b>(Highest weight:</b> 64.230 out of 100)
 Consists of 4 sub-groups: <b>Food Articles; Non-Food Articles; Minerals; and Crude, petroleum and natural gas.</b>	 <b>Consists of 3 sub-groups:</b> Coal; Mineral Oils; Electricity.	 Consists of 22 sub-groups.

#### Need for revision in WPI Base Year

- **Structural Changes:** Fundamental changes in the production and consumption patterns.
- **Updating Commodities basket:** To allow for inclusion of emerging products and the removal of obsolete ones.
- **Goods and Services Tax:** To ensure compatibility of WPI series with GST.

#### About Producer Price Index (PPI)

- It measures the **average change in the price a producer receives** for his goods/services sold in the **domestic market/ exports**.
- **Two types:**
  - **Output PPI:** Measures the average price change of all covered goods and services resulting from an activity and sold on the domestic/ export markets.
  - **Input PPI:** Measure the change in the prices of all intermediate inputs used in production by a specified sector of the economy.

#### Need to replace WPI by PPI

- **Multiple Counting Bias:** WPI has inbuilt **bias** due to double/ multiple counting of same product.
- **Exclusion of Services:** WPI also excludes the service sector (about 55% of GDP).
- **Exclusion of taxes:** News WPI (2011-12) series considers only basic prices and does not include taxes, rebate/trade discounts, transport and other charges.
- **Advantages of PPI:** Cover services; exclude indirect taxes among some, International Prominence of PPI being used by advanced economies like U.S.A. etc.

#### Consumer Price Index

- **Definition:** Measures price changes at the consumer level (retail prices paid by consumers).
- **Published by:** National Statistics Office (NSO), Ministry of Statistics and Programme Implementation.
- **Scope:** Covers goods and services consumed by households.
- **Base Year:** 2012.
- **Composition:** Includes goods and services like food, healthcare, education, and housing.
- **Measurement:** The weights of the CPI basket are based on the average household expenditure taken from the Consumer expenditure survey.

### **3.1.4. OTHER KEY DEVELOPMENTS**

#### **3.1.4.1. REGIONAL RURAL BANKS (RRBs)**

The finance ministry proposes 4<sup>th</sup> phase of consolidation of Regional Rural Banks (RRBs) as per reports.

##### **About Regional Rural Banks (RRBs)**

- **Genesis:** Established in **1975** on the recommendations of the **Narsimhan Working Group (1975)**, after promulgation of an ordinance, **which was later replaced by the Regional Rural Banks Act, 1976**.
- **Objectives:** To **develop the rural economy** by providing **credit** and other facilities particularly to small and marginal farmers, agricultural labourers, small entrepreneurs etc.
- **Shareholding:** Government of India (**50%**), State Government (**15%**), and Sponsor Bank (**35%**).
- They are **Scheduled Commercial Banks** (Government Banks) regulated by **RBI** and supervised by **National Bank for Agriculture and Rural Development (NABARD)**.
- Created primarily for rural areas, however, **may also set up branches in urban areas**.
- RRBs have been consolidated in a **phased manner** based on recommendations of **Dr. Vyas Committee (2001)**.
- The RBI has set a **Priority Sector Lending (PSL) target of 75%** of total outstanding advances for RRBs as against 40% for Scheduled Commercial Banks.
- The area of operation of the RRBs is limited to **few notified districts in a State**.

#### **3.1.4.2. INDIA POST PAYMENT BANK (IPPB)**

Recently, India Post Payment Bank (IPPB) marked its 7<sup>th</sup> Foundation Day.

##### **About IPPB**

- Established in 2018 under the **Department of Posts**, Ministry of Communication with **100% equity owned by the Government of India**.
- **Aim:** To provide every household in India an access to efficient banking services and enable them to become financially secure and empowered by **leveraging postal network**.
- **Services offered:** Saving/Current account, Direct Benefits Transfers, Bill and Utility Payments, access to 3<sup>rd</sup> Party products such as loans, insurance, etc.

##### **About Payment Banks**

- **Payments banks** are **differentiated banks**, conceptualized by the Reserve Bank of India (RBI) on the recommendations of the **Nachiket Mor committee**.
- **Objective:** To widen the spread of payment and financial services to small businesses, low-income households, and migrant labor workforce in a secure technology-driven environment.
- They can **accept demand deposits** in the form of saving and current accounts. However, they **cannot accept time and NRI deposits**.
- These banks **cannot issue loans and credit cards**. However, they can issue ATM cards or debit cards and provide online or mobile banking services.

#### **3.1.4.3. RESERVE BANK OF INDIA (RBI) GOVERNOR**

Recently, Union government named the 26<sup>th</sup> RBI Governor.

##### **About RBI Governor**

- **Appointment:** By the **Central Government** as per the **Reserve Bank of India (1934) Act**.
  - Sir Osborne Smith (1937) was the first Governor of the Reserve Bank.
  - Chintaman Dwarkanath Deshmukh (1943-49) was the **first Indian Governor** of the Bank.
- **Process:** **Financial Sector Regulatory Appointment Search Committee**, (consisting Cabinet Secretary, current RBI Governor, Financial Services Secretary and two independent members) shortlists candidates.
  - Final appointment is made by the **Cabinet Committee on Appointments**, headed by the Prime Minister.

- **Tenure:** Holds office for term **not exceeding 5 years** or as the Central Government may fix while appointing.
  - **Eligible for reappointment.**

#### Related News

- The Reserve bank of India set up a committee to develop a **Framework for Responsible and Ethical Enablement of Artificial Intelligence (FREE-AI)** in Financial Sector
- The **8-member committee** is headed by **Dr. Pushpak Bhattacharyya**.
- It will recommend a framework assessing the current level of adoption of AI in financial services, identifying potential risks associated with AI etc.

### 3.1.4.4. FOREIGN CURRENCY NON-RESIDENT (BANK) ACCOUNTS

Recently, RBI hiked the rate ceilings on **Foreign Currency Non-Resident (Bank) [FCNR (B)] accounts** to support foreign flows.

#### About FCNR (B)

- Term deposit account that can be opened by **Non-Resident Indians (NRIs)** and **Persons of Indian Origin (PIOs)** in any **permitted foreign currency** which is freely convertible.
- **Other types of NRI Bank Accounts:**
  - **Non-Resident (External) Rupee Account (NRE):** Savings, Current, Recurring, Fixed Deposit account that can be opened by NRIs or PIOs in **Indian Rupees**.
  - **Non-Resident Ordinary Rupee Account (NRO):** Savings, Current, Recurring, Fixed Deposit account that can be opened by any resident outside India for their bonafide transaction in **rupees**.

## 3.2. FINANCE AND TAXATION

### 3.2.1. FISCAL HEALTH INDEX REPORT 2025

#### Why in the News?

Recently, NITI Aayog released **Fiscal Health Index (FHI) Report 2025** to throw light on **fiscal status at the sub-national level** and guide policy reforms for sustainable and resilient economic growth.

#### Fiscal Health Index 2025

- **About:** Index ranks States on the basis of composite **fiscal index**, which is based on five major sub-indices and nine minor sub-indices (**See the infographic**).
- States have been classified on the **basis of the FHI score**:
  - **Achiever:** Greater than 50
  - **Front Runner:** Greater than 40 & less than equal to 50.
  - **Performer:** Greater than 25 & less than equal to 40
  - **Aspirational:** Less than equal to 25
- **Report analyses 18 major states** using CAG data, **excluding special category and Himalayan states**.
- **Period of the analysis:** Financial Year 2022-23.
- **Competitive Governance Initiative:** Government aims to boost state participation through **fiscal incentives and performance indexes** to achieve growth targets through improved governance.

Sub-Indices of FHI	
MAJOR SUB-INDICES	MINOR SUB-INDICES
	Total Developmental Expenditure/Total Expenditure Total Capital Outlay/ GSDP*
	State Own Revenue/ GSDP* State Own Revenue/ Total Expenditure
	Gross Fiscal Deficit/GSDP* Revenue Deficit/GSDP*
	Interest Payments/Revenue Receipts Outstanding Liabilities/ GSDP*
	Growth Rate of GSDP* – Growth Rate of Interest Payments

\*GSDP at current prices for the year 2022-23

#### Key Findings of FHI 2025

- **Top Performing States:** Odisha, Chhattisgarh and Goa.

- **Non-tax revenue:** Odisha, Jharkhand, Goa, and Chhattisgarh demonstrated strong non-tax revenue generation, accounting for **21% of their total revenue**.
- **Capital expenditure:** Madhya Pradesh, Odisha, Goa, Karnataka, and UP demonstrated stronger capital investment by **allocating 27% of their development funds to capital expenditure**.
- **Debt Sustainability:** West Bengal and Punjab showed concerning fiscal trends with increasing debt-to-GSDP ratios, raising serious questions about their long-term debt sustainability.

### **3.2.1.1. STATE FINANCES: A STUDY OF BUDGETS OF 2024-25 REPORT**

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

The RBI released **State Finances: A Study of Budgets of 2024-25 Report** with theme '**Fiscal Reforms by States**'.

#### **Fiscal Position of the State Governments as per Report**

- **Gross Fiscal Deficit:** State governments contained their **gross fiscal deficit within 3% of Gross Domestic Product (GDP)** during 2021-22 to 2023-24.
  - GFD of the Indian States fell from an average of 4.3% of GDP during 1998-99 to 2003-04 to 2.7% of GDP during 2004-05 to 2023-24.
- **Revenue Deficit:** States maintained the **revenue deficit at 0.2% of GDP** during 2021-22 to 2023-24.
- **Expenditure quality improved:** Capital outlay, expenditure that leads to creation of **physical/financial assets**.
- **Debt of States:** Declined from **31.8% of GDP** at end-March 2004 to **28.5% of GDP** at end-March 2024
  - However, it remains well above the level of **20%** recommended by the **Fiscal Responsibility and Budget Management (FRBM) Review Committee (2017)** and **FRBM Act**.

#### **Gross Fiscal Deficit (GFD) & Revenue deficit (RD)**

- **Gross fiscal deficit:** It is a measure of how much the government needs to borrow.
  - **Formula:**  $\text{Gross fiscal deficit} = \text{Total expenditure} - (\text{Revenue receipts} + \text{Non-debt creating capital receipts})$
- **Revenue deficit:** Represents the shortage of Government's funds to maintain daily affairs.
  - **Formula:**  $\text{Revenue deficit} = \text{Total Revenue expenditure} - \text{Total Revenue receipts}$

#### **About FRBM Act, 2003**

- It was enforced in July 2004 with an objective of ensuring **inter-generational equity in fiscal management** and ensuring **long-term macroeconomic stability**.
- It prescribes limits for Fiscal Deficit (FD) in order as burden of **present-day borrowings would have to be borne by the future generations**.
- It has been amended four times in **2004, 2012, 2015 and 2018**.
- **Targets under the Act**
  - Fiscal deficit to be **3% of the GDP**.
  - Containing **General Government debt to 60% of GDP (Central Government Debt to 40% of GDP and State Government Debt to 20% of GDP)** by **2024-25**.

### **3.2.2. GOVERNMENT SECURITIES (G-SEC)**

#### **Why in the news?**

Recently, RBI notified the calendar for issuance of **T-Bills**, one of the types of **Government Securities (G-Sec)**.

#### **Government Securities Market in India**

- **About:** It is a **tradeable instrument** issued by the **Central or State Governments** acknowledging the Government's **debt obligation**.
  - **Issued by:** RBI through an auction on its electronic, **E-Kuber platform**.
    - > **RBI's Public Debt Office (PDO)** acts as its registry / depository.
  - **Major Participants:** Commercial banks, Primary Dealers, Insurance companies, co-operative banks, regional rural banks, mutual funds, retail investors (non-competitive bidding section), etc.

## Types of G-Sec

- Short term with original maturities **less than a year**. E.g., T-Bills
  - **Treasury Bills (T-bills)**
    - > Money market and short term debt instruments issued by the Government of India (GOI)
    - > Zero coupon securities and pay no interest.
      - ✓ Issued at a discount and redeemed at the face value at maturity.
    - > Issued in 3 tenors, namely, **91 day, 182 day and 364 day**.
  - **Cash Management Bills (CMBs):** Short-term (maturities less than 91 days) instrument introduced by the GOI in 2010 to meet the temporary mismatches in its cash flows.
- Long Term, with original maturity **of one or more year**. E.g., Government Bonds or Dated Securities.
  - **Dated G-Sec:** They carry a **fixed or floating interest rate** paid on the face value, on half-yearly basis, with maturities ranging from 5 to 40 years.
  - **State Development Loans (SDLs):** Dated securities issued by State Governments with half-yearly interest payments.
- **NOTE:** In India, the **Central Government** issues both T-Bills and bonds or dated securities while the **State Governments** issue only bonds or dated securities, called the **State Development Loans (SDLs)**.

## Advantages of Investing in Government Securities



## Initiatives taken for Government -Securities (G-Secs)

- **G-sec Acquisition Programme (G-SAP):** Under it, RBI conducts **open market operations to purchase G-Secs** from the market.
  - It helps the central bank in controlling excessive volatility faced by market participants in G-Secs market.
- **RBI Retail Direct Scheme:** Under this, retail investors will have the facility to open and maintain '**Retail Direct Gilt Account**' with RBI to access its G-Sec platform.
- **Scheme for Non-competitive Bidding Facility in Auctions of G-Secs:** Introduced by RBI to encourage retail participation in primary market for G-Secs and **SDLs**.

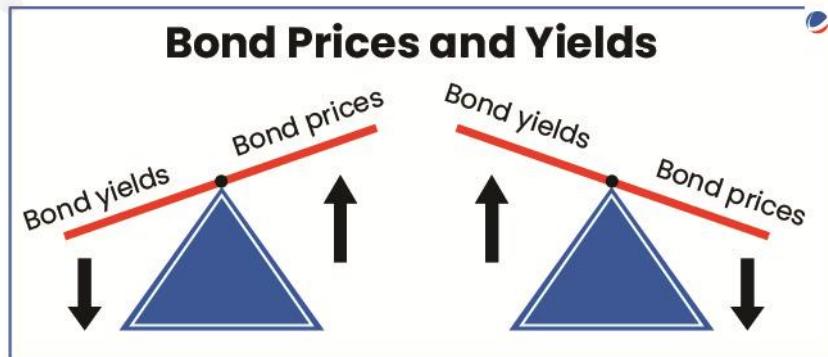
### 3.2.2.1. SOVEREIGN BONDS

#### Why in the news?

The 10-Year Sovereign Bond Yield Falls to Near 1-Year Low

#### Sovereign Bond

- It is a specific **debt instrument** issued by the government. It can be **denominated in both foreign and domestic currency**.
- It promises to **pay the buyer a certain amount of interest** for a stipulated number of years and repay the face value on maturity.



## Why Government Prefers Sovereign Bonds?

- To meet their expenditure, governments have 2 options: either to **raise taxes or to issue bonds**.
- **Raising taxes is an unpopular move.** So, **Sovereign bonds are preferred** as they are similar to taking loans from the market.

## Bond Yield

- It is the **interest rate** that the Issuer/government pays on issuing bonds. It is a **return realized by a bond investor**.
- It is dependent on primarily 3 factors -
  - **Creditworthiness:** Country's ability to repay debts.
  - **Country Risk:** E.g., unrest, wars etc.
  - **Exchange Rates:** Countries with **volatile economies and high inflation rates have to issue higher interest returns** on their bonds compared to more stable ones.

## Bond Price - Yield relation

- Price and yield are **inversely related**.
- As the price of a bond goes up, its yield goes down. Conversely, as the yield goes up, the price of the bond goes down.

## 3.2.3. OTHER KEY DEVELOPMENTS

### 3.2.3.1. CESS AND SURCHARGE

Recently, the Chairman of the 16th Finance Commission highlighted concerns related to cess and surcharge.

- **Articles 270 and 271 of the Indian constitution** deal with the Cess and Surcharges.

#### About Cess and Surcharge

- **Cess:** It is a form of tax levied by government on tax with specific purposes till the time the government gets enough money for that purpose. Ex - Education cess, Health cess etc.
  - They are **typically imposed in addition to existing taxes** and may be fixed or calculated ad **valorem** (percentage-based).
  - Funds are credited to the **Consolidated Fund of India** and withdrawn only with parliamentary approval.
  - It is usually not shared with states.
- **Surcharge:** It is an additional tax imposed on existing duties and taxes, essentially a tax on tax.
  - Unlike a cess, a **surcharge does not require a specific purpose at the time of levy**. The Union has discretion over the use of proceeds.
- Both Funds are credited to the **Consolidated Fund of India**.
- They are generally kept out from net proceeds, unlike other taxes under the divisible pool for sharing with States.

### 3.2.3.2. PRINCIPAL PURPOSE TEST

Recently, **Central Board of Direct Taxes** (CBDT) has issued updated guidance for application of the **Principal Purpose Test** (PPT) under India's **Double Taxation Avoidance Agreements** (DTAAs) to curb revenue leakages.

- New guidance **exempts certain provisions** under **India-Cyprus DTAA, India-Mauritius DTAA, & India-Singapore DTAA**.
- Guidance also recognizes and nudges tax authorities to refer to **Base Erosion and Profit Shifting (BEPS) Action Plan 6** as well as the **UN Model Tax Convention** (subject to India's reservation on specific matters) for a supplementary source of guidance.
  - **BEPS Action Plan 6 addresses treaty shopping** (use of tax treaties to reduce tax liability by routing investments through countries with favorable tax agreements) through treaty provisions.

### What is PPT?

- It is a part of **international tax rules** aimed at **preventing misuse of tax treaties**.
- It is a **key provision under the Multilateral Convention to Implement Tax Treaty related provisions to prevent BEPS**, which entered into force for India on **October 01, 2019**.
  - This Convention also modified some India's DTAAs.
- Under **BEPS** framework, PPT checks whether a business arrangement is genuinely commercial or created mainly **to avoid taxes**.

### 3.2.3.3. UN REPORT LAUDS INDIA GENDER RESPONSIVE BUDGETING (GRB)

Report titled 'Charting New Paths for Gender Equality and Empowerment: Asia-Pacific Regional Report on Beijing + 30 Review' published by **UN Economic and Social Commission for Asia and the Pacific (ESCAP)** and **UN Women**.

### What is GRB or Gender Budgeting?

- A tool for **gender mainstreaming** which uses the Budget as an entry point to apply a gender lens to the **entire policy process**.
  - It is **not a separate Budget** and also not about spending the **same on women and men**.
- **GRB in India**
  - **Genesis:** Institutionalized by **Ministry of Finance** in **2005–2006**.
  - **Gender Budget Statement** is presented by the Government in budget session.
  - **Nodal Agency:** Ministry of Women and Child Development (MWCD)
  - **Consists of two parts:**
    - > **Part A:** Encompasses schemes that allocate funds exclusively for women.
    - > **Part B:** Represents the dominant share in the budget – comprises schemes that allocate a minimum of 30% of funds towards women.
  - It also comes under the **Samarthya, sub-scheme of Mission Shakti**.

## 3.3. PAYMENT SYSTEMS AND FINANCIAL MARKET

### 3.3.1. CENTRAL BANK DIGITAL CURRENCY

#### Why in the News?

Recently, US President issued an executive order for **banning** the establishment of USA's Central Bank Digital Currency (CBDC), i.e., '**Digital Dollar**'.

#### What is Digital Currency?

- It is money that is **exclusively available only in digital or electronic form**.
- They are generally **handled, preserved and exchanged using digital computer systems**, connected to Internet.
- A digital currency can be distributed with a condition programmed into it such as a time-frame for spending it.
- It is possible to make payments in a digital currency without using US dollar or SWIFT system.

3 Types of Digital Currencies		
Cryptocurrency	CBDCs	Stablecoins
<ul style="list-style-type: none"><li>• Regulates the <b>generation of new units</b> and secures transactions <b>using cryptographic methods</b>.</li><li>• <b>Blockchain ledger</b> is used to verify transactions.</li><li>• <b>Control:</b> Decentralized</li><li>• <b>E.g.,</b> Bitcoin.</li></ul>	<ul style="list-style-type: none"><li>• <b>Digital version of fiat currencies</b> issued by Central Banks.</li><li>• Maintains the <b>reliability and security of traditional currencies</b>.</li><li>• <b>Control:</b> Centralized</li><li>• <b>E.g.,</b> Digital Rupee (<b>e₹</b>)</li></ul>	<ul style="list-style-type: none"><li>• Typically <b>backed by underlying asset's reserves or by algorithms</b> that modify the supply based on market demand.</li><li>• Designed to have a <b>constant value in comparison to a traditional currency</b> or other asset.</li><li>• <b>Control:</b> Centralized or hybrid</li><li>• <b>E.g.,</b> Tether (USDT)</li></ul>

## About CBDC

- It is a **legal tender** and a central bank **liability in digital form denominated in sovereign currency** and appearing on central bank balance sheet. (**RBI**)
  - **Legal tender** is money issued by monetary authority and cannot be refused by any citizen of the country for settlement of any kind of transaction.
- **Types of CBDCs**
  - **Wholesale CBDCs:** Used among banks and other licensed financial institutions for interbank payments and securities transactions.
  - **Retail CBDC:** It is available to general public via digital wallets, smartphone apps, etc.
    - > **Two models of retail CBDC:**
      - ✓ **Token-based CBDCs:** Enables anonymous transactions through private and public key authentication.
      - ✓ **Account-based CBDCs:** Requires user digital identification for account access. e.g., DCash of Eastern Caribbean.
- **Sand Dollar: Bahamas** became the **first country to launch CBDC** in 2020.
- **DCash: Eastern Caribbean Currency Union** launched its digital currency and became the first currency union to embrace blockchain-based CBDC.

## About India's Digital Rupee (e₹)

- It is a **digital form of fiat currency**, issued and regulated by the RBI.
- It is a sovereign currency issued by the Reserve Bank of India (RBI) in **alignment with its monetary policy**.
- It is **currently in pilot mode (ongoing with 15 Banks)**, since **December 2022**, to test and explore the uses/ features/ technology and applications of Digital Rupee.
- It is **available in the same denominations as physical currency**.
- It is **legal tender** and is **liability of Reserve Bank of India** (Section 26 of the Reserve Bank of India Act, 1934).
- It is freely convertible against commercial bank money and cash.

## 3.3.2. MBRIDGE PROJECT

### Why in the News?

As per Bank for International Settlements (BIS), Project mBridge reached minimum viable product (MVP) stage in mid-2024.

### About Project mBridge

- **Launched in 2021**, mBridge is a **cross-border, decentralised, multiple central bank digital currency (mCBDC)** platform.
- A platform based on a new blockchain '**the mBridge Ledger**' was also built to support real-time, peer-to-peer, cross-border payments and foreign exchange transactions.
  - It is built on **distributed ledger technology (DLT)** - a decentralized ledger network that uses the resources of many nodes to ensure data security and transparency.
- **Participants:** Initially led by the **BIS Innovation Hub**, in collaboration with the other **four central banks** of China, Thailand, the United Arab Emirates (UAE) and Hong Kong.
  - Saudi Central Bank joined in 2024.
  - There are more than **31 observing members** including **Reserve Bank of India**.

### Similar Global Initiatives

- **BRICS Bridge:** Proposed payment system by BRICS nations.
- **Project Nexus:** Bank for International Settlements (BIS) initiative that aims to connect multiple domestic instant payment systems (IPS) globally.

### Bank for International Settlements (BIS)



**Genesis:** Created in 1930 at the **Hague Conference**



**Mandate:**

- To support central banks' pursuit of monetary and financial stability through international cooperation
- Act as a bank for central banks.



**Structure:** Owned by **63 central banks including Reserve Bank of India**

### 3.3.3. OTHER KEY DEVELOPMENTS

#### 3.3.3.1. PAN (PERMANENT ACCOUNT NUMBER) 2.0

The Cabinet Committee on Economic Affairs (CCEA) approved **PAN 2.0 Project** of the Income Tax (IT) Department.

##### About PAN 2.0 Project

- An **e-Governance initiative** for re-engineering the business processes of taxpayer registration services through **technology driven transformation**.
- It will be an **upgrade** of the current PAN/TAN 1.0 eco-system
  - PAN is a **ten-digit unique alphanumeric number** issued by the IT Department to identify/ link transactions (tax payments, etc.) of the holder with the department.
  - **Issuing Agencies:** Protean (formerly known as NSDL e-governance) and UTI Infrastructure Technology and Services Ltd (UTIITSL).
- **Benefits:** Serve as **common Identifier** for all digital systems of specified government agencies, **Data consistency, Single Source of Truth**, etc.

#### 3.3.3.2. PAYMENT AGGREGATOR

RBI approved JP-Morgan-backed fintech company In-Solutions Global (ISG) to operate as a **payment aggregator**.

##### About Payment Aggregator (PA):

- **Third-party service provider** that enables **online payment** by **customers** and **acceptance** of payments by **businesses and e-commerce**.
- PA is a **company** incorporated in India under the **Companies Act, 1956 / 2013**.
- They enable payments through **debit cards, credit cards, NetBanking, UPI, e-wallets** etc.
- Unlike Bank PAs, **non-bank PAs** require **authorisation** from **RBI** under **Payment & Settlement Systems Act, 2007**.

#### 3.3.3.3. PREPAID PAYMENT INSTRUMENTS (PPI)

RBI has allowed **Prepaid Payment Instruments (PPIs)** holders to make and receive **Unified Payments Interface (UPI) payments** through **third-party mobile applications**.

##### About PPI

- PPIs are instruments that facilitate the **purchase of goods and services**, conduct of financial services, enable remittance facilities, etc., against the value stored therein. E.g. Mobile wallets, digital wallets, gift cards
- PPIs can be **issued by banks and non-banks**.

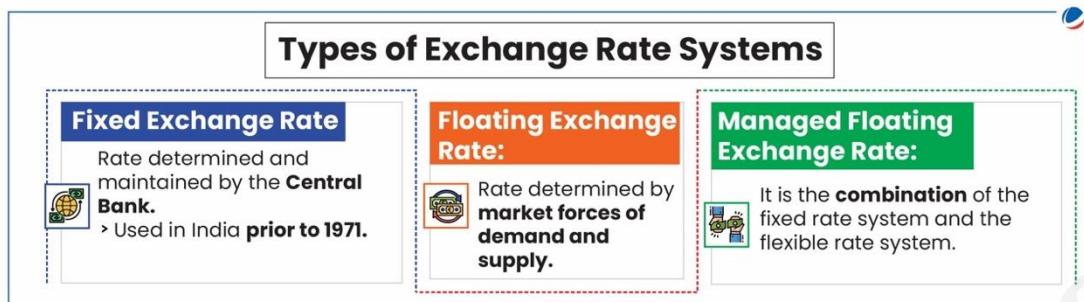
- Classified under two types: **small PPIs** (issued after obtaining minimum details of the PPI holder) **and Full KYC PPIs.**

## 3.4. EXTERNAL SECTOR

### 3.4.1. RUPEE DEPRECIATION

#### Why in the News?

Recently, the Indian rupee's **exchange rate** against the US dollar has breached the 86 mark. The Rupee faced its **sharpest depreciation** in last two years.



#### What is Rupee Depreciation?

- It refers to the **decline in the value of the Indian Rupee (INR) relative to a foreign currency**, typically the US Dollar (USD) or other major global currencies.
- **Exchange Rate:** It is the price of one currency in terms of other.
- **Note:** Currently, India follows Floating Exchange Rate with occasional RBI interventions, when necessary.

#### Key Factors Responsible for Rupee's Depreciation

- **Confidence in Central Bank:** Modern generations of currency crises seem to be triggered by markets that conduct **value at risk assessments** of the central bank's balance sheet. This affects the investor confidence.
- **Illiquidity:** It arises out of short term foreign currency debt becoming larger than liquid foreign currency assets.
- **Inflation:** Higher inflation in India compared to trading partners **erodes purchasing power** of Indian Rupee and adversely affects the exchange rate.
- **Monetary policy:** RBI's **interest rate decisions and foreign exchange interventions** impact the rupee's strength.
  - **RBI's market operations to buy USD** to maintain sufficient Forex reserve also affects exchange rate of the INR.
- **Capital Outflows:** Foreign investors pulling out funds from Indian markets reduce Forex reserves, leading to depreciation.
- **Trade Deficit:** When **imports exceed exports**, demand for foreign currency rises, weakening the rupee.
  - **India's traditional demand for high-value imports** such as crude oil and gold boosts demand for the dollar and weakens the rupee.

#### NEER and REER

- **Nominal Effective Exchange Rate (NEER):** It is the **weighted average of bilateral nominal exchange rates** of the home currency in terms of foreign currencies.
  - An **increase** in NEER indicates an **appreciation** of the local currency against the weighted basket of currencies of its trading partners.
- **Real Effective Exchange Rate (REER):** It is defined as a **weighted average of nominal exchange rates adjusted** for relative price differential between the domestic and foreign countries.
  - An **increase** in REER implies that **exports become more expensive and imports become cheaper**. An increase indicates a loss in trade competitiveness.
- **REER = NEER × (Domestic Price Index / Foreign Price Index)**

- Global economic factors:** High crude oil prices, US Federal Reserve interest rate hikes, or global recessions can also weaken the rupee.

### Impact of Rupee's Depreciation

Positive Impact	Negative Impact
<ul style="list-style-type: none"> <li><b>Boost to Exports:</b> Goods and services become more competitive in international markets due to lower prices in dollar terms.           <ul style="list-style-type: none"> <li>Export-oriented sectors, such as IT and pharmaceuticals, are expected to benefit.</li> </ul> </li> <li><b>Higher Remittance Value:</b> NRIs benefit from higher rupee value sending money back home.</li> <li><b>Effect on Capital and Investment:</b> A weakening rupee may also result in domestic investments due to rise in exports.</li> </ul>	<ul style="list-style-type: none"> <li><b>Higher Import Costs:</b> A weaker rupee makes imports more expensive, particularly for crude oil. It further leads to the widening of Trade Deficit.</li> <li><b>Higher Inflation:</b> As some industries are import dependent, these result in high production costs.</li> <li><b>Effect on Capital and Investment:</b> A weakening rupee may also trigger capital flight and a decline in foreign direct investment (FDI) inflow.</li> <li><b>Others:</b> Increased cost of foreign debt, reduced purchasing power and higher import costs erode consumer sentiment, etc.</li> </ul>

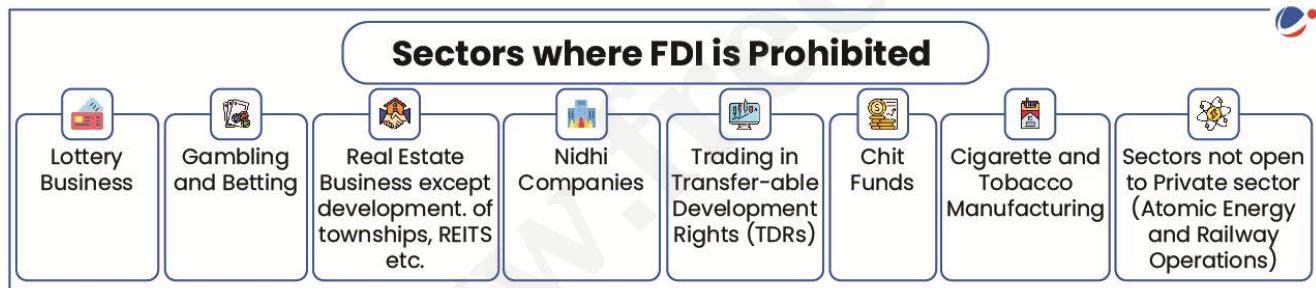
### Measures can be taken to stabilize the Rupee

- Direct Dollar Sales:** To increase the supply of USD in the market, thereby supporting the rupee's value.
- Foreign Exchange Swaps:** RBI can use **buy-sell swaps to inject or absorb dollar liquidity** without depleting forex reserves significantly.
- Attract Foreign Investments:** Policy incentives, such as tax benefits, can encourage FDI and portfolio inflows.
- Promoting International Use of the Rupee:** India is working to increase the international use of its currency, especially for trade. Enhancing the rupee's global presence can further stabilize its value.

### 3.4.2. FRAMEWORK FOR RECLASSIFICATION OF FPI TO FDI

#### Why in the News?

Recently, RBI Issued Framework for Reclassification of **foreign portfolio investment (FPI)** to **Foreign Direct Investment (FDI)**.



#### More on the News

Under current regulations, (**FPIs**) can hold a **maximum of 10%** of an Indian company's total **paid-up equity capital** (amount of money that a company receives from shareholders in exchange for shares).

- Exceeding this 10% cap** (prescribed limit of FPI) had previously left FPIs with **two choices: Divesting** (selling off) the **surplus shares** or **reclassifying them as FDI**.
- In case the **FPI intends to reclassify its FPI into FDI**, the FPI shall follow the operational framework as given below.

#### RBI'S New Operational Framework on reclassification of FPI to FDI

- The facility of reclassification **shall not be permitted in sectors prohibited for FDI**. E.g., Chit funds, gambling, etc.

- FPI investments require government approvals, especially from land-bordering countries, and need Indian investee company's concurrence.
  - Also, investment should be in adherence to entry route, sectoral caps, investment limits, pricing guidelines, and other attendant conditions for FDI under the rules.
- FPI reclassification will be guided by Foreign Exchange Management (Mode of Payment and Reporting of Non-Debt Instruments) Regulations, 2019.

*To know more about FDI refer to Article 4.2 in PT365 Economy 2025*

### 3.4.3. DE-DOLLARISATION

#### Why in the news?

Recently, RBI Governor clarified that India has not taken steps toward de-dollarisation and is rather focused on de-risking its domestic trade from geopolitical upheavals.

#### What is De-dollarization?

- **About:** It aims to reverse dollarization (historical domination of US dollar in global market) causing a significant reduction of its use in world trade and financial transactions.
- **Recent Trends:** India has allowed trade invoicing in Indian Rupees (INR) with various countries, including Russia.
  - The recent BRICS Summit (Kazan, 2024) also discussed the potential for a common BRICS currency.

#### Why are countries moving towards De-dollarization?

- **Reduction of Exchange Rate Risk:** It allows countries to trade in their local currencies, minimizing the risks associated with fluctuations in the US dollar's value.
- **Enhanced Monetary Policy Control:** Countries can implement strategies suitable to their economic conditions without being influenced by US Dollar.
- **Geo-political Benefits:** Challenging US dominance & its weaponisation of dollar through sanctions.

### 3.4.4. REMITTANCES

#### Why in the news?

According to the World Bank, **India secured 14.3% of Global Remittances in 2024, highest share ever.**

#### About Remittances

- **Definition:** Remittances are financial transfers made by individuals working abroad to support their families in their home country.
- **Top five recipients in 2024:** India at \$129 billion (Compared to \$125 billion in 2023), Mexico, China, Philippines, and Pakistan, driven by recovery in job markets in high-income countries of OECD.
- **China's share of global remittances dropped to 5.3% in 2024, its lowest share in two decades,** due to reduced low-skilled emigration stemming from its rising economic prosperity and aging population.

#### Factors responsible for High Remittances in India

- **Scale of Migration:** India has one of the largest diaspora populations in world, with over 18 million Indians living abroad as of 2023 (UN World Migration Report 2024).
- **Shift in Destination Trends:** Increasingly, Indian migrants are moving to high-income economies like US, UK, and Australia.
- **Skilled and Unskilled Labor:** Indian migrants range from highly skilled professionals (IT, healthcare) to semi-skilled and unskilled labourers.

#### Significance of High Remittances

- **For Recipient Households:** used for essential expenses like food, healthcare, and education, directly improving living standards.

- **For Macro-economy:** Major source of foreign exchange, reduced reliance on foreign aid, funding current account deficits and fiscal shortfalls etc.

#### About Liberalised Remittances Scheme

- **Genesis:** Introduced in 2004.
- **Benefit:** All resident individuals, including minors, are allowed to freely remit up to USD 2,50,000 per financial year for any permissible current or capital account transaction or a combination of both.
- There are **no restrictions on the frequency of remittances** under it.
- The Scheme is **not available to corporates, partnership firms, Hindu Undivided Family (HUF), Trusts etc.**

### 3.4.5. MOST-FAVoured-NATION (MFN)

#### Why in the news?

World Trade Organisation (WTO) has highlighted that Over 80 per cent of global merchandise trade is on Most-favoured-nation (MFN) basis.

#### About MFN

- This principle underlines that countries cannot **normally discriminate** between their trading partners.
  - In simple words, if any country grants someone a **special favour** (such as a lower customs duty rate for one of their products) then it has to do the same for all other WTO members.
- The principle is embedded mainly in Article I of the **General Agreement on Tariffs and Trade (GATT)**, 1994.
  - MFN is also a priority in **General Agreement on Trade in Services (GATS)** and Agreement on **Trade-Related Aspects of Intellectual Property Rights (TRIPS)**.
- **Mechanism for Implementation:** Member countries shall extend MFN status to each other automatically, unless otherwise specified in the agreement or schedule notified to the WTO by the member country.
  - India has extended MFN status to many countries.

#### Exceptions to the MFN

- **Trade Pacts:** It includes Regional Trade Agreements (RTA) and Preferential Trade Arrangements (PTAs).
  - E.g. Comprehensive and Progressive Trans-Pacific Partnership (CPTPP)
- **Generalized System of Preferences (GSP) scheme:** Under it, developed countries may grant a preferential tariff treatment to imports from developing countries and LDCs.
- **Other:** Anti-dumping duties, countervailing duties, etc.
  - **Countervailing duties** are additional tariffs levied on imported goods a WTO Member may impose once the presence of **subsidized imports** has demonstrated to injure a domestic industry.

### 3.4.6. AMENDMENT IN THE FOREIGN TRADE POLICY (FTP), 2023

#### Why in the news?

Directorate General of Foreign Trade (DGFT) notified amendment in the Foreign Trade Policy (FTP), 2023.

#### About the Amendment

- The Amendment has provided **legal backing in the FTP** to make it **necessary** to do consultation with stakeholders including importers/exporters/industry experts concerning the formulation or amendment of the FTP.
- **The amendments made** in the exercise of powers conferred under **the Foreign Trade (Development & Regulation) Act, 1992**.

#### FTP 2023 and its Key Features

- **Objective:** Aims at process re-engineering and automation to facilitate ease of doing business for exporters.
- **Target:** To take India's exports to 2 trillion dollars by 2030
- **Key Approach to the policy is based on these 4 pillars:**

- Incentive to Remission,
  - Export promotion through collaboration - Exporters, States, Districts, Indian Missions,
  - Ease of doing business, reduction in transaction cost and e-initiatives and
  - Emerging Areas – E-Commerce Developing Districts as Export Hubs and streamlining SCOMET policy.
- **Key Initiatives**
  - **Districts as Export Hubs Initiative:** It focuses on the development of logistics, testing facilities, connectivity for exports, etc.
  - **Expanded Export Promotion of Capital Goods (EPCG) Scheme:** E.g. Prime Minister Mega Integrated Textile Region and Apparel Parks (PM MITRA) was brought under it.
  - **Promoting Cross Border Trade in Digital Economy:** Provided for establishing **E-Commerce Export Hubs (ECEHs)**, etc.
  - **Recognition of Exporters:** Exporter firms recognized with 'status' based on export performance will now be partners in capacity-building initiatives.
  - **Streamlining SCOMET (Special Chemicals, Organisms, Materials, Equipment and Technologies) Policy:** To provide access of dual-use High end goods and technologies to Indian exporters while facilitating exports of controlled items/technologies under SCOMET.
  - **Advance authorisation Scheme** accessed by DTA units provides duty-free import of raw materials for manufacturing export items and is placed at a similar footing to EOU and SEZ Scheme.

## 3.5. GROWTH AND DEVELOPMENT

### 3.5.1. GDP BASE YEAR REVISION

#### Why in the News?

Government has formed 26-member **Advisory Committee on National Accounts Statistics (NAS)** to update the GDP base year from existing 2011-12 to 2022-23.

#### More on the News

- Advisory Committee, under chairmanship of **Biswanath Goldar**, has been formed to identify new data sources & refine methodology for compiling NAS and align GDP with inflation and industrial indices.
  - Central Statistics Office (CSO) brings out NAS annually which includes **GDP estimates from multiple approaches**.
- Previously, in 2015, the base year was changed **from 2004-05 to 2011-12**.
  - In the new series, CSO did away with **Gross Domestic Product (GDP) at factor cost**, and adopted the international practice of valuing industry-wise estimates as **Gross Value Added (GVA) at basic prices**.

#### What is Base Year?

- A base year is the **reference year** whose **prices are used to calculate the real growth** (minus inflation) in national income.
- Thus, Base year is a **benchmark used for GDP calculation**.
  - For example: If 2011-12 is the base year, GDP for other years is adjusted to match 2011-12 prices.

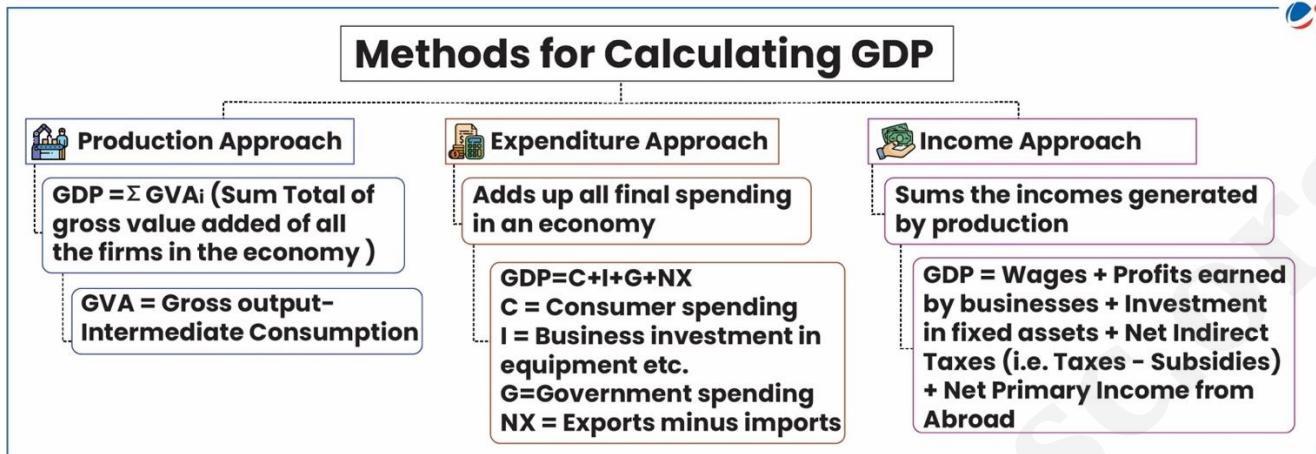


## Need to Update the GDP Base Year

- **Removing Inflation Effects:** Outdated base years can overestimate GDP by ignoring rising prices.
- **Enhances Data Quality:** Includes new data from digitization, enhances more reliable data use, etc.
- **Global Comparison:** Aids in comparing GDP with other countries.
- **Other Reasons:** Adapts to post-pandemic dynamics, supports policymaking, etc.

## About GDP

- **Measurements of GDP:** Theoretically, GDP can be measured in three different ways, each of which should give the same answer (refer to the infographic).
  - **Nominal GDP:** Measured at current market prices, ignores inflation.
  - **Real GDP:** Adjusted for inflation using base year prices, showing true economic growth.



### 3.5.1.1. PURCHASING POWER PARITIES

#### Why in the news?

Global Purchasing Power Parities (PPP) Data for 2021 has been released by the **International Comparison Program (ICP)** for 176 **economies**.

#### Key Findings

- China was the largest economy in 2021, followed by US on the basis of PPP.
- **India's economy (\$11.0 trillion) was the third largest**, accounting for 7.2% of Global GDP.
  - On the basis of GDP ranking, India is **5<sup>th</sup> largest economy** at present.
- **High-income economies** with just **16.4% of world's population** accounted for 46% of the global GDP. On the other hand, **low-income economies** (8.4% of world's population) accounted for just **1% of global GDP**.

#### About PPP

- PPP is the **exchange rate** at which **one nation's currency** would be converted into another to purchase the same amounts of a large group of products.
- Used to determine the **relative value** of different currencies.
- **Significance:**
  - Provides **more accurate measure of living standards across countries** than Market exchange rate (MER)-based estimates.
    - > **MER often inflates the buying power of high-income countries** (where prices are high) and underestimates that of low-income ones (where prices are lower).
  - **PPP exchange rates are relatively stable over time** than MER.

#### About ICP

- A worldwide statistical initiative to collect comparative price data and detailed GDP expenditures to produce PPPs for the world's economies.
- Initiated in 1968, it is coordinated by the **World Bank** under the auspices of the **United Nations Statistical Commission**.
- Also measures **Price Level Index (PLI)**, which is the ratio of a PPP to its corresponding exchange rate.

### 3.5.2. INDIA'S DIGITAL ECONOMY

#### Why in the News?

The **Ministry of Electronics and Information Technology (MeitY)** has released a comprehensive study titled **Estimation and Measurement of India's Digital Economy**.



### Overview of India's Digital Economy (2022-23)



#### Status

- » Third largest digitalised country (as per **State of India's Digital Economy Report 2024**)
- » Placed 12th among the G20 countries in the level of digitalisation of individual users.



#### Contribution

- » Contributes **11.74%** of the national income.
- » In absolute numbers, its **contribution to GDP** is ~USD 402 billion.
- » Accounted for 14.67 million workers or **2.55% of India's estimated workforce**.

### Sectoral Contributions



#### Digital-enabling industry:

Accounted for 7.83% of **Gross value added (GVA)** (highest contributor).

- » It includes sectors such as information and communication-related services.



#### New digital industries:

Account for nearly 2% of GVA

- » It includes **Big Tech players**, other digital platforms and intermediaries, and firms dependent on digital intermediaries.



#### Other:

Contribution of three traditional industries (**Banking, financial services, and insurance (BFSI), trade, and education**), amounts to 2% of national GVA

#### Benefits/Significance of Digital Economy

- **Enhances Exports:** India is the 2<sup>nd</sup> highest ICT services exporter in the world, behind Ireland (2023).
- **Enhanced Service Delivery:** E.g., **e-Hospital** and **e-Sanjeevani** (National Telemedicine Service) have made healthcare facilities more accessible.
- **Increases Global Competitiveness/Promotes Ease of doing Business.**
- **Boost to Startups and Innovation:** India has the **third-largest number** of homegrown unicorns in the world (2024) and also hosts about **55%** of the world's **Global Capability Centers (GCCs)**.
  - » **GCCs** are offshore centres established by multinational corporations to provide a variety of services to their parent organisations, including R&D, IT support, and business process management.

### 3.5.2.1. DIRECT BENEFIT TRANSFER (DBT)

#### Why in the news?

As per a recent report by the State Bank of India, the **Direct Benefit Transfer (DBT)** amount to women through various schemes has crossed ₹ 2 trillion mark across multiple states.

#### About Direct Benefit Transfer (DBT)

- **Launched:** 2013.
- **Objective:** Reform the mechanism of transferring cash subsidies and benefits to ensure **reduction in leakages, faster delivery and elimination of delays in fund flow.**
- **Scope of Support:**
  - **Cash Transfers:** Examples include PM-KISAN (farmer income support), pensions (old-aged, widows), and scholarships.
  - **In-Kind Support:** Fertilizer subsidies, food grain distribution (PDS), and school meals (PM Poshan).
- **Mechanism (built on India Stack)**
  - **Public Financial Management System (PFMS):** It performs functions such as beneficiary list preparation, digital signing, and payment processing via the **Aadhaar Payment Bridge (APB)** of NPCI.
  - **JAM (Jan Dhan-Aadhaar-Mobile) Trinity:** Integrates Aadhaar-seeded **Jan Dhan accounts** with mobile numbers to enable seamless and direct credit to beneficiaries.
  - **Banking Infrastructure:** Utilizes **Business Correspondents, Payment Banks**, and Aadhaar-enabled Payment Systems (AePS) for financial inclusion and delivery of funds.
  - **UPI Integration:** Expands interoperability, allowing both public and private sector participation in delivering subsidies and benefits.

#### DBT Schemes of States



**Karnataka** Gruha Lakshmi

**Maharashtra** Mukhya Mantri Majhi Ladki Bahin Yojana

**Madhya Pradesh** Mukhyamantri Ladli Behna Yojana

**Odisha** Subhadra Yojana

### 3.5.3. HOUSEHOLD CONSUMPTION EXPENDITURE SURVEY (HCES), 2023-24

#### Why in the news?

National Sample Survey Office (NSSO) released the results of the HCES 2023-24.

#### Important Findings of HCES: 2023-24

- **Average Monthly Per Capita Expenditure (MPCE):**
  - **Rural:** ₹4,122 (₹4,247 with imputed benefits), increased by 9% from 2022-23.
  - **Urban:** ₹6,996 (₹7,078 with imputed benefits), increased by 8% from 2022-23.
- **Urban-Rural Gap: Reduced** from 84% (2011-12) to 70% (2023-24), indicating rural consumption growth.
- **Increased Spending on Non-Food Items:** **Non-food items** dominate expenditure (53% rural, 60% urban), with the major contribution from conveyance, clothing, etc.
  - Percentage **share of food** in average monthly expenditure had **fallen**.
- **Consumption Inequality:** **Gini coefficient declined** to 0.237 (rural) and 0.284 (urban), reflecting **reduced income disparity**.
  - **Gini Coefficient measures the extent of income inequality** among households. It ranges from 0 (perfect equality) to 1 (perfect inequality).

#### Key Objectives of HCES



##### Consumption Patterns

Captures household consumption data reflecting living standards and well-being



##### Economic Indicators

Provides basis for revising macroeconomic indicators like GDP and CPI



##### Consumer Price Indices

Facilitate development of weighing diagrams for CPI essential for economic analysis

- Inequality among States:** MPCE is highest in Sikkim and lowest in Chhattisgarh.

#### About Household Consumption Survey Expenditure (HCES)

- Conducted by:** National Sample Survey Office (NSSO) at regular intervals,
  - Initially, it was conducted at **one-year duration** (starting 1950-51).
    - However, since its 26<sup>th</sup> round, the survey has been **conducted roughly every 5 years**. (The 2017-18 Survey was discarded by the government citing 'Data Quality' issues.)


•

**National Sample Survey Office (NSSO)**

 **Establishment:** Founded in **1950**, NSSO is part of NSO and a subordinate office under the control of MoSPI (Ministry of Statistics and Programme Implementation).  
 ➤ The National Statistics Office (NSO) consists of the Central Statistics Office (CSO) and NSSO

 **Purpose:** To conduct large-scale **sample surveys** in diverse fields on an **All-India basis**.

 **Survey Frequency:**  
 ➤ **Annual Surveys:** Smaller sample studies on specific topics.  
 ➤ **Quinquennial Surveys:** Large-scale, detailed surveys conducted every five years.

 **Major Surveys Conducted:**  
 ➤ Household Consumption Expenditure Survey (HCES)  
 ➤ Periodic Labour Force Survey (PLFS)  
 ➤ Annual Survey of Industries.  
 ➤ Situation Assessment Survey of Agricultural Households

#### 3.5.4. OTHER KEY DEVELOPMENTS

##### 3.5.4.1. CONSUMER CONFIDENCE SURVEY (CCS)

Latest RBI's bi-monthly Consumer Confidence Survey (CCS), conducted across 19 major cities, shows weakened consumer confidence in India's economy, employment, and spending.

#### About Consumer Confidence and Consumer Confidence Survey (CCS)

- Consumer Confidence is an economic indicator that **measures the degree of optimism or pessimism** that consumers feel about **overall state of the economy and personal financial situation**.
  - It serves as an **indicator of the health of the economy** from the perspective of the consumer.
  - High consumer confidence** in the economy is usually related to **higher spending by Consumers**.
- CCS responses are measured through **two indexes**:
  - Current Situation Index (CSI)** - Consumer sentiment about current economic, employment, and price conditions as compared to a year ago.
  - Future Expectation Index (FEI)** - Expectations about economic, employment, and price conditions a year ahead.

##### 3.5.4.2. WORLD BANK RELEASED ANNUAL INTERNATIONAL DEBT REPORT (IDR) 2024

The IDR features external debt statistics and analysis for Low- and Middle-Income Countries (LMICs) that report to the **World Bank's Debtor Reporting System (DRS)**.

#### Key highlights

- Rising External Debt:** Total external debt of LMICs rose by 2.4% in 2023, **reaching \$8.8 trillion**.
- Factors Driving Indebtedness**

- **High Interest Rates:** Tight monetary policies in high-income countries pushed interest rates to a 20-year high.
  - > **Bangladesh and India** experienced over **90% increases in interest payments in 2023.**
- **Other Factors:** Inflation, depreciating currencies, and global economic uncertainty due to armed conflicts and trade fragmentation.

## 3.6. AGRICULTURE AND ALLIED SECTOR

### 3.6.1. ANNA CHAKRA TOOL

#### Why in the news?

The Union Minister of **Consumer Affairs, Food and Public Distribution** launched the ‘Anna Chakra’ PDS Supply Chain optimization tool and **SCAN Portal** to modernize the PDS system.

#### About Anna Chakra

- It is a Public Distribution System (PDS) **Supply Chain optimization tool** that leverages **advanced algorithms** to **identify optimal routes** and ensure **seamless movement of food grains**.
- It is an initiative of the **Department of Food Public Distribution** developed in **collaboration** with the **World Food Programme (WFP)** and **IIT-Delhi**.
- It is **Integrated** with the **PM Gati Shakti platform** and **FOIS (Freight Operations Information System) portal** of the Railways through the **Unified Logistics Interface Platform (ULIP)**.

#### About SCAN (Subsidy Claim Application for NFSA) portal

- Aims to provide a **single window submission of subsidy claims** by **states, claim scrutiny and approval** by DFPD facilitating **expeditious settlement** process through end-to-end workflow automation.

#### About Public Distribution System (PDS)

By **coverage**, it is the **world's largest food distribution program**.

Operated under **joint responsibility** of Centre and States:

- **Centre (through FCI): Procurement, storage, transportation and bulk allocation** of food grains.
- **States: Operational responsibility** including **allocation** within State, **identification** of eligible families, issuing of **Ration Cards** and supervision of FPSs.

**Evolution of PDS:** Revamped PDS (1992), Targeted PDS (TPDS) (1997), Antyodaya Anna Yojana (AAY) (2000), National Food Security Act (2013), **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) (2020).**

### 3.6.2. RUBBER BOARD UNVEILED iSNR AND INR KONNECT

#### Why in the news?

The initiatives **iSNR (Indian Sustainable Natural Rubber)** and **INR Konnect** were unveiled on the occasion of the platinum jubilee celebrations of the Rubber Act, 1947.

- The **Act of 1947** provided for the establishment of the **Rubber Board** (works under the **Ministry of Commerce & Industry**) to ensure **overall development of the rubber industry in the country**.

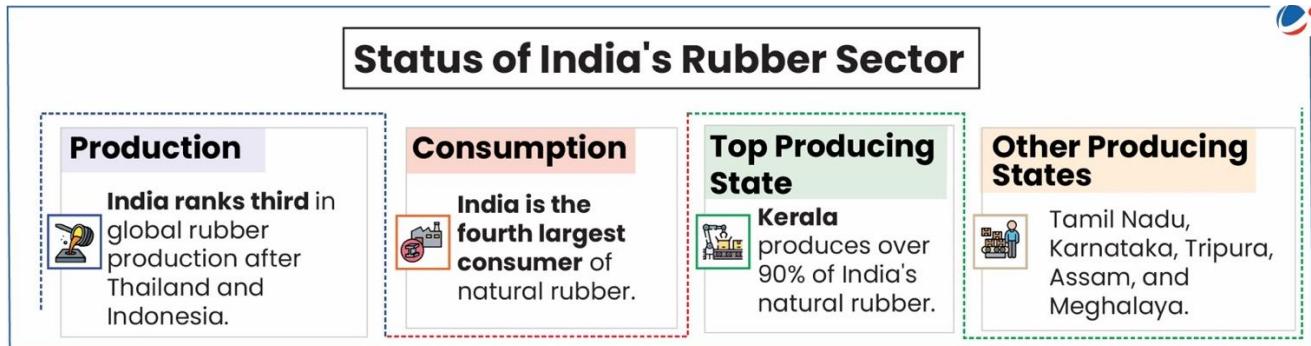
#### About Initiatives

- **iSNR:** Aims at aligning Indian rubber production with the stringent **European Union Deforestation Regulation (EUDR)** standards.

#### About Rubber Crop

- **Hevea brasiliensis (Rubber Tree)** native of the **Amazon river basin**.
  - **Introduced to tropical Asia and Africa by the British.**
  - **Rubber is obtained** in the form of **latex** from tree.
- **Conditions required for Plantation**
  - **Climate:** Tropical climate with **annual rainfall of 200 – 300 cm** is suited for cultivation.
    - > Temperature should be ranged from 25 to 34°C with 80 % relative humidity.
  - **Soil:** It requires **deep and lateritic fertile soil**, deficient in phosphorus.

- A key feature of iSNR is its **traceability certification** (guarantees the rubber's origin and certifies its compliance).
- **INR Konnect** (web-based platform): Designed to connect growers of untapped rubber holdings with interested adopters to maximise plantation productivity.



### 3.6.3. NATIONAL TURMERIC BOARD

#### Why in the news?

Union Minister for Commerce and Industry launches National Turmeric Board.

#### About National Turmeric Board (NTB)

- **Headquarters:** Nizamabad, Telangana (a major turmeric-producing region).
- **Ministry:** Ministry of Commerce and Industry.
- **Prominent Members:**
  - **Key Department & Ministries:** Representatives of Ministry of AYUSH, Department of Pharmaceuticals, Department of Agriculture & Farmers Welfare and Department of Commerce.
  - **States:** Will be represented on the Board by rotation.
- **Type:** NTB is an executive body (not a Statutory Body).

#### About Turmeric (*Curcuma longa*); also called 'Golden Spice'

**Type:** Perennial, rhizomatous herbaceous plant **native to the Indian subcontinent and Southeast Asia.**

**Significance of Turmeric:** It has **anti-inflammatory, antioxidant, and detoxifying properties.** It helps protect the liver from damage, supports detoxification, etc.

**Climatic conditions:** Turmeric thrives in **tropical and subtropical climates** with the following conditions:

- **Temperature:** Between 20°C and 30°C.
- **Rainfall:** Between 1,500 to 2,500 mm annually.
- **Soil:** Well-drained, fertile soils rich in organic matter.
- **Altitude:** Grows best at elevations up to 1,500 meters above sea level.

#### India's Dominance in the Global Turmeric Industry

- **India is the largest producer, consumer, and exporter** of turmeric.
- **Accounts for:** 70% of global production & 62% of global trade.
- **The largest producing states of Turmeric:** Maharashtra, Telangana, Karnataka and Tamil Nadu.
  - More than **30 varieties of Turmeric** are grown in India and it is grown in over **20 states in the country.**
    - > **Major varieties with GI (Geographical Indication) Tags:** Erode Turmeric (Tamil Nadu), Lakadong Turmeric (Meghalaya, known for high curcumin content), Kandhamal Haldi (Odisha).
- **Targets:**
  - Double the production to 20 lakh tonnes in five years.
  - By **2030**, turmeric exports are projected to reach **\$1 billion USD.**

### 3.6.4. INDIA'S COFFEE EXPORTS

#### Why in the news?

Indian coffee exports surpass \$1bn for the first time: Centre for Monitoring Indian Economy (CMIE).

## Reason for increase in export

- **Surge in Robusta coffee prices:** By over **60% in 2024**, reaching 45-year high due to increased global coffee consumption.
  - It was driven by poor weather (e.g. droughts) which disrupted supply in key coffee producing countries like Brazil and Vietnam.
- **European Union Deforestation Regulation (EUDR):** Sharp growth is due to stocking ahead of EU's new deforestation regulation that could raise cost of coffee and other agricultural exports to EU.

## Status of Coffee Production

- **India is eighth largest** coffee producer globally in 2022-23.
  - **Brazil is world's largest coffee producer**, contributing about 40% of global production.
- Traditionally grown in **rainforests of Western Ghats in South India** mainly produced in Karnataka (**highest**), Kerala, Tamilnadu, Andhra Pradesh and Odisha.
- **Arabica and Robusta Coffee** are of major economic importance.
  - **Arabica is superior in quality to Robusta** and trades at **higher price than that of Robusta**.
  - **India is fifth largest producer for robusta coffee** which accounts for 72% of country's total coffee production.

## Growing Conditions for Coffee

Factors	Arabica	Robusta
 <b>Soils</b>	Deep, Fertile, rich in organic matter, well-drained and slightly acidic (PH 6.0–6.5)	Same as Arabica
 <b>Slopes</b>	Gentle to moderate slopes	Gentle slopes to fairly level fields
 <b>Elevation</b>	High (1000–1500 m)	Low (500–1000 m)
 <b>Temperature</b>	150 –250 degree C ; Cool equable	200–300 degree C ; Hot, humid
 <b>Relative Humidity</b>	70–80%	80–90%
 <b>Annual Rainfall</b>	1600–2500 mm	1000–2000 mm

## 3.6.5. OTHER KEY DEVELOPMENTS

### 3.6.5.1. INDIA'S FIRST ORGANIC FISHERIES CLUSTER

Union Ministry of Fisheries, Animal Husbandry and Dairying launched India's first Organic Fisheries Cluster in Soreng District of Sikkim.

- It aims at development of **organic fisheries and aquaculture** in Sikkim under **Pradhan Mantri Matsya Sampada Yojana (PMMSY)**.
  - PMMSY aims to **bring about Blue Revolution** through sustainable development of fisheries sector in India.
  - PMMSY provides for adoption of **cluster-based approach** to enhance competitiveness of fisheries sector, facilitate economies of scale, and generate higher incomes.
- Organic Fisheries focuses on **ecologically healthy fish farming system** avoiding the use of harmful chemicals, antibiotics, and pesticides.

### 3.6.5.2. BASIC ANIMAL HUSBANDRY STATISTICS (BAHS) 2024

Ministry of Fisheries, Animal Husbandry & Dairying released BAHS 2024 on **National Milk Day** (26<sup>th</sup> November) to celebrate birth anniversary of **Dr. Verghese Kurien (Father of White Revolution in India)**.

### Key Findings of BAHS 2024

 <b>Milk:</b> <ul style="list-style-type: none"><li>Production: India leads in milk production globally with an estimated 239.30 million tonnes in 2023-24.</li><li>Growth: 5.62% over past 10 years (2014-15).</li><li>Top milk producing States: Uttar Pradesh, Rajasthan, and Madhya Pradesh.</li></ul>	 <b>Egg:</b> <ul style="list-style-type: none"><li>Production: India is second globally with an estimated 142.77 billion number in 2023-24.</li><li>Growth: 6.8% over past 10 years.</li><li>Major States: Andhra Pradesh followed by Tamil Nadu.</li></ul>	 <b>Wool:</b> <ul style="list-style-type: none"><li>Production: Estimated as 33.69 million kg.</li><li>Growth: 0.22% over last year.</li></ul>
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### 3.6.5.3. WORLD ORGANISATION FOR ANIMAL HEALTH (WOAH)

Indian Council of Agricultural Research-National Research Centre on Equines (**ICAR-NRC Equine**) in Haryana has been granted **WOAH Reference Laboratory status**.

- This recognition is specifically for its expertise in **Equine Piroplasmosis disease**.
  - Equine Piroplasmosis is caused by **tick-borne protozoan parasites**, affects horses, donkeys, mules, and zebras.

#### About WOAH

- An **intergovernmental organization** founded in 1924.
- Objective:** Disseminating information on animal diseases and improving animal health globally.
- Members:** 183 including India.
- HQ:** Paris, France

### 3.6.5.4. DIGITIZATION OF LAND RECORDS

Union Minister of Rural Development recently notified that nearly **95% of the land records** have been **digitized in Rural India since 2016**.

- This achievement is due to **Digital India Land Records Modernization Programme (DILRMP)**.

#### About Digital India Land Records Modernization Programme (DILRMP)

- Launched:** In **2016** by revamping the National Land Records Modernization Programme.
- Ministry:** Central Sector Scheme under Department of Land Resources, Ministry of Rural Development.
  - It has been **extended** from **2021-22 to 2025-26** with **addition of two new components** viz.
    - Computerization** of all Revenue Courts in country & their **integration** with land records.
    - Consent-based linking of Aadhaar number with **Records of Rights (RoR)**.
- Aim:** To replace manual presumptive land-title system with a **digital conclusive land titling system**.

#### Key Initiatives under DILRMP

- Bhu-Aadhar - Unique Land Parcel Identification Number (ULPIN):** A 14-digit alphanumeric code for each land parcel to streamline real estate transactions, resolve property disputes, and improve disaster management efforts.

- **National Generic Document Registration System (NGDRS):** e-Registration ensuring a uniform process for deed/document registration.
- **Bhoomi Samman: Awards (Platinum Grading)** for districts achieving saturation of core components of DILRMP.

### **3.6.5.5. BANANA CULTIVATION**

According to **Agricultural and Processed Food Products Export Development Authority (APEDA)**, India has achieved a **tenfold increase** in banana exports over the past decade and aims to reach **\$1 billion** in the next 5 years.

- In FY 2023-24, India **exported bananas worth \$300 million**, a substantial leap from \$176 million in 2022-23.

#### **About Banana cultivation**

- **Climate:** Tropical crop grows well in a **temperature range of 15°C – 35°C** with **relative humidity of 75-85%**.
- **Soil:** Deep, rich loamy soil with **pH** between **6.5 – 7.5**
  - Should have good drainage, adequate fertility and moisture, should neither be too acidic or alkaline.
- **Major varieties:** Dwarf Cavendish, Robusta, Monthan, Poovan, Nendran, etc.
- **Major producers:** Andhra Pradesh, Maharashtra, Gujarat etc.

### **3.6.5.6. TOBACCO BOARD**

On its formation day, Tobacco Board highlights that earnings of Flue-Cured Virginia (FCV) tobacco farmers have more than doubled between 2019-20 and 2023-24.

- **FCV tobacco** is a **high-quality, aromatic tobacco variety** widely used in **production of cigarettes**.
- Currently, India is **2<sup>nd</sup> largest producer** of tobacco in world after China (4th in FCV).

**HQ: Guntur, Andhra Pradesh**



**Tobacco Board**



**Ministry:** Department of Commerce, Ministry of Commerce and Industry.



**Genesis:** Established on **1<sup>st</sup> January 1976** by an Act of Parliament '**Tobacco Board Act, 1975**'.



**Objective:** Promote development of tobacco industry, including regulation of production, distribution, and export of FCV tobacco.

### **3.6.5.7. PROJECT VISTAAR**

IIT Madras has partnered with the Ministry of Agriculture and Farmers Welfare on Project VISTAAR (**Virtually Integrated System to Access Agricultural Resources**)

#### **About VISTAAR**

- It is a "Network" of Networks (AI-augmented) and every State can build their own Agri-Advisory network.
- It is a comprehensive network that connects **decentralized databases** to provide seamless access to vital agricultural resources.
- **Objective:** Enhance decision-making and resource utilization
- **Significance**
  - Expand access to **high-quality advisory services** on crop production, marketing, **value addition**, and supply chain management.
  - Provide farmers with information on **relevant government schemes**.

### **3.6.5.8. NANO FERTILIZERS**

Indian Scientists have developed a **nanomaterial coating** (made of nanoclay) **for muriate of potash (MoP)**.

- MoP serves **80% of potassium fertilizer needs.**

#### **About Nano Fertilizers**

- Nano fertilizers are **nutrients that are encapsulated or coated within nanomaterial** (measuring 100 nanometres or less).
  - It enables **controlled release and its subsequent slow diffusion** into the soil.
- IFFCO had launched **world's first 'Nano Liquid Urea' fertiliser** in 2021 & then **Nano-DAP** in 2023. **Indian Farmers Fertilizer Cooperative Limited** (IFFCO) has developed a new product, nano-NPK fertilizer.
- **Benefits:**
  - **Promotes sustainable farming:** Reduces soil and water contamination.
  - **Cost Effectiveness:** Improves nutrient absorption, reduce nutrient wastage and lower application frequency, etc.

### **3.6.5.9. KISAN KAVACH**

Scientists affiliated to the Department of Biotechnology (DBT) have developed an Indigenous '**anti-pesticide suit**' called Kisan Kavach.

#### **About Kisan Kavach**

- Developed by **BRIC-inStem, Bangalore**, it is designed to protect farmers from the harmful effects of pesticide exposure.
- The kit consists of a **trouser, pullover, and a face-cover** made of '**oxime fabric**'.
  - Oxime fabric can **chemically breakdown any of the common pesticides that get sprayed onto cloth or body during spraying operations**

### **3.6.5.10. MILKWEED FIBER**

Ministry of Textiles encouraging research & development into new natural fibers, including milkweed fiber.

#### **About Milkweed fiber**

- It is a unique **natural fiber** extracted from the seed pods of **milkweed plants** (*Asclepias syriaca L.*).
  - The plant is **native to North America**. In India, it is found as a wild plant in **Rajasthan, Karnataka & Tamil Nadu**.
- **Properties:** It contains **oily material & lignin, a woody plant substance**, which makes them too brittle for spinning.
  - Its **amphiphilic material** that can exhibit both **hydrophilic** (water absorbing) & **hydrophobic** (water-repelling/resisting) properties.
- **Applications:** Used as an absorbent material, water-safety equipment (life jackets & belts) etc.

### **3.6.5.11. TOMATO GRAND CHALLENGE (TGC)**

Centre announced "funding and mentorship" for winners of 'Tomato Grand Challenge (TGC)'

- TGC seeks **innovative, scalable solutions to stabilize the tomato supply chain**.
- It was launched in 2023 by the Department of Consumer Affairs in collaboration with Ministry of Education (Innovation Cell).
- **Tomatoes, along with Onions and Potatoes (collectively referred as TOPs)** have seen **huge fluctuations** in agriculture commodities among all crops.
  - TOPs are the **largest cultivated, produced and consumed vegetables in India**.
  - TOPs **make up more than a third of the Consumer Price Index (CPI) vegetables category**.
- **Operation Greens was launched** under PM Kisan Sampada Yojna to address price volatility of TOPs, later it was extended to other fruits & vegetables (TOP to TOTAL).

## 3.7. INFRASTRUCTURE

### 3.7.1. LOGISTICS EASE ACROSS DIFFERENT STATES (LEADS) 2024' REPORT

#### Why in the news?

The LEADS 2024 is has been released by the **Ministry of Commerce and Industry**.

#### About LEADS

- Objective:** Provides insights into improvement of logistics performance at State/UT level.
  - LEADS was conceived on the lines of **Logistics Performance Index (LPI)** of **World Bank** in 2018.
    - While the LPI relies entirely on perception-based surveys, LEADS incorporates both perception as well as **objectivity**.
- Parameters:** 4 key pillars i.e., **Sustainable Logistics, Operating and Regulatory Environment, Logistic Infrastructure and Logistic Services**
- Categories of State/UTs:** They are categorised into four groups **Coastal, Landlocked, Northeast and Union Territories.**
  - And further they are given tags of **Achievers, Fast movers, and Aspirers** on the basis of their performance.

Performance Highlights of 2024		
Achievers	Fast movers	Aspirers
Gujarat, Haryana, Assam, Chandigarh, etc.	Andhra Pradesh, Bihar, Himachal Pradesh etc.	Kerala, West Bengal, Manipur, Chhattisgarh, etc.

### 3.7.2. OTHER KEY DEVELOPMENTS

#### 3.7.2.1. GRIHA (GREEN RATING FOR INTEGRATED HABITAT ASSESSMENT)

Inland Waterways Authority of India's **Intermodal Terminal at Kalughat in Bihar** has received **five five-star SVAGRIHA rating** from GRIHA.

- Terminal is part of **World Bank funded Jal Marg Vikas Project** for capacity augmentation of **National Waterway 1 – River Ganga**.

#### About GRIHA

- Ministry:** Joint venture of Ministry of New and Renewable Energy and The Energy and Resources Institute (TERI)
- Role:** GRIHA is a **rating tool** that evaluates the **environmental performance of a building holistically over its entire life cycle**, thereby providing a definitive standard for what constitutes a '**green building**'.
- SVAGRIHA:** SVAGRIHA (Simple Versatile Affordable GRIHA), is given to **small-scale stakeholders** (owners of projects such as bungalows and small offices).

#### 3.7.2.2. SMILE PROGRAM

**India and Asian Development Bank (ADB)** recently signed a **\$350 million policy-based loan** under the second subprogram of **SMILE (Strengthening Multimodal and Integrated Logistics Ecosystem)** program.

#### About SMILE Program

- It is a **programmatic policy-based loan (PBL)** by **ADB** to support the government of India to undertake wide ranging **reforms in the logistics sector**.
- Objective**
  - To **strengthen the institutional and policy framework** for inter-ministerial coordination and planning for **incentivizing private sector participation** in multimodal logistics projects (MMLPs)
  - To improve **efficiencies in external trade logistics** and encourage the **use of smart and automated systems** for improved service delivery.

### 3.7.2.3. KANDLA PORT

Union Minister of Ports, Shipping & Waterways announced major initiatives to boost the capacity at Kandla Port.

#### About Kandla Port

- **Establishment:** Constructed in the **1950s as a replacement for the Karachi Port** (lost after the partition of India).
- **Official Name:** Deendayal Port (**renamed in 2017 under the Indian Ports Act, 1908.**)
- **Location:** Kutch District, Gujarat, India.
- **Significance:**
  - India's **second largest port by cargo volume** (Paradip Port ranked one).
  - It serves as a **gateway port for states in North, West, and Central India.**
  - It hosts the **Kandla Special Economic Zone (KASEZ)**, established in 1965 as the **first SEZ in India and Asia.**

## 3.8. SERVICES

### 3.8.1. TOURISM SECTOR IN INDIA

#### Why in the News?

Cruise Bharat Mission (CBM) launched by the **Ministry of Ports, Shipping and Waterways**.

#### About Cruise Bharat Mission

- **Aim:** To excel in India's vision to become a **global hub for cruise tourism** and promote the country as the leading global cruise destination. It also aims to:
  - **Double cruise passenger traffic** within five years; i.e. by 2029.
  - Double volume of cruise calls from 254 in 2024 to 500 by 2030.
- **Phase wise implementation:** It will be implemented during 2024-2029 in 3 phases.
- **Three key cruise segments:**
  - **Ocean & Harbour Cruise segment:** Encompasses ocean cruises, including deep-sea and coastal cruises, along with harbour-based yachting and sailing cruises.
  - **River & Inland Cruise segment:** Focuses on river and inland cruises on canals, backwaters, creeks, and lakes.
  - **Island Cruise segment:** Highlights inter-island cruises, lighthouse tours, etc.

#### Status of Tourism sector



#### Other Initiatives taken to promote Tourism Sector

- **Swadesh Darshan 2.0** to develop sustainable tourism destinations, following a destination & tourism-centric approach.
- **National Mission on Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive (PRASHAD) scheme** to safeguard India's ancient civilizational heritage.
- **100% FDI** is allowed through automatic route in **tourism construction projects** including development of hotels, resorts, and recreational facilities.
- **Dekho Apna Desh initiative** to promote domestic tourism.

- Promotion of Rural Tourism:** Dhordo village in the Kutch district of **Gujarat** was awarded as the **Best Tourism Village by the United Nations World Tourism Organization (UNWTO)**.
- Special Assistance to States/Union Territories for Capital Investment (SASCI) scheme:** To infuse **long term interest free loans** for a period of **50 years to States** for comprehensively develop iconic tourist centers in the country, branding, and marketing them at global scale.

## 3.9. MINING, ENERGY AND INDUSTRY

### 3.9.1. MANUFACTURING SECTOR

#### Why in the news?

Annual Survey of Industries (ASI) released by Ministry of Statistics and Programme Implementation for FY 2022-23.

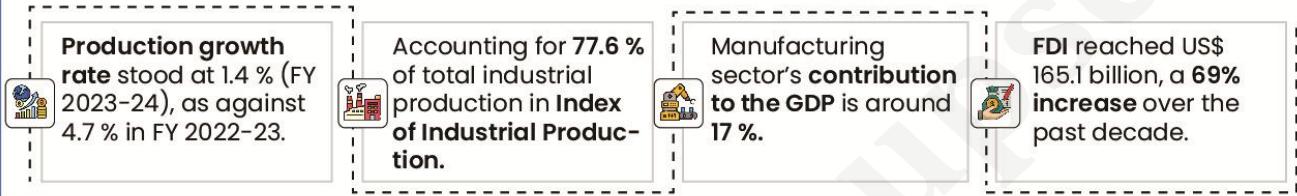
#### Key Highlights

- Manufacturing Gross Value Added (GVA):** Grew by **7.3% in current prices in 2022-23** over 2021-22.
  - Top 3 States:** Maharashtra, Gujarat and Tamil Nadu, in terms of **Manufacturing GVA**.me
- Employment:** 7.4% increase in manufacturing employment in **2022-23 over previous year**.
  - Top 3 states in employment:** Tamil Nadu, Maharashtra, Gujarat.

#### “Midgets making widgets” phenomenon

- Indian firms are increasingly **setting up multiple factories** (multi-plants) **in the same state** instead of expanding a single large factory.
- Multi-plant firms have **lower productivity** than single-plant firms of equivalent size. Hence, Indian firms are **losing out to smaller countries like Bangladesh**.

#### India's manufacturing sector



#### Initiatives for Manufacturing Sector

- National Manufacturing Mission:** Announced in Budget 2025-26, aims to support small, medium, and large industries under the “Make in India” initiative.
  - Five focal areas:** Ease and cost of doing business; future ready workforce for in-demand jobs; a vibrant and dynamic MSME sector; availability of technology; and quality products.
  - Make in India:** Launched in 2014, it aims to transform India into a global hub for design and manufacturing.
- Production linked Incentive (PLI) Schemes:** Aligned with India’s vision of becoming ‘Atmanirbhar’ (self-reliant), the Production Linked Incentive (PLI) Schemes were introduced to enhance the country’s manufacturing capabilities and boost exports.
- National Manufacturing Policy (NMP):** Targets increasing manufacturing sector contribution to 25% of GDP.

#### About ASI

Conducted under Collection of Statistics Act, 2008 except in Jammu & Kashmir (**Conducted under J&K Collection of Statistics Act, 2010**).

#### Industries covered:

- Factories registered under Sections 2m(i &ii) of **Factories Act,1948**
- Bidi and cigar manufacturing** establishments under the Bidi & Cigar Workers (Conditions of Employment) Act,1966
- Electricity undertakings** not registered with Central Electricity Authority (CEA)

- **Units with 100 or more employees** registered in the **Business Register of Establishments (BRE)** maintained by the States.

### 3.9.2. MSMES

#### Why in the news?

In Union Budget 2025-26, government revised the classification for MSMEs (Refer Infographic).

#### Status of MSMEs

- **Globally**, MSMEs account for **90% of businesses**, **60 to 70% of employment**, and **50% of GDP**.
- **In India** MSMEs contributes around **30% to India's GDP**, **~46% of India's total exports**.

#### Other Key Measures for MSMEs in Union Budget 2025-26

- **Enhanced Credit Availability:** The credit guarantee cover for micro and small enterprises has been increased from ₹5 crore to ₹10 crore, enabling additional credit of ₹1.5 lakh crore over five years.
  - Startups will see their guarantee cover double from ₹10 crore to ₹20 crore, with a reduced fee of 1% for loans in 27 priority sectors.
- **Customised Credit Card scheme:** A new scheme will provide ₹5 lakh in credit to micro enterprises registered on the Udyam portal, with 10 lakh cards set to be issued in the first year.
- **Other:**
  - **A new Fund of Funds** with ₹10,000 crore will be established to expand support for startups.
  - A scheme for 5 lakh first-time women, Scheduled Caste, and Scheduled Tribe entrepreneurs will provide term loans up to ₹2 crore over five years.

Rs. in Crore	Investment		Turnover	
	Current	Revised	Current	Revised
Micro Enterprises	1	2.5	5	10
Small Enterprises	10	25	50	100
Medium Enterprises	50	125	250	500

#### Initiatives to support MSMEs in India

- **Pradhan Mantri Mudra Yojana (PMMY):** To facilitate easy collateral-free micro credit of **up to ₹20 lakh**.
  - A new '**Tarun Plus**' category has been created for loans above **Rs. 10 lakh and upto Rs. 20 lakh**.
- **Centre for Rural Enterprise Acceleration through Technology (CREATE):** It supports and **enhances local productivity, product quality, economic potential and improves livelihoods** for the local communities.
- **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE):** Set up in 2000 by **Ministry of Micro, Small and Medium Enterprises and SIDBI**.
  - **It aims to provide credit guarantee support to member lending institutions** for credit facilities sanctioned by them to MSEs, especially in absence of collateral.
  - **Eligible Lending Institutions:** Scheduled commercial banks (Public Sector Banks/Private Sector Banks/Foreign Banks) and select Regional Rural Banks.
  - **Corpus Contribution:** Government and SIDBI in ratio of 4:1.
- **MSME loans:** All bank loans to MSMEs shall qualify for classification under PSL.

### **3.9.2.1. RECEIVABLES SECURITIZATION GAINING POPULARITY AMONG MSMES FOR ACCESSING LIQUIDITY**

#### **About Receivables securitization**

- Receivables securitization is a **financial process where companies convert their accounts receivable into cash** by selling them as securities in the capital markets.
  - Companies pool their receivables & **transfer** them to a **third party** which **finances the purchase by issuing securities** that are sold to investors in the financial markets.
- **Significance:** It allows MSMEs to **unlock the value tied up in outstanding payments & gain access to funds quickly.**

### **3.9.2.2. TReDS**

Bills financed through **TReDS (Trade Receivables Electronic Discounting System)** has seen significant growth in 2024.

#### **About TReDS**

- It is an **electronic platform for online discounting of bills of MSMEs** for supplies to large Corporates.
  - It facilitates the **discounting of both invoices** as well as **bills of exchange**.
- It **enables MSMEs secure financial assistance digitally at competitive terms** and without any collateral security, based on the invoices/ bills for supplies to large corporates.
- **3 Operations TReDS platforms - Receivables Exchange of India Ltd (RXIL), M1xchange, and Invoicemart.**

### **3.9.3. ANNUAL SURVEY OF UNINCORPORATED SECTOR ENTERPRISES (ASUSE) FOR 2023-24 RELEASED**

#### **Why in the news?**

It has been released by **National Statistics Office, Ministry of Statistics and Programme Implementation (MoSPI)** for the reference period October 2023 – September 2024.

#### **About ASUSE**

- **Objective:** To measure various economic and operational characteristics of unincorporated non-agricultural establishments in manufacturing, trade and other services sector (excluding construction).
- **Purpose:** Input for policymaking, supporting national accounts statistics & requirements of key ministries, data-driven decisions etc.

#### **About Unincorporated Sector Enterprise**

- A producer unit which is **not incorporated as a legal entity separate from the owner**.
  - **Assets used** in such enterprises **do not belong to the enterprises but to the owners**.
  - They **cannot engage in transactions or enter into contractual relationships** with other economic units nor incur liabilities on their own behalf.
- Owners are personally liable for any debts or obligations** incurred in the course of production.

## 3.10. ORGANISATIONS IN NEWS

### 3.10.1. WORLD ECONOMIC FORUM

**HQ:** Geneva, Switzerland.



#### World Economic Forum



**About:** WEF is the International Organization for Public-Private Cooperation.



**Genesis:** Established in 1971 as a not-for-profit foundation.



**Functions:** To demonstrate entrepreneurship in the global public interest while upholding the highest standards of governance.



**Annual Meeting:** Held in Davos, Switzerland.



#### Key Initiatives:

- » **The First Movers Coalition:** Global coalition of companies working to scale the innovative technologies needed to decarbonize the world's heavy-emitting sectors
- » **EDISON Alliance** (for digital Inclusion); **Net-Zero Industry Tracker** (to monitor progress on hard-to-abate sectors' decarbonization) etc.



**Important Reports:** Future of Jobs Report 2025, Global Competitiveness Report and the Global Gender Gap Report, Energy Transition Index, Global Risk Report, Global Travel and Tourism Report etc.

### 3.10.2. INTERNATIONAL LABOUR ORGANISATION (ILO)

International Labour Organization (ILO) has recently released its **World Employment and Social Outlook: Trends 2025 report**.

**HQ:** Geneva, Switzerland



#### International Labour Organization



**About:** It is the **only tripartite UN agency**, since 1919, it brings together governments, employers, and workers from 187 member states to set **labor standards, create policies**, and promote decent work for all.

**India is a founding member.**



**Genesis:** It was created in 1919, as part of the **Treaty of Versailles** that ended World War I.



#### Objective:

- » To promote and realize standards, and fundamental principles and rights at work.
- » To create greater opportunities for women and men to secure decent employment.
- » To enhance the coverage and effectiveness of social protection for all.
- » To strengthen tripartism and social dialogue.

### 3.10.3. NATIONAL FEDERATION OF STATE CO-OPERATIVE BANKS LIMITED (NAFSCOB)

Union Home Minister and Minister of Cooperation attended Diamond Jubilee Celebrations of National Federation of State Co-operative Banks Limited (NAFSCOB).



National Federation of  
State Co-operative  
Banks Ltd



#### About NAFSCOB



**Genesis:** Established in 1964 with a view to facilitate the operations of State and Central Co-operative Banks in general and Development of Co-operative Credit in particular.



**Objective:**

- » To facilitate the growth and development of cooperative banking in India, ensuring financial inclusion and supporting the rural economy.
- » **Promote and protect the interests of the member banks** in all spheres of their activities and to give expression to the views of the member banks.



**Three wings of NAFSCOB:** Planning, Research and Development, All India Mutual Arrangement Schemes and Computer Services Division.

### 3.10.4. EMPLOYEES' PROVIDENT FUND ORGANISATION (EPFO)

EPFO wins International Social Security Association's (ISSA) 'Good Practice Award' for Asia and Pacific.



#### Employees Provident Fund Organisation



**Genesis:** Employees' Provident Funds Ordinance, 1951 established EPFO. It was replaced by Employees' Provident Funds Act of 1952.

» The act is now referred as **Employees' Provident Funds & Miscellaneous Provisions Act of 1952**



**Nodal Ministry:** Ministry of Labour & Employment.



**Mission:** To extend the Reach & Quality of Publicly Managed Old-Age Income Security Programs.



**Administers following schemes:**

- » Employees' Provident Fund (EPF) Scheme 1952,
- » Employees' Pension Scheme (EPS) 1995 and
- » Employees' Deposit Linked Insurance (EDLI) Scheme 1976.

### 3.10.5. NATIONAL FINANCIAL REPORTING AUTHORITY (NFRA)

Recently, NFRA recommended the **revision of Standards on Auditing** aligning it with the global Standard ISA 600.



**HQ:** New Delhi

#### National Financial Reporting Authority



**Constitution:** Constituted in 2018 under the **Section 132(1) of the Companies Act, 2013.**



**Objectives:** Continuously improve the quality of all corporate financial reporting in India



**Functions:** Recommend accounting and auditing policies and standards; Monitor and enforce compliance; oversee service quality, etc.

### 3.10.6. DIRECTORATE OF REVENUE INTELLIGENCE (DRI)

The Supreme Court restored Directorate of Revenue Intelligence (DRI) officers authority to issue notices and recover dues under the Customs Act, 1962.

**Directorate of Revenue Intelligence (DRI)**



**About:** DRI is the **apex anti-smuggling agency of India**.

**Working:** under the **Central Board of Indirect Taxes & Customs (CBIC), Ministry of Finance**

**Responsibilities**

- » **Detecting and preventing smuggling of contraband**, including illegal drug trafficking
- » Preventing and detecting illicit international trade in **wildlife and environmentally sensitive items**,
- » **Combating commercial frauds** related to international trade and evasion of Customs duty.

### 3.10.7. NCDRC

- Supreme Court set aside the 2008 NCDRC ruling in **Awaz & Others vs. RBI**, which barred banks from charging over 30% interest on credit card dues, deeming it an unfair trade practice.



**National Consumer Disputes Redressal Commission**



**About:** It is a **quasi-judicial** commission set up in **1988** under the **Consumer Protection Act, 1986**.



**Headed by:** A **sitting or retired Judge** of SC or a sitting or a retired **Chief Justice of a High Court**.



**Functions:** Entertain **complaints** valued **more than two crores**.



**Jurisdiction:** **Appellate and Revisional jurisdiction** from the orders of **State Commissions or the District fora**.

- » Appeal against the order of NCDRC lies with the Supreme Court.

## 3.11. MISCELLANEOUS

### 3.11.1. WORLD FOOD AND AGRICULTURE 2024 STATISTICAL YEARBOOK

#### Why in the news?

Recently, **Food and Agriculture Organization** (FAO) of the United Nations released the Statistical Yearbook which offers a **synthesis of the major factors at play in the global food and agriculture landscape**.

#### Key Highlights from the Yearbook

- **Economic dimensions of agriculture**
  - **Share of agriculture in global GDP** has been stable at around **4%** since **2000**.
  - Agriculture **employed 26% (892 million people)** of the global workforce, compared with 40% in 2000.
    - > **India had the largest number of people working in agriculture** in 2022 at **226 million** people.
  - In 2022, **India (76 million ha)** and **China (75 million ha)** had the **largest equipped area for irrigation**.

- **Production, trade, and prices of commodities**
  - Americas and Europe are the **largest exporters** and Asia the **largest importer** of cereals.
  - India is top producer of **milk** (23% of Global share in 2022) and **second largest producer of sugarcane and fisheries**.
- **Food security and nutrition:** Prevalence of **food insecurity is higher for women** across all continents.
- **Sustainability and environmental aspects of agriculture**
  - Between 2000 and 2022, **agricultural land declined by 91 million ha**, while **forest area declined by 109 million ha**.
  - **Greenhouse gas emissions** from agrifood systems **grew by 10% between 2000 and 2022**.

### 3.11.2. REPORTS IN NEWS

Reports	Released/Published by
<b>India Skills Report 2025</b>	<b>Wheebox</b>
The World Energy Employment 2024 report	<b>International Energy Agency</b>
<b>Global Investment Trends Monitor</b>	<b>United Nations Conference on Trade and Development (UNCTAD)</b>
Trading with Intelligence: How AI Shapes and is Shaped by International Trade” Report	<b>World Trade Organization (WTO)</b>
World Intellectual Property Indicators 2024 report	World Intellectual Property Organization
<b>World Economic Situation and Prospects (WESP) 2025</b>	<b>UN Department of Economic and Social Affairs (UN DESA) in partnership with UN Conference on Trade and Development (UNCTAD) and the five UN regional commissions.</b>
<b>Sustainable Trade Index</b>	India has been ranked 23rd on the Sustainable Trade Index 2024 released by World Competitiveness Center and the Hinrich Foundation.
<b>Global Wage Report (2024-25)</b>	<b>International labour organization (ILO)</b>

### 3.11.3. EMPLOYEES' STATE INSURANCE CORPORATION (ESIC)

ESIC has been awarded **one certificate of merit for its mobile application -Ask An Appointment (AAA+)**.

- Also awarded **three certificates for Occupational Accident and Disease, Sustainable Investment and System Resilience** at Regional Social Security Forum for Asia and Pacific (RSSF Asia-Pacific).
- RSSF Asia-Pacific **organized by International Social Security Association (ISSA) in Riyadh, Saudi Arabia**.

#### About ESIC and AAA+

- ESIC set up under Employees' State Insurance Act, 1948 under Ministry of Labour & Employment.
- AAA+ serves insured persons, beneficiaries, staff, and ESI pensioners and **streamlines healthcare services**.

#### International Social Security Association (ISSA)

- **About:** It is world's leading international organization for social security institutions, government departments & agencies.
- **Genesis:** Founded in 1927, under ILO.

### 3.11.4. QUICK UPDATE

<b>Banihal Bypass</b>	<p>The Banihal bypass has been completed.</p> <p>The pass is <b>2.35 km road section of NH-44 in Jammu and Kashmir</b>,</p> <ul style="list-style-type: none"> <li>○ NH44, also known as the Old NH 7, is the <b>longest national highway in India</b>.</li> <li>○ It stretches 3,745 kilometers, connecting <b>Srinagar</b> in the northern tip of Jammu and Kashmir to <b>Kanyakumari</b> at the southernmost point of India.</li> </ul>
<b>Z Morh Tunnel</b>	<p>Prime Minister has inaugurated <b>Z-Morh tunnel in Ganderbal's Sonamarg area in J&amp;K</b>.</p> <p>Initially started by BRO in 2015 and evolved with National Highways and Infrastructure Development Corporation Limited.</p> <p><b>Significance:</b> Enhance all-weather connectivity between <b>Srinagar and Sonamarg enroute to Leh</b>.</p>
<b>Anji Khad Bridge</b>	<p>The Indian Railways has unveiled a monumental engineering achievement with the completion of the Anji Khad Bridge, <b>India's first cable-stayed rail bridge</b>.</p> <p><b>Location:</b> Reasi district, Jammu and Kashmir, part of the Udhampur-Srinagar-Baramulla Rail Link (USBRL) Project.</p> <p><b>Significance:</b> Enhances connectivity between <b>Katra and the Kashmir Valley</b>.</p>
<b>BAANKNET</b>	<p>Ministry of Finance launched a revamped e-auction portal '<b>BAANKNET</b>'.</p> <p>It <b>consolidates information on e-auction properties from all Public Sector Banks</b> and offers a <b>one-stop destination for buyers and investors</b> to discover a wide range of assets.</p> <p>The listings include residential properties such as <b>flats, independent houses, and open plots, as well as commercial properties, industrial land and buildings, shops, etc.</b></p> <p>The platform is expected to <b>unlock the value of distressed assets</b> and boosting investor confidence.</p>
<b>Interest Coverage Ratio (ICR)</b>	<p>According to the <b>Centre for Monitoring Indian Economy (CMIE)</b>, the <b>Interest Coverage Ratio (ICR)</b> of unlisted companies is at a <b>30-year high</b>.</p> <p><b>About ICR</b></p> <ul style="list-style-type: none"> <li>○ <b>Definition:</b> It is a <b>financial ratio</b> that indicates the <b>ability of a firm to service its outstanding debt</b>.</li> <li>○ <b>ICR Formula:</b> Company's <b>Operating Profit (Earnings before Interest and Taxes)</b> divided by the <b>Interest Expense</b> (interest payable on borrowings such as bonds, loans, etc.)</li> <li>○ It is used by <b>lenders, creditors and investors</b> to determine the <b>riskiness</b> of lending capital to a company.</li> <li>○ It reflects the <b>short-term financial health</b> and <b>stability</b> of the firm.     &gt; <b>Lower ICR</b> indicates <b>greater debt</b> and <b>higher risk</b> of the company's <b>bankruptcy</b> and vice versa.</li> </ul>
<b>ISHAN Initiative</b>	<p>The Airports Authority of India (AAI) has started work on ISHAN (Indian Single Sky Harmonized Air Traffic Management) Initiative.</p> <p><b>ISHAN:</b> Involves Combining India's four airspace regions (FIRs) into a single system overseen from Nagpur.</p>
<b>Uniform Protection Protocol</b>	<p><b>Central Electricity Authority approves the Uniform Protection Protocol</b> for users of Indian Grid for implementation on Pan India basis.</p> <p>It aims to ensure <b>Grid stability, reliability, security</b> and support India's vision for integration of 450 GW Renewable Energy into the National Grid by 2030.</p>
<b>All-India House Price Index (HPI)</b>	<p><b>Reserve Bank of India released its quarterly House Price Index (HPI)</b>.</p> <p><b>About All-India Home Price Index (HPI)</b></p>

	<ul style="list-style-type: none"> <li>○ <b>Base:</b> 2010-11 = 100</li> <li>○ <b>Data Source:</b> Transaction-level data from registration authorities in 10 major cities.</li> <li>○ <b>Cities Covered:</b> Ahmedabad, Bengaluru, Chennai, Delhi, Jaipur, Kanpur, Kochi, Kolkata, Lucknow, Mumbai.</li> </ul>
<b>Delhi Declaration on civil aviation</b>	<p>The 2<sup>nd</sup> Asia Pacific Ministerial Conference on Civil Aviation (APMC) concluded with unanimous adoption of <b>Delhi Declaration on civil aviation</b>.</p> <p><b>Delhi Declaration Commitments</b></p> <ul style="list-style-type: none"> <li>○ Reaffirming Asia and Pacific Ministerial Declaration on Civil Aviation (Beijing).</li> <li>○ Aviation Safety &amp; Security and Aviation Environment Protection.</li> <li>○ Ratification of <b>International Air Law Treaties</b> including Amendments to Convention on International Civil Aviation.</li> </ul>
<b>UPI</b>	<p>RBI has recently decided to permit <b>Small Finance Banks to extend pre-sanctioned credit lines through UPI</b>.</p> <p><b>Credit Line through UPI by SFBs</b></p> <ul style="list-style-type: none"> <li>○ Under this facility, <b>payments through a pre-sanctioned credit line</b> issued by a Bank to individuals, with prior consent of the individual customer, <b>are enabled for transactions using UPI System</b>.</li> <li>○ Previously, in <b>September 2023</b>, RBI allowed operations of <b>pre-sanctioned credit limits through UPI by Scheduled Commercial Bank</b> to individuals. RBI has revised transaction limits to ₹ 1,000 from ₹ 500 earlier for UPI Lite to encourage use of UPI. RBI also raised the total limit for offline transactions on UPI Lite to ₹ 5,000 from ₹ 2,000.</li> </ul>
<b>Restricted Return InvITs</b>	<p>Recently, SEBI has proposed a <b>framework for Restricted Return InvITs</b> to enhance investor security.</p> <p><b>About Restricted Return InvITs</b></p> <ul style="list-style-type: none"> <li>○ <b>Differentiating from traditional InvITs</b>, where returns are directly tied to full performance of the underlying infrastructure assets, <b>in this model, returns are structured with downside protection (a floor) and/or an upside cap</b>.</li> <li>○ <b>Downside protection:</b> If the InvIT's <b>returns fall</b> below guaranteed minimum, <b>sponsors must provide funds</b> to ensure unitholders receive a baseline return.</li> <li>○ <b>Upside cap:</b> If the InvIT's <b>returns exceed</b> a threshold, <b>excess will go to the sponsor</b>.</li> </ul>
<b>Medical Device Sector</b>	<p><b>Medical device sector</b> is recognized as a <b>sunrise sector</b> in India.</p> <ul style="list-style-type: none"> <li>○ <b>Sunrise Sector</b> is a term used for a sector that is developing and poised for rapid growth. E.x- Semiconductor, Artificial Intelligence,etc.</li> </ul> <p><b>India ranks as the 4th largest market</b> for medical devices in Asia and stands among the top 20 globally.</p> <p><b>100% FDI</b> through automatic route for the medical devices sector.</p>
<b>National Legal Metrology Portal (e-Mapp)</b>	<p>Ministry of Consumer Affairs, Food &amp; Public Distribution launches <b>National Legal Metrology e-Mapp on National Consumer Day 2024</b>.</p> <p>Every year, <b>National Consumer Day</b> is celebrated on 24<sup>th</sup> December commemorating the receipt of Presidential assent for Consumer Protection Act, 1986.</p> <p>Department of Consumer Affairs is developing eMaap to <b>integrate State Legal Metrology Departments and their portals into a unified National System</b>.</p>

### 3.11.5. ERRATA

- In the infographic titled “**Brief Glance at Indian Economy**” on page 5, in the first bar diagram depicting India’s Structural Transformation, third category of bars should be titled “**Services**” instead of “Industry Services”.
- In the infographic titled “**Targets/Sub-targets for PSL for Different Types of Banks**” on page 8, the last parameter is “**Advances to Weaker Sections**” instead of “Same as Domestic Commercial Bank”.
- In the infographic titled “**Human Development Index**” on page 50, “**Expected Years of Schooling**” and “**Mean Years of Schooling**” are two indicators under the Knowledge Dimension.
- In the infographic titled “**Schemes Identified for Convergence**” on page 62, “**Pradhan Mantri Formalization of Micro Food Processing Enterprises Scheme (PMFME)**” is a single scheme under Ministry of Food Processing Industries and will be placed under same bullet point.
- In the infographic titled “**Schemes Identified for Convergence**” on page 62, “**Allocation of food grains under National Food Security Act, 2013**” will be placed under same bullet point in Ministry of Consumer Affairs, Food and Public Distribution.
- In the infographic titled “**Edible Oil Sector in India**” on page 62, under the Production tab, **correct information** will be as follows: India accounts for 15-20% of global oilseed area; 6-7% of vegetable oil production; **9-10% of total consumption**.

# ALL INDIA MAINS TEST SERIES

## GS Mains, Essay & Ethics

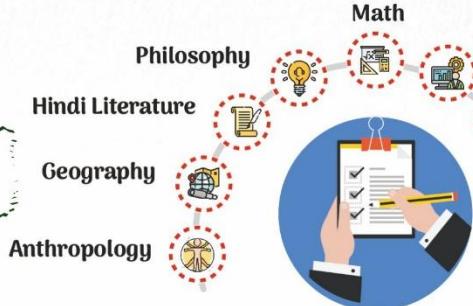


**2025** | ENGLISH MEDIUM | 2 MARCH | हिन्दी माध्यम | 2 मार्च

**2026** | ENGLISH MEDIUM | 9 MARCH | हिन्दी माध्यम | 9 मार्च

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# OPTIONAL TEST SERIES



**2025** | ENGLISH MEDIUM | 2 MARCH | हिन्दी माध्यम | 2 मार्च

# 4. ENVIRONMENT

## 4.1. BIODIVERSITY

### 4.1.1. WILDLIFE

#### 4.1.1.1. COP-16 TO THE UNCBD

##### Why in the News?

Recently, 16<sup>th</sup> Conference of Parties (CoP-16) to the UN Convention on Biological Diversity (UNCBD) concluded in Cali, Colombia.

##### More on the News

- Theme of this year's conference was 'Peace with Nature'.
- It is the first CoP, since adoption of Kunming-Montreal Global Biodiversity Framework (KMGBF).
- CoP-17, 2026 is to be held in Yerevan, Armenia.

##### About UNCBD

- Origin:** International legally binding treaty adopted at the United Nation's Conference on Environment and Development (UNCED), Earth Summit, Rio de Janeiro, Brazil in 1992.
  - Entered into force in 1993, operates under United Nations Environment Programme (UNEP).
- Objectives:** Conservation of biological diversity; sustainable use of its components; and fair and equitable sharing of the benefits.
- Secretariat:** Montreal, Canada.
- Members:** Ratified by 196 members (India became a party in 1994).
  - USA hasn't ratified the convention.
- Governing mechanism:** CoP meets every two years (biennial).

### Protocols and Targets under the UNCBD

**Cartagena Protocol on Biosafety:** Aims to ensure the safe handling, transport and use of Living Modified Organisms (LMOs) resulting from modern biotechnology.

**Nagoya - Kuala Lumpur Supplementary Protocol:** Provides international rules and procedures in the field of liability and redress relating to LMOs.

**Nagoya Protocol on Access and Benefit-sharing:** Aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way.

**Aichi Biodiversity Targets:** 20 global biodiversity targets divided under 5 goals, adopted under 'Strategic Plan for Biodiversity 2011-2020' to conserve biodiversity and enhance its benefits for people.

##### About KMGBF

**Non-binding framework** adopted at the CoP-15 to CBD at Montreal, Canada in 2022.

- Successor to 'Strategic Plan for Biodiversity 2011-2020' and its Aichi Targets.

**Aim:** To halt and reverse biodiversity loss by 2030.

**Goals:** Sets 4 goals to be achieved by 2050: Protect and restore ecosystem and species health; Prosper with Nature; Share benefits fairly; Invest and collaborate (to close biodiversity finance gap of \$700 billion per year).

**Targets:** Sets 23 targets to be met by 2030.

- Some of the key targets being:
  - 30-by-30 Target (i.e. 30% conservation of land, sea, and inland water and 30% restoration of various degraded ecosystems by 2030).
  - Reducing the introduction of invasive alien species by 50% by 2030.
  - Formulate mechanism for "benefit-sharing from use of Digital Sequence Information (DSI) on genetic sources" and traditional knowledge.

## Major Outcomes of CoP-16

- **Operationalization of Cali Fund** for sharing the benefits from Digital Sequence Information (DSI).
  - DSI is a **policy term** that refers broadly to **genomic sequence data and other related digital data of organisms** used for research in agriculture, pharmaceuticals, biodiversity conservation etc.
  - **Companies benefiting commercially from DSI to contribute 1% of their profit** (0.1% of their revenues) to support Indigenous Peoples and local communities.
  - **Goal-C (Share benefits fairly) and Target-13 of KMGBF:** Promotes equitable sharing of benefits from utilization of DSI and traditional knowledge.
- Through establishment of **permanent subsidiary body** under **Article 8(j) of the UNCBD** and **Cali Fund** to enhance participation of indigenous people.
  - At least **50% of the Cali Fund** is for **self-identified needs of indigenous communities** including women and youth.
- **Launch of Kunming Biodiversity Fund (KBF)** under **Global Environment Facility (GEF)**.
  - Earlier at **CoP-15**, **Global Biodiversity Framework Fund (GBFF)** was agreed and established by **GEF**.
- **Identification of Ecologically or Biologically Significant Marine Areas (EBSAs)** Crucial for **30-by-30 Target** under **KMGBF** and **Biodiversity Beyond National Jurisdiction (BBNJ) Agreement** (High Seas Treaty).
- **Invasive alien species management:** Through new databases, improved cross-border trade regulations, etc.
- **Approved Global Action Plan on Biodiversity and Health:** Embraces 'One Health' approach.

### 4.1.1.2. NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (NBSAP)

#### Why in the News?

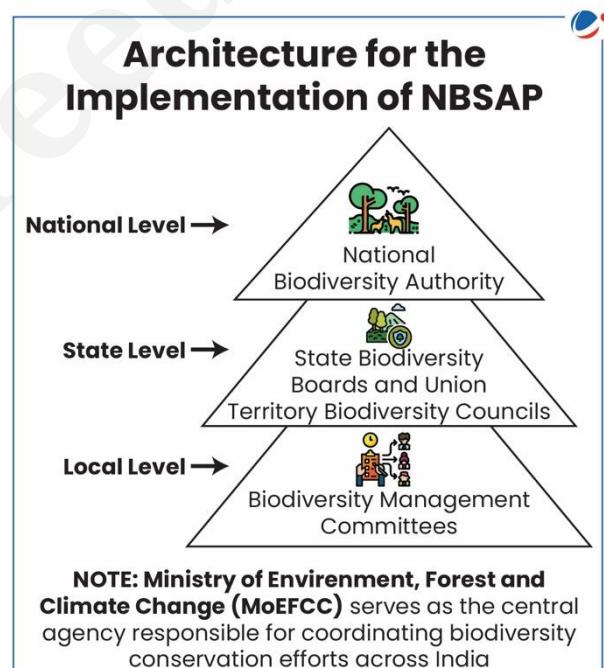
India unveiled its **updated NBSAP for 2024-30** at CoP-16 to the **UN Convention on Biological Diversity (UNCBD)**.

#### About NBSAP

- **Article 6 of the UNCBD** requires every party to the convention to **prepare NBSAPs**.
- It is the **primary tool for mainstreaming biodiversity and implementation of the UNCBD** at the country level.
- It provides a **framework for biodiversity conservation, sustainable use of biological resources, and fair and equitable sharing of benefits derived from them**.
- India's **1<sup>st</sup> NBSAP** was created in **1999**; later **National Biodiversity Action Plan (NBAP)** was adopted in **2008**, updated in **2014** to align with **Aichi Biodiversity Targets**.

#### Key highlights of the updated NBSAP 2024-30

- **Approach:** Adopts a '**Whole of Government**' and '**Whole of Society**' approach aligning itself with **KMGBF**.
- **National Biodiversity Targets (NBTs):** 23 NBTs focused on **3 themes** – reducing threats to biodiversity; ensuring sustainable use of resources; and enhancing tools for implementation.
- **Implementation framework:** Ministry of Environment, Forest and Climate Change (**MoEFCC**) serves as the central agency.
  - **Enactment of Biological Diversity Act, 2002 developed a multi-tier governance structure** (refer infographic).



- **Resource mobilization:** Recognizes India among leading countries for **implementation of Biodiversity Finance Initiative (BIOFIN)** at national level.
  - BIOFIN is a global partnership launched by **UNDP and the European Commission** to support countries for the financial management of biodiversity and ecosystems.

#### **Other commitment at CoP-16 by India**

**Budgetary Allocation:** Around ₹81,664 crore on biodiversity and conservation efforts for the period 2025-30.

**Call for resource mobilization:** In mobilizing international financial resources laid down under KMGBF's **Target 19** for implementation of NBSAP.

- Target 19 calls for mobilizing \$200 billion per year for biodiversity from all sources, including \$30 billion through international finance.

**Other highlights:** Advocates for global conservation through 'Plant4Mother' Campaign; wildlife conservation through establishment of **International Big Cat Alliance (IBCA)**; increase in Ramsar sites from 26 to 85 since 2014 etc.

### **4.1.1.3. BIODIVERSITY RULES, 2024**

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

**Ministry of Environment, Forest and Climate Change** notified rules in accordance with the **Biological Diversity Act of 2002** to replace Biodiversity Rules, 2004.

#### **Key Highlights of the Rules**

- **National Biodiversity Authority (NBA):**
  - Chairperson appointed by the Central Government, for a term of **three years**, eligible for re-appointment.
- **General Functions of the NBA**
  - Administering the **National Biodiversity Fund (NBF)**, under the Act of 2002.
  - Granting approvals for **biodiversity-related agreements**.
  - Providing **technical guidance** and support to state bodies.
  - **Developing and maintaining databases** related to biological resources and traditional knowledge.
- **Intellectual Property Rights:** Approval of Authority will be required before the **actual grant of the IPR**.
- **Penalties for Contraventions:** Penalties for violations range from ₹1 lakh to ₹50 lakh, collected penalties go to the NBF or relevant state funds.

#### **About Biological Diversity Act, 2002 (last amended in 2023)**

- **Aim:** Highlights India's commitment in implementing the provisions of **UNCBD**.
- **Goals:** Protect and conserve the biological diversity; sustainable use of biological resources; and fair and equitable sharing of benefits.
- **Key provision of the Act**
  - **Provides conditions and modalities** for research, commercial utilization etc. These are:
    - > All foreign nationals require approval from NBA for obtaining Biological Resources.
    - > Indian individuals/ entities seek approval before transferring knowledge/ research and material to foreigners.
    - > Prior approval of NBA before applying for any kind of IPR based on research conducted on biological material and/ or associated knowledge obtained from India.
- **2023 Amendments**
  - **Exemption granted to AYUSH practitioners and Traditional Knowledge holders from paying Access and Benefit Sharing (ABS).**
    - > ABS, a type of **compensatory amount**, typically paid to tribal and other communities who traditionally gather, protect and utilize herbs and medicinal plants crucial to AYUSH industry.
  - **Removes criminal penalties for violations** and replace them with fines.

- **Institutional structure under the Act:** Three-tier implementation at **National-level** [National Biodiversity Authority (NBA), headquartered at Chennai], at **State-level** [State Biodiversity Boards (SBBs)] and at **Local-level** [Biodiversity Management Committees (BMCs)].
  - SBBs are **not constituted for Union Territories (UTs)**. NBA exercises the powers and performs the functions of a SBB for the UT.

#### **4.1.1.4. OTHER RELATED NEWS**

##### **4.1.1.4.1. GARUDAKSHI**

Karnataka launched the '**Garudakshi**' online FIR system to curb wildlife crimes.

##### **About Garudakshi**

- **It is software to enable an online FIR system** similar to that of the **Police Department** developed in collaboration with the **Wildlife Trust of India**.
- Allows the public to register complaints on forest offences using mobile phones or email addresses.

#### **4.1.2. FORESTS**

##### **4.1.2.1. COP16 OF THE UNCCD**

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

Recently, some new initiatives and reports were launched at the **COP 16 of the UNCCD** under the chairmanship of **Saudi Arabia**.

##### **About UNCCD**

- **About:** It is the **sole legally binding international agreement** linking environment and development to sustainable land management.
- **Genesis:** 1994
- **Members:** 197 countries and the European Union.
- **Objectives**
  - **To protect and restore land**
  - It is committed to a **bottom-up approach**, encouraging the **participation of local people**.
- **Report:** Global Land Outlook.
- **Flagship initiatives:**
  - In 2015, **Land Degradation Neutrality (LDN) target setting programme (LDN TSP)**: Parties were invited to formulate voluntary targets to achieve LDN.
    - > **LDN:** It refers to the **sustainable management of land resources** to support ecosystem services and food security.
    - > India committed to **restore 26 million hectares by 2030**.
  - In 2017, **the Strategic Framework 2018–2030**: urging nations to incorporate desertification/land degradation and drought concerns into national policies.
  - **Other initiatives:** the Great Green Wall (2007), The Changwon Initiative (2011), International Drought Resilience Alliance (2022), G20 Global Land Initiative (2020), etc.

New initiatives	
 <b>Riyadh Drought Resilience Partnership</b>	Leverage public and private finance to support 80 of the most vulnerable and drought-hit countries
 <b>World Drought Atlas</b>	Launched by <b>UNCCD</b> , with <b>European Commission Joint Research Centre (JRC)</b> and other partners. ➤ Depicts the systemic risks of drought across critical sectors like energy, agriculture, river transport and trade etc.
 <b>International Drought Resilience Observatory (IDRO)</b>	Launched by <b>International Drought Resilience Alliance (IDRA)</b> , first global, AI-powered data platform for building drought resilience.
 <b>Other Initiatives at UNCCD</b>	<b>Role of Private sector in supporting sustainable land use highlighted at CoP 16 at the Business 4 Land Initiative.</b> ➤ <b>Business 4 Land Initiative (2024)</b> is <b>UNCCD's main initiative</b> to engage the private sector in sustainable land and water management. ➤ <b>Aim:</b> Restore <b>1.5 billion hectares of land by 2030</b> , supporting <b>Land Degradation Neutrality (LDN)</b> . ➤ First-ever ' <b>Indigenous Peoples Forum at UNCCD</b> ' spotlighted invaluable contributions of indigenous people to land conservation and sustainable resource management.
Report	
 <b>Decent Work in Nature Based Solutions (NbS)</b>	<b>Released By:</b> International Labour Organization (ILO), the United Nations Environment Programme (UNEP) and the International Union for Conservation of Nature (IUCN) at CoP 16 of UNCCD. ➤ <b>Employment:</b> 60.5–63 million people (1.8% of total global employment) currently work in NbS globally. ■ <b>95%</b> of this employment is concentrated in Asia and the Pacific, primarily driven by <b>Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)</b> . ➤ <b>NOTE:</b> NbS are actions addressing <b>key societal challenges</b> through the protection, sustainable management and restoration of both <b>natural and modified ecosystems</b> , e.g., protecting and restoring coral reefs, etc.
Other Reports by UNCCD	
 <b>Stepping back from the precipice: Transforming land management to stay within planetary boundaries</b>	<b>Released By:</b> Potsdam Institute for Climate Impact Research in collaboration with the <b>United Nations Convention to Combat Desertification (UNCCD)</b> . <b>Key Highlights</b> ➤ <b>Impact of Land Degradation:</b> Land degradation affects an area of 15 million sq km, and 1.2 billion people globally. ➤ <b>Economic cost of land degradation</b> estimated between 6.3 –10.6 trillion US Dollar annually.

#### 4.1.2.2. FOREST ECOSYSTEM RESTORATION

##### Why in the News?

The Secretariat of the **Convention on Biological Diversity (CBD)** marked the **10<sup>th</sup> anniversary of Forest Ecosystem Restoration Initiative (FERI)** in 2024.

### About Forest Ecosystem Restoration Initiative (FERI)

- It is a **collaborative project** developed by The **Korea Forest Service** of the Republic of Korea, in cooperation with the Executive Secretary of the **CBD in 2014**.
- **Mandate:** It directly supports developing countries in the implementation of the **Kunming-Montreal Global Biodiversity Framework (KMGBF)**
- **FERI's other Initiatives:**
  - **Short-Term Action Plan on Ecosystem Restoration (STAPER)**
  - **WePlan – Forests:** A decision support platform for tropical forest ecosystem restoration.

### About Forest ecosystem restoration

- Involves returning trees to former forest land and improving the condition of degraded forests, etc.
- **Restoration Interventions:** Rehabilitation, Reconstruction, Reclamation, Replacement.
- **Major global Initiatives for forest restoration**
  - IUCN's **Forest Conservation Programme** for sustainable management of forests.
  - WWF's **Forests for Life Programme** for conserving biological diversity.
  - 'REDD+' framework of UN for sustainable management of forests and conservation of forest carbon stocks.
  - **The Forest and Landscape Restoration Mechanism (FLRM)** by Food and Agriculture Organization (FAO).

#### Steps taken by India

- **The Forest Conservation Act (FCA), 1980** to regulate forest clearing.
- **National Mission for a Green India (NMGI)** to restore and afforest different ecosystems.
- **The Compensatory Afforestation Fund Management and Planning Authority (CAMPA)**, statutory body under FCA, 1980.
- **Nagar Van Yojana:** Envisages creation of 600 Nagar Vans and 400 Nagar Vatika during 2020-21 to 2026-27.
- **National Forest Policy, 1988** aims at maintaining at least 1/3<sup>rd</sup> of the country's land under forest or tree cover and 2/3<sup>rd</sup> in hilly and mountainous regions.
- **Other Afforestation schemes** such as National Bamboo Mission, and Sub-Mission on Agroforestry.

### 4.1.2.3. INDIA STATE OF FOREST REPORT (ISFR) 2023

#### Why in the News?

The Ministry of Environment, Forests and Climate Change (MoEFCC) recently released **India State of Forest Report (ISFR) 2023**.

#### About ISFR

- **Overview:** Prepared by **Forest Survey of India (FSI)**, published **every two years** since 1987.
- **Assessment Method:** Used satellite data, National Forest Inventory data, Field verification, Covered **751 districts** (up from 636 in previous report).

#### Key Definitions Used in ISFR 2023

- **Tree Cover:** Comprises **all tree patches outside the forest area, less than one hectare in extent** including all the scattered trees in the rural and urban settings, **not captured under the forest cover**.
- **Forest Cover:** Defined as all lands, **more than one hectare** with a **tree canopy density of more than or equal to 10%** including orchards, bamboo and palm, irrespective of ownership, legal status and land use. Such lands **may not necessarily be a recorded forest area (RFA)**.

#### Forest Cover Classifications

##### Very Dense Forests

Tree canopy density: 70% and above



##### Moderately Dense Forests

Tree canopy density: 40% to less than 70%



##### Open Forests

Tree canopy density: 10% to less than 40%

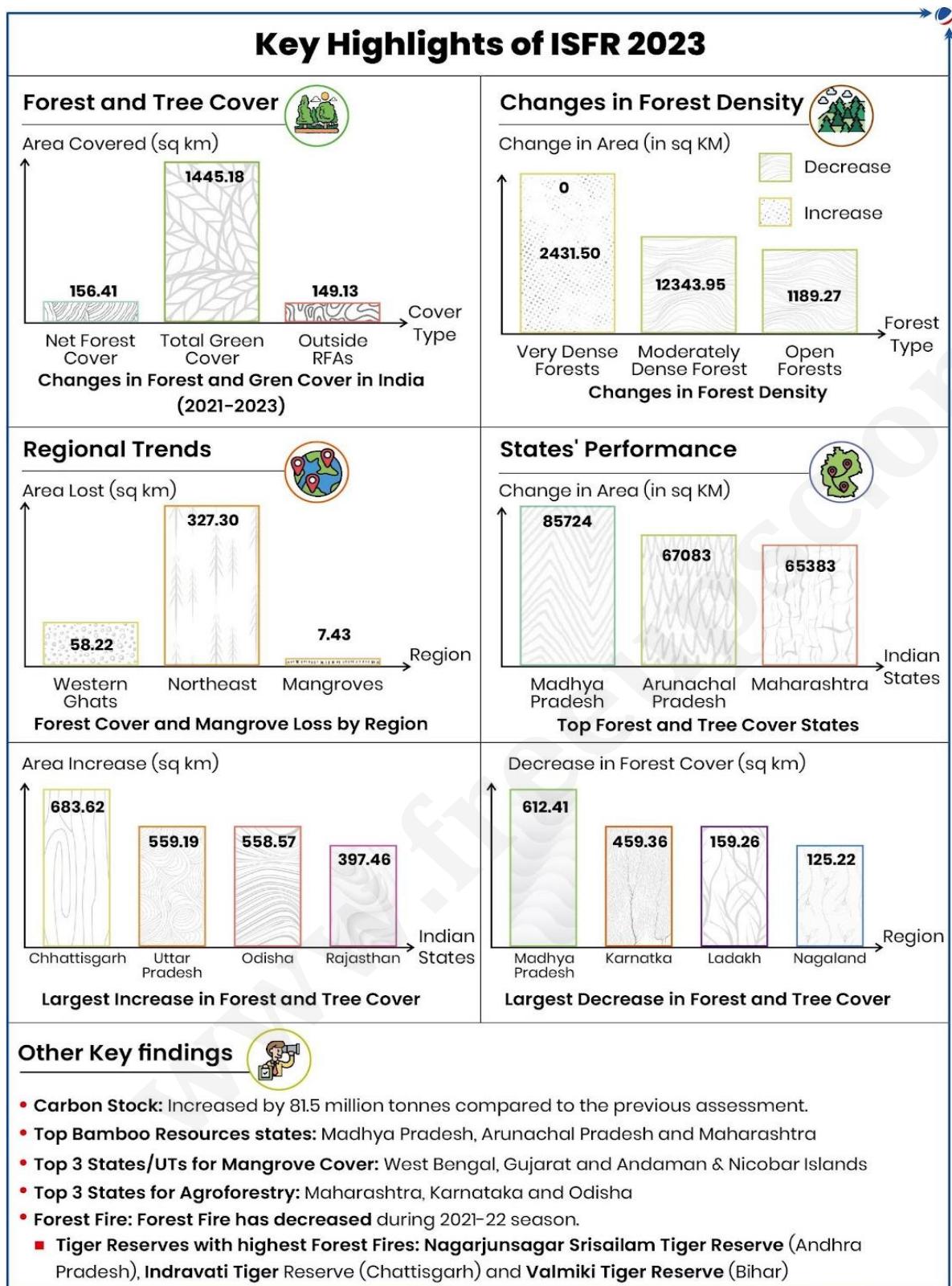


##### Scrub

Forest lands with canopy density less than 10%



- Forest Area:** Also known as the **Recorded Forest Area (RFA)**, defined as “all such lands which have been notified as forest under any Government Act or Rules or recorded as ‘forests’ in the Government Records”.
  - Thus, the term ‘forest area’ denotes the legal status of the land as per the government records, whereas the term ‘forest cover’ indicates presence of trees over any land.



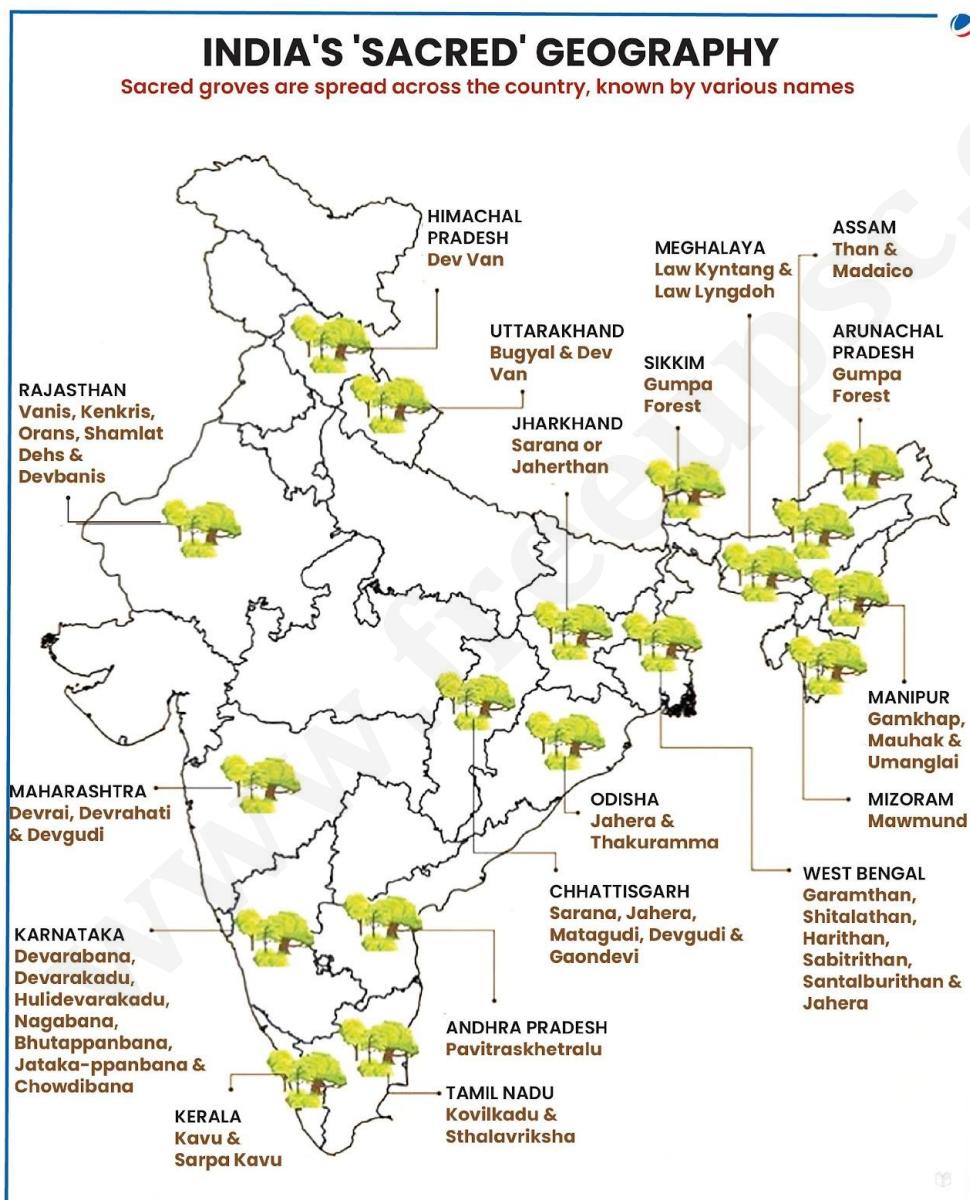
#### 4.1.2.4. SACRED GROVES

##### Why in the news?

SC pronounced direction on the identification of sacred groves such as **Orans** by the Rajasthan Government in accordance with the **T.N. Godavarman judgment (1996)**.

##### More on the news

- The court suggested the **Piplantari model**.
  - Piplantri is a village in the **Rajsamand district of Rajasthan**, that gained international recognition as the **villagers planted 111 trees, whenever a girl child is born**.
- T.N. Godavarman judgment** expanded definition of "forest" to include:
  - All areas recorded as "forest" in any **government (Union and State) record**, irrespective of ownership, recognition, and classification.
  - All areas that conformed to the "**dictionary' meaning of forest**".
- Areas that are identified as "**forest**" by expert committees set up by the State governments following the **1996 order**.



### About Sacred Groves

- Comprise patches of forests or natural vegetation that hold deep religious and spiritual meaning to indigenous communities and are protected by them.
- India is estimated to have around **100,000 to 150,000 sacred groves (IUCN)**.
- **Living Root Bridges** (Jingkieng Jri) of **Meghalaya** a sacred grove is part of the tentative list of **UNESCO World Heritage Site**.
- **Need for Protection: Cultural** (associated with deities and serve as venues for weddings, festivals, etc. E.g., Sabarimala in Kerala and Hariyali in Garhwal); **Economic and medicinal benefits; growth of livestock-based economies** (41% livestock in Barmer district of Rajasthan is dependent on the sacred groves “Orans”), etc.

### 4.1.2.5. FOREST RIGHTS ACT, 2006

#### Why in the News?

The **District Level committee** approved **Community & individual rights** under **Forest Rights Act, 2006**, to Nagaroothu I, Nagaroothu II, & Chinnarpathi tribal settlements in **Anamalai Tiger Reserve, Tamil Nadu**.

#### About Forest Rights Act, 2006

- **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition Of Forest Rights) Act**, popularly known as FRA was **enacted in 2006**.
- **Objective: Undo historical injustice to forest dwelling communities; ensuring livelihood & food security.**

#### Key Features

- **Forest Rights Recognized Under FRA:**
  - **Individual Rights:** Rights of Self-cultivation & Habitation, In-situ rehabilitation etc.
  - **Community Rights:** Grazing, Fishing & access to Water bodies in forests, right to intellectual property & traditional knowledge, right to protect traditional customary rights etc.
- **Eligibility:** Rights can be claimed by any member or community that has for **at least three generations (75 years) before the 13th day of December 2005** lived in the forest.
- **Critical wildlife habitats:** Provides that **critical wildlife habitats** of National Parks & Sanctuaries must remain inviolate for wildlife conservation.

#### Authorities for vesting forest rights

- **Gram Sabha:** Authority to initiate process for determining nature & extent of individual/community forest rights.
- **Sub-Divisional Level Committee:** Constituted by state government, examines resolution of Gram Sabha.
- **District Level Committee:** Final approval of forest rights.
- **Role of State Governments:** Entrusted with task of implementing FRA, constitute **State Level Monitoring Committee, District Level Committees and Sub-Divisional Level Committees.**

### 4.1.2.6. OTHER RELATED NEWS

#### 4.1.2.6.1. MIYAWAKI FOREST

A dense forest created in Pithoragarh, Uttarakhand, using the **Miyawaki method** has achieved 93% success rate.

#### About Miyawaki method

- It is a **reforestation technique** developed by Japanese botanist **Akira Miyawaki** based on **Potential Natural Vegetation (PNV)** concept.
  - It deals with the regeneration of forest by **closely planting a variety of tree species**, best suited for the **specified locality**.
- **Benefits:** High tree density, mitigation of noise and air pollution, help in carbon sequestration, etc.
- **Limitations:** Limited genetic diversity, resource intensive, not suitable for all locations.

#### **4.1.2.6.2. OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES (OECMS)**

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

Recently, International Union for Conservation of Nature (IUCN) released 'Guidance on OECMs' report on conserving land, water and coastal areas through OECMs.

##### **About OECMs**

- **Definition:** Geographically defined area **other than Protected Areas (PAs).**
  - It is **governed/ managed to achieve sustained long-term outcomes for in-situ conservation of biodiversity**, with **associated ecosystem functions and services** and where applicable, cultural, spiritual, socio-economic, and other locally relevant values.
  - Areas that are already established as PA or lie within PA **should not also be identified/reported as OECMs.**
- Can be governed by a **government agency, private group** (e.g. NGO), **Indigenous peoples, local communities** or in a shared arrangement.
- OECMs term **first appeared in 2010 within Aichi Biodiversity Targets** established by CBD.
  - At CoP-14 in 2018, CBD adopted its official definition.

### **4.1.3. WETLANDS, COASTLAND AND OCEANS**

#### **4.1.3.1. MARINE PROTECTED AREAS (MPAS)**

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

A study highlighted that MPAs management can conserve biodiversity and improve nutritional security.

##### **About Marine Protected Areas (MPAs)**

- They essentially a space in the ocean where **human activities are more strictly regulated than the surrounding waters (as per ENVIS).**
- Given special protections for natural or historic marine resources by local, state, territorial, native, regional, or national authorities.
- **Significance:** Reservoirs of Genetic material, shields marine species from various threats, reference sites for scientific research, nature based conservation and tourism, climate change mitigation, etc.
- **Challenges in conservation of MPAs: Difficulties** in enforcing regulations, **requirement of substantial resources**, impacts livelihoods of local fishing communities.

##### **Global Initiatives to Protect Marine Biodiversity**

- **Kunming-Montreal Global Biodiversity Framework:** Protect 30% of the planet's oceans and lands by 2030.
- **Agreement on Marine Biodiversity of Areas beyond National Jurisdiction (High Seas Treaty).**
- **MPAs in India:** Gulf of Mannar Marine Park (Tamil Nadu), Lothian Island (West Bengal), Gahirmatha (Odisha).

#### **4.1.3.2. COASTAL ZONE MANAGEMENT PLAN (CZMPS)**

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

Recently, Ministry of Environment approved the CZMPs for 10 coastal districts of Kerala.

##### **About CZMP**

- **CZMP** is a strategic framework designed to manage and regulate human activities in coastal areas.

- **Key components of CZMPs**
  - **Zoning:** CZMPs divide coastal areas into different zones, such as **No Development Zones (NDZ)**, and **Coastal Regulation Zones** (Refer Table).
  - **Public Participation:** To consider the opinions and worries of local communities etc.
- Approval of CZMP is a **pre-condition for the States** to make the Coastal Regulation Zone (CRZ) Notification 2019 applicable and avail relaxed norms under it.

#### About CRZ

- **Central Government** declares **coastal stretches** of the country and the water area **up to its territorial water limit**, excluding the islands of Andaman and Nicobar and Lakshadweep as **CRZ**.
- **MoEF&CC** under the **Environment Protection Act, of 1986**, issued the first **CRZ notification in 1991**.
  - Subsequently, **CRZ was noticed in 2011 further superseded by CRZ 2019**.

<b>CRZ-IA</b>	<b>Ecologically Sensitive Areas</b> like Mangroves, Corals and coral reefs, Sand dunes, Salt Marches etc.
<b>CRZ-1B</b>	<b>Intertidal zone</b> i.e. area between Low Tide Line and High Tide Line.
<b>CRZ-II</b>	<b>Developed Land Areas</b> up to or close to the <b>shoreline</b> , within the existing <b>municipal limits or in other existing legally designated urban areas</b>
<b>CRZ-III A</b>	Area with <b>population density more than 2161 per square kilometre</b> . In CRZ-III A, <b>area up to 50 meters from the HTL</b> on the landward side earmarked as the ' <b>No Development Zone (NDZ)</b> ', <b>provided the CZMP have been approved</b> .
<b>CRZ-III B</b>	All other CRZ-III areas with population density of less than 2161 per square kilometre. In CRZ-III B, the <b>area up to 200 meters from the HTL</b> on the landward side shall be earmarked as the ' <b>NDZ</b> '.
<b>CRZ-IV</b>	CRZ- IV shall constitute the water area and shall be further classified as <b>CRZ-IVA and CRZ-IVB</b> .

#### 4.1.3.3. WETLAND ACCREDITED CITIES

##### Why in the News?

Recently, **Indore** and **Udaipur** became the **first two Indian cities** making global list of 31 accredited wetland cities under Ramsar Convention on Wetlands.

##### More on the News

- **Indore:** Sirpur Lake (Ramsar Site) **recognised for water bird congregation** and is being developed as a **bird sanctuary**.
- **Udaipur:** Surrounded by **five major wetlands**, namely, **Pichola, Fateh Sagar, Rang Sagar, Swaroop Sagar, and Doodh Talai**.

##### About Wetland City Accreditation (WCA)

- **Voluntary Accreditation system** provides an opportunity for cities that value their **natural or human-made wetlands** to gain international recognition and positive publicity for their efforts.
- **Approved at Uruguay in COP12 of Ramsar Convention (2015)**.
- **Valid for 6 years**, must be renewed, **filling each of 6 criteria** (refer image).
- **Significance:** Promotes Conservation and wise of urban and peri-urban wetlands, help in implementation of Amrit Dharohar initiative of MoEF&CC, etc.

#### 6 Criteria for WCA Enlistment

- |   |   |
|---|---|
|  | <b>Criterion 1</b><br>Contains Ramsar Sites providing ecosystem services within city jurisdiction |
|  | <b>Criterion 2</b><br>Adopts measures for wetland conservation and ecosystem services protection  |
|  | <b>Criterion 3</b><br>Implemented wetland restoration and/or management measures                  |
|  | <b>Criterion 4</b><br>Integrates wetland planning into urban land-use decisions                   |
|  | <b>Criterion 5</b><br>Promotes public awareness and local participation in wetland decisions      |
|  | <b>Criterion 6</b><br>Establishes local committee for wetland management and Ramsar accreditation |

## 4.1.4. ORGANIZATIONS IN NEWS

### 4.1.4.1. INTERGOVERNMENTAL PLATFORM ON BIODIVERSITY AND ECOSYSTEM SERVICES (IPBES)

#### Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)



**i Genesis:** 2012.

**G Aim:** Strengthen the science-policy interface for biodiversity and ecosystem services for conservation and sustainable use of biodiversity, human well-being and sustainable development.

**H Membership:** Independent intergovernmental body comprising 147 member states. **India** is a founding member.

**S Secretariat:** Not a **UN body** but **UN Environment Programme provides secretariat services to IPBES.**

#### **R Reports/Indices:**

##### **Transformative Change**

↳ **Definition:** It is a fundamental system-wide shifts in **views** (ways of thinking), **structures** (ways of organizing & governing) and **practices** (ways of doing & behaving).

↳ **Four principles to guide transformative change:** equity and justice; pluralism and inclusion; respectful and reciprocal human-nature relationships; and adaptive learning and action.

## 4.2. CLIMATE CHANGE

### 4.2.1. INTERNATIONAL YEAR OF GLACIERS' PRESERVATION

#### Why in the News?

Recently, **UN has declared 2025** as the **International Year of Glaciers' Preservation**.

#### More on the News

- It was also announced that **March 21** of each year will be celebrated as **World Day for Glaciers, starting in 2025.**

#### About International Year of Glaciers' Preservation

- Co-facilitated by:** UNESCO and the World Meteorological Organization (WMO).
- Objective:** To raise global awareness about the critical role of glaciers in the climate system and the hydrological cycle, and the economic, social and environmental impacts in the Earth's cryosphere.
- Significance of Glaciers:** There are more than **275 000 glaciers in the world**, covering an area of **around 700,000 sq. kms**, which account for **~70% of the global freshwater**.

### 4.2.2. TERMS IN NEWS

#### 4.2.2.1. GEOENGINEERING

New Study explores Diamond Dust as a potential Geoengineering Strategy for Cooling of Planet.

#### Benefits of using diamond dust

- Enhanced Properties:** It reflects light and heat effectively, remains airborne longer, and is less likely to clump together in atmosphere
- Safer Alternative:** Unlike sulfur dioxide, which poses risks like acid rain and ozone depletion, diamond dust is chemically inert

## What is Geoengineering /Climate Engineering?

- Large-scale intervention in the Earth's climatic system, with an aim of **reducing global warming**.
- There are **two main categories** of geo-engineering:-
  - **Carbon Dioxide Removal**
    - > **Direct Air Carbon Capture and Storage (DACCs)**: uses chemical processes to capture and separate **and then store CO<sub>2</sub>** directly from ambient air.
    - > **Ocean fertilization**: Addition of nutrients (e.g iron) to enhance the growth of phytoplankton that remove CO<sub>2</sub>.
  - **Solar Radiation Management**
    - > **Stratospheric aerosol injection**: Injecting reflective particles such as sulfate aerosols into the stratosphere to reflect incoming radiation
    - > **Marine cloud brightening**: injection of salt spray into shallow marine clouds to brighten them, increasing their reflection of sunlight

## 4.3. POLLUTION

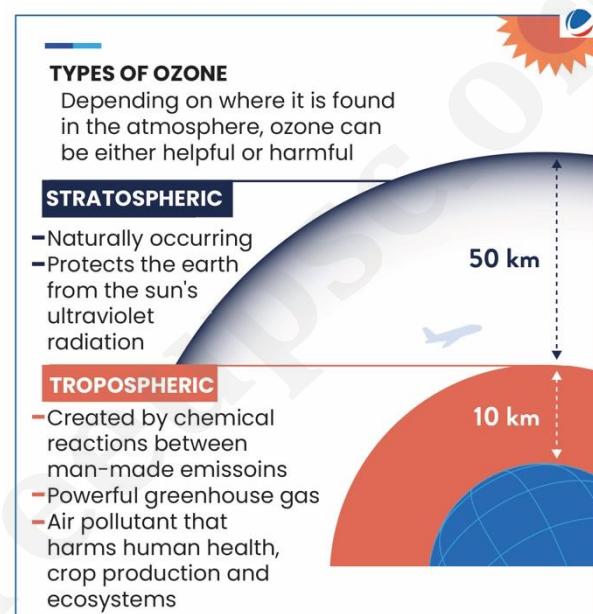
### 4.3.1. OZONE

#### Why in the News?

The National Green Tribunal (NGT) took cognizance of the increasing levels of ground-level ozone, which is a key air pollutant and a precursor to smog.

#### About ground-level ozone (GLO) or Tropospheric Ozone

- **Ozone (O<sub>3</sub>)**: It's a variant of oxygen composed **of three oxygen atoms**.
  - It occurs both in the **Earth's upper atmosphere** and at **ground level/Tropospheric Ozone** (See Image).
- **Genesis of GLO**: It's a short-lived secondary pollutant which is formed in the ground level through atmospheric reactions (Troposphere) in the **presence of sunlight**.
- **Responsible factors**: High temperature and emissions of Precursor pollutants. **E.g.,** Oxides of Nitrogen (NO<sub>x</sub>) & Volatile Organic Compounds (VOCs).
  - **Peak O<sub>3</sub> levels occur in summers.**
- **Sources of Precursor Pollutant**: Largely vehicular emission, fossil fuel power plants, oil refineries, the agriculture sector, etc.
- **Central Pollution Control Board (CPCB)**: has set the following **National Ambient Air Quality Standards (NAAQS)** for GLO:
  - **8-hour average**: 100 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ )
  - **1-hour limit**: 180  $\mu\text{g}/\text{m}^3$



#### Steps taken to control the precursors of ozone, i.e. NOx and VOC emissions:

- **BS VI Vehicles**: Reduced NOx emissions by up to 87% for heavy vehicles and 70-85% for 2-wheelers.
- **Electric Mobility**: Under PM-E Drive to achieve zero vehicular emissions.
- **Revised Industrial Emission Standards**: Stricter NOx and VOC standards for industries like fertilizers, thermal power plants etc.
- **Vapor Recovery System (VRS)**: Installed at Delhi-NCR petrol pumps to reduce VOC emissions during refueling.

### 4.3.2. URBAN AIR POLLUTION

#### Why in the News?

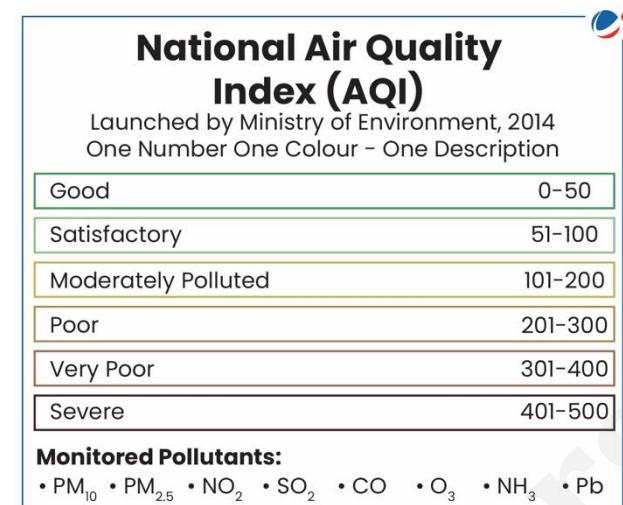
As per **World Cities Report 2024: Cities and Climate Action** of UN-Habitat, urban air pollution accounted for 6.7 million premature deaths in 2019.

#### More on the News

- **6<sup>th</sup> Annual World Air Quality Report by IQAir** found New Delhi to be the most polluted capital city in the world.
  - **9 out of the 10 most polluted cities in the world** were found to be located in India.

#### Reasons for urban air pollution in India

- **Meteorological and Geographical Factors**
  - **Low Rainfall and Winds:** Low rainfall in September-October and sluggish winter winds contribute to stagnant pollutant levels in north India.
  - **Airshed Dynamics:** Regional air pollution spreads through wind patterns.
  - **Dust Storms:** Dust from the Sahara and Thar deserts, rich in nitrates, contributes to surface ozone formation;
  - **Topography:** Northern India's low-lying terrain traps pollutants, with the Himalayas blocking dispersion.
  - **Temperature Inversion:** Winter conditions trap cooler air near the ground, preventing pollutant dispersal.
  - **Agricultural practices: Stubble Burning.**
- **Urban and Industrial Factors:** Construction and Demolition Waste, High Vehicle Density, Unscientific Waste Disposal, Industrial Emissions.



#### Related News

##### Air Quality Dashboard By ICIMOD

International Centre for Integrated Mountain Development (ICIMOD) has unveiled an **Air Quality Dashboard**.

##### About Air Quality Dashboard:

- It **combines ground sensor data** with satellite imagery to provide a comprehensive view of air pollution across local, sub-regional and regional scales.
- It is powered by the **Weather Research and Forecasting model coupled with Chemistry (WRF-Chem)**.
- This model reveals the **alarming spread of PM2.5 plumes across the region**, including hotspots like Lahore, New Delhi and Kolkata.

##### About PM 2.5 & 10

- **PM10:** Particles that are **10 microns or less** in diameter.
- **PM 2.5:** Particles that are **2.5 microns or less** in diameter.

### 4.3.3. ANNUAL GROUND WATER QUALITY REPORT 2024

#### Why in the news?

Ministry of Jal Shakti released Annual Ground Water Quality Report Conducted by the **Central Ground Water Board (CGWB)** for the year 2024.

# Key Bodies in India's Groundwater Management



## Central Ground Water Board (CGWB)

- Multi-disciplinary scientific organization under **Ministry of Jal Shakti**
- Explores and monitors ground water
- Functions as **Central Ground Water Authority (CGWA)**
- Regulates development and management of ground water
- HQ: Bhujal Bhawan, Faridabad, Haryana



## Central Water Commission (CWC)

- Key **technical body** for water resource management.
- **Coordinates with state governments for:**
  - Flood control
  - Irrigation
  - Navigation
  - Drinking water
  - Hydropower projects
- **Three wings:**
  - Designs & Research
  - River Management
  - Water Planning & Projects



## Central Pollution Control Board (CPCB)

- Implements **Water (Prevention and Control of Pollution) Act, 1974**
- Restores and maintains water quality
- **Advises Central Government on:**
  - Prevention of pollution
  - Control of pollution
  - Water quality improvement
  - Air quality improvement

## Key Findings on Groundwater Quality in India

- **Groundwater Usage:**
  - India is the largest user of groundwater and has the largest area under groundwater irrigation in the world.
  - 87% of extracted groundwater is used in agriculture and 11% is used for domestic purposes.
- **Recharge:** Total Annual GW Recharge has increased (15 BCM) substantially and Extraction has declined (3 BCM) in 2024 from 2017 assessment.
- **Seasonal Trends:** Electrical Conductivity (EC) and fluoride levels indicate positive effects of monsoon recharge, improving water quality.

## Major Groundwater Contaminants in India

### Nitrate ( $\text{NO}_3^-$ ) (40% exceed limit)

- Affected States:**
- > Rajasthan
  - > Tamil Nadu
  - > Maharashtra
- Cause:** Excessive fertilizer use

### Fluoride ( $\text{F}^-$ ) Alarming levels

- Affected States:**
- > Rajasthan
  - > Haryana
  - > Karnataka
  - > Andhra Pradesh
  - > Telangana

### As Arsenic

- Affected States:**
- > West Bengal
  - > Bihar
  - > Uttar Pradesh
  - > Assam
  - > Punjab

### U Uranium

- Affected States:**
- > Rajasthan (42%)
  - > Punjab (30%)
- Cause:** Groundwater overexploitation

### EC High EC levels

- Affected States:**
- > Rajasthan
  - > Delhi
  - > Gujarat
  - > Haryana
  - > Punjab
  - > Telangana
  - > Andhra Pradesh
  - > Karnataka

#### 4.3.4. DRAFT SOLID WASTE MANAGEMENT RULES, 2024

##### Why in the News?

The Ministry of Environment, Forest and Climate Change (MoEFCC) has released the Draft Solid Waste Management (SWM) Rules, 2024 for wider public consultations.

##### More on the News

- **Statutory Provisions:** The SWM Rules, 2024 amend and expand upon the **Solid Waste Management (SWM) Rules of 2016.**
  - SWM Rules are issued under the **Environment Protection Act (EPA), 1986.**
- **The Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs)** are responsible for **enforcing the pollution control guidelines** including the **rules under the EPA, 1986.**
  - **Implementation Date:** The rules are set to come into force on **October 1, 2025**, providing a transition period for stakeholders.

##### Key Features of Draft Solid Waste Management Rules 2024

- **Monitoring and Compliance:** CPCB to establish centralized online registration and annual reporting system.
- **Circular Economy Focus:** MoHUA is the apex coordinating body to drive circular economy initiatives while CPCB shall drive and monitor the circular economy initiatives.
- **Waste Segregation into biodegradable and non- biodegradable:** Safai Karamcharis authorized to fine violators and refuse unsegregated waste collection.
- **Extended Producer Responsibility (EPR):** EPR covers all waste generators including Bulk generators. Environmental compensation based on "polluter pays" principle.
- **Agricultural Waste Management:** Local bodies, including Gram Panchayats, mandated to prevent burning of agricultural waste.
- **Processing Requirements:** Encourages on-site waste processing. Stricter implementation timelines and responsibilities for local bodies.

##### About SWM in India

- **Definition:** Any discarded material including garbage, trash, and refuse.
- **Categorisation:** India legally classifies **waste into 6 types:** Municipal, Hazardous, Electronic, Biomedical, Plastic, and Construction waste.
- **Current Status (according to the TERI):**
  - **Annual waste generation:** 62+ million tons
  - **Collection:** 43 million tons
  - **Treatment:** Only 12 million tons
- Remaining **31 million tons dumped in wasteyards**

##### Key Initiatives for Promoting Effective SWM

###### India

- **Smart Cities Mission:** Over 60 cities are managing solid waste with **increased technology use**, improving route management, efficiency of collection, and daily management.
- **Swachh Bharat Mission (Grameen): Phase-II of the mission** focuses on proper management of solid waste at the village level.
- **Swachh Bharat Mission (Urban):** Launched in 2014 for scientifically managing municipal solid waste (MSW) throughout India.
  - **SBM-U 2.0** and aims to achieve a "**Garbage Free**" status for all urban areas by **2026.**

###### Global

- **UNEP International Environmental Technology Centre (IETC) in Japan:** Its work focuses on the proper treatment of special wastes (electronics, agricultural biomass, plastics) in developing countries.

### **4.3.5. ENVIRONMENT PROTECTION (MANNER OF HOLDING INQUIRY AND IMPOSITION OF PENALTY) RULES, 2024**

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

MoEFCC has introduced new rules for conducting inquiries and imposing penalties on polluters after SC's pollution order.

#### **About new rules**

- **Complaints against violators of environmental regulations can be initiated by key bodies**, including CPCB, SPCBs, Pollution Control Committees and others.
- In cases of **jurisdictional issues**, adjudicating officers may **transfer a case to appropriate authority**.
- **Initiation of enquiry**: By designated adjudicating officer **within 30 days**, as per **Section 15C of Environment (Protection) Act**.
  - **Violators are given at least 15 days to reply** and may be asked to appear in person etc.
  - **Timely resolution**: Inquiries be completed **within six months** from the notice date.

#### **Related News**

**Union Environment Ministry notified Water (Prevention and Control of Pollution) (Manner of Holding Inquiry and Imposition of Penalty) rules, 2024**

#### **Water Rules 2024**

- The rules comes in backdrop of amendments wherein **offenses and violations of the Act were decriminalized, replacing them with penalties**
- **It had also allowed the Centre to appoint 'Authorised Officers'** to adjudicate offenses, violations and determine penalties.
- **Significance**: Reduce the burden on the judicial system; encourage compliance through financial disincentives.

### **4.3.6. WEF GLOBAL PLASTIC ACTION PARTNERSHIP (GPAP)**

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

Recently, New members including **Angola, Bangladesh, Gabon, Guatemala, Kenya, Senegal & Tanzania** joined GPAP.

#### **About Global Plastic Action Partnership**

- **Launched**: During **Sustainable Development Impact Summit in 2018** of the World Economic Forum (WEF).
  - **Plastic pillar** of the Platform for **Accelerating the Circular Economy** and **Friends of Ocean Action**.
- **Present members**: **25** (including **Maharashtra State from India**)
- **Objectives**: **Accelerate global response to plastic pollution crisis, advance circular plastics economy to reduce emissions & protect land and ocean ecosystems.**
- **Key activities**: Helps countries in developing **National Action Roadmaps & Investment Mobilization** for waste management

### **4.3.7. POLLUTANTS IN NEWS**

#### **4.3.7.1. MANGANESE**

**As per a recent study by Scientists**, Manganese (Mn) contamination of water is causing **cancer in the Gangetic plains of Bihar**.

#### **About Manganese (Mn)**

- It is the **fifth-most abundant metal** on earth that exists in the form of **oxides, carbonates, and silicates**.
- Manganese is an essential component of the steel-making process.

- It is present in **food, water, soil, and rock** as a naturally occurring component.
- It is an '**essential trace element**' which plays a vital role in **maintaining body homeostasis**.
- It has been reported to be **toxic in higher doses for human beings**.
- **Source of Mn contamination of Groundwater: Industrial pollution** (anthropogenic), or **sedimentary or igneous rocks** (geogenic) deposits of Mn.

#### **4.3.7.2. TRICHLOROETHYLENE & PERCHLOROETHYLENE**

US EPA announces final bans on manufacture, processing, & use of **trichloroethylene & perchloroethylene**.

##### **About Trichloroethylene & Perchloroethylene:**

- **Toxic chemicals** used in **stain removers, degreasers, and range of industrial processes**, including dry cleaning
  - **Volatile organic compounds (VOCs)** with significant industrial utility but raise concerns due to their environmental and health impacts.
- **Health Impact:** Linked to severe health issues like **kidney cancer, Non-Hodgkin lymphoma, cardiac defects and bladder cancer**

#### **4.3.7.3. SILICON DIOXIDE**

National Green Tribunal (NGT) directed the **Central Pollution Control Board** to draft new guidelines for granting permission for **silica mining and washing plants**.

##### **About Silicon Dioxide**

- **Silica is the common name** given to materials composed of silicon dioxide (SiO<sub>2</sub>), which exist in crystalline or amorphous forms.
- The toxicity of silica has been linked to its crystallinity and capacity to **generate free radicals**.
- **Sources:**
  - **Industrial Processes:** Mining, construction, sandblasting, glass manufacturing, and cement production
  - **Natural Sources:** Volcanic eruptions, soil erosion, and dust storms
  - **Agriculture:** Tilling operations that release soil particles
- **Health Impact:**
  - **Respiratory issues:** Lung diseases such as silicosis, chronic bronchitis, chronic obstructive pulmonary disease, emphysema, pulmonary tuberculosis, and even lung cancer.
  - **Cognitive Decline:** Exposure to silica from drinking water leads to risk of cognitive decline, dementia and Alzheimer's disease.
- **Environmental Effects:** Dust deposition on vegetation reduces photosynthesis and plant growth.

#### **4.3.8. MISCELLANEOUS**

##### **4.3.8.1. CONSENT TO ESTABLISH**

###### **Why in the news?**

Ministry of Environment, Forest and Climate Change (MoEFCC) **removed the dual compliance** of Environmental Clearance (EC) and Consent to Establish (CTE) for setting up of new industries.

###### **More on the news**

- **Now, non-polluting white category industries** will not be required to take CTE or Consent to Operate (CTO) at all.
- Also, industries who have **already taken EC** will not be required to take CTE.

#### About Consent to Establish (CTE)

- CTE is required under the **Water (Prevention and Control of Pollution) Act, 1974** and **Air (Prevention and Control of Pollution) Act, 1981**.
- A CTE from the State Pollution Control Board is required to **industries that discharge effluents or emit pollutants into the environment**.

#### 4.3.8.2. AROTRACK

Scientists at IIT Bombay have developed **portable water-pollutant detecting device** called ‘AroTrack’.

#### About AroTrack

- The device uses a **protein-based biosensor** to detect harmful ‘aromatic xenobiotic’ pollutants like **phenol, benzene and xylenols** from water samples.
  - **Aromatic xenobiotic compounds** can be **extremely toxic** to living organisms and are **difficult to detect**.
- The **MopR biosensor** with **engineered protein DNA sequence** senses different pollutants and a **LED phototransistor** relays the results through light of varied intensities.
- **Significance:** It’s a low cost, battery-operated nature can revolutionize water quality testing.

#### 4.3.8.3. RIVER CITIES ALLIANCE

Ganga Utsav 2024 organized recently by the **National Mission for Clean Ganga (NMCG)** witnessed participation from several river cities under the **River City Alliance**.

#### River Cities Alliance

- **About:** It is an organization which includes 145 river cities nationwide and is **open to all river cities** of India.
- **Objective:**
  - Promote **healthy urban rivers** through **river-sensitive urban planning**, contributing to **water-secure cities** and fostering inclusive, sustainable urban development.
  - Provides a platform to the member cities for **sustainable management of urban rivers, sharing best practices and supporting innovation**.

### 4.4. SUSTAINABLE DEVELOPMENT

#### 4.4.1. GREEN GDP

##### Why in the News?

Recently, Chhattisgarh became the first state to adopt **Green GDP**.

##### More on the news

- The move highlights the **direct link** between significant **environmental contributions of forests** like clean air, water conservation, biodiversity and **the state's economic progress**.
  - Forest accounts for **Chhattisgarh's 44% of land cover** with forest products like tendu leaves contributing to the rural economy.

##### About Green GDP

- **Genesis:** Coined in the **late 1980s**.
- **Definition:** Green GDP refers to **environmentally adjusted gross domestic product (GDP)**.
- **Calculation:**
  - **Green GDP** = Net Domestic Product - (Cost of Depletion of Natural Resources + Cost of Degradation of Ecosystem)
- **Need for Green GDP:** GDP overlooks **environmental depletion and degradation**, often treating them as economic gains.

- For instance, **cutting down a rainforest** and selling the timber **increases GDP** but harms long-term wellbeing and growth.

### Green GDP Accounting Initiatives

- **SEEA (1993):** UN framework for standardizing environmental-economic statistics.
- **WAVES:** World Bank initiative integrating natural capital into economic accounts.

## 4.4.2. SUSTAINABLE AGRICULTURE

### 4.4.2.1. NATIONAL PROGRAMME FOR ORGANIC PRODUCTION (NPOP)

#### Why in the News?

Recently, Ministry of Commerce and Industry launched the 8th edition of NPOP.

#### About NPOP

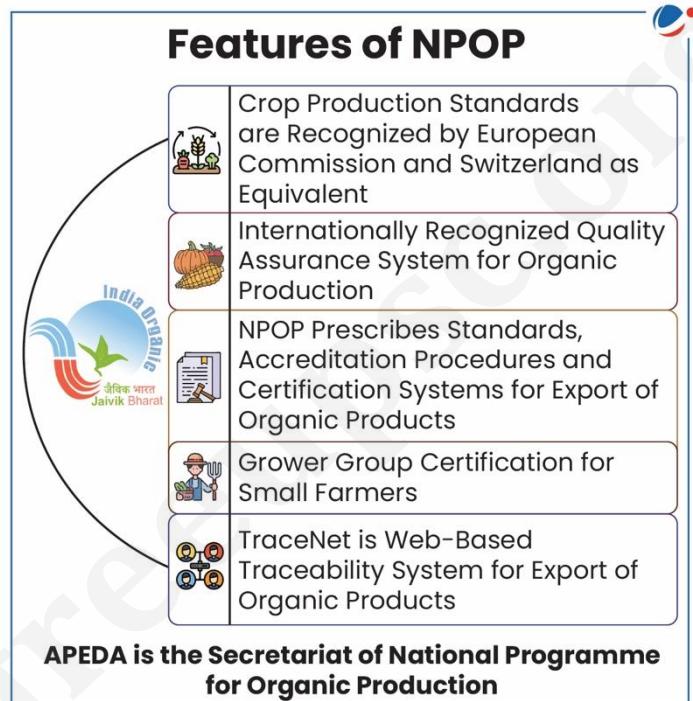
- Aimed at promoting **ease of operations and enhancing transparency** for stakeholders, including farmers.
- NPOP strengthens India's organic certification system (refer to the infographics).
  - APEDA, Ministry of Commerce & Industries, is **implementing Agency**.

#### Key highlights of 8th Edition of NPOP

- **Simplified Certification:** Organic grower groups have been granted legal status in place of the Internal Control System (ICS).
- **Market Support:** ICS of organic grower groups must ensure the procurement of the entire organic produce.
- **Faster land conversion to organic farming:** Reducing the transition period by up to three years.

#### Achievements of NPOP

- **Global Ranking:** India ranks first globally in organic producers and second in organic agricultural land.
- **Certified area:** The total certified area reaches 7.3 million hectares (2023-24), with **Madhya Pradesh** leading, followed by **Maharashtra and Rajasthan**.
- **Organic Exports:** Currently at ₹4,007.91 crore, are projected to **reach ₹20,000 crore in three years**.



## 4.4.3. OTHER RELATED NEWS

### 4.4.3.1. KODO MILLET

Recently, consumption of **kodo millet** was considered to be the reason behind the death of wild elephants in **Madhya Pradesh's Bandhavgarh Tiger Reserve**

#### About kodo millet (*Paspalum scrobiculatum*)

- It is also known as **Kodra** and **Varagu** in India and is a staple food for many tribal sections
- **Features:**
  - Rich in **dietary fiber** and minerals like iron, antioxidant.
  - Useful in curing asthma, migraine, blood pressure, heart attack, diabetic heart disease and for postmenopausal in females.

- Drought tolerant, high yield potential, better storage properties.
- **Climate:** Warm and Dry climate (grown mainly in Deccan Region)
- **Issues:** Ingesting millets harvested after rainfall can result in **adverse health conditions**.

#### 4.4.3.2. REGENERATIVE AGRICULTURE

Recently, Government of Odisha and ICRISAT launched a '**Compendium of Regenerative Agriculture**', for scaling regenerative agriculture practices.

##### About Regenerative agriculture (RA)

- Regenerative agriculture is a **way of farming** that focuses on soil health.
- Key Principles include:**
  - Minimizing **soil disturbance** (minimum ploughing) keeping CO<sub>2</sub> in soil, and improving its water absorvency.
  - Maximizing **crop diversity, improving biodiversity**,
  - Maintaining soil cover, keeping living roots year-round, and integrating livestock.

#### 4.4.3.3. AGRIVOLTAIC FARMING

Practical implementation of agrivoltaic systems showcased in 7th session of the **International Solar Alliance (ISA)**.

##### About Agrivoltaic farming

- Practice of **growing crops underneath solar panels** uses land for both agriculture and solar photovoltaic energy generation.
- It's also sometimes referred to as **agrisolar, dual use solar, low impact solar**.
- Benefits:** Diversified income for farmers, reduced land use competition, reduced carbon footprint and energy resilience.

#### 4.4.4. ALTERNATIVE FUELS/ENERGY AND ENERGY EFFICIENCY

##### 4.4.4.1. INDIGENOUS HYDROGEN TRAIN ENGINE

###### Why in the News?

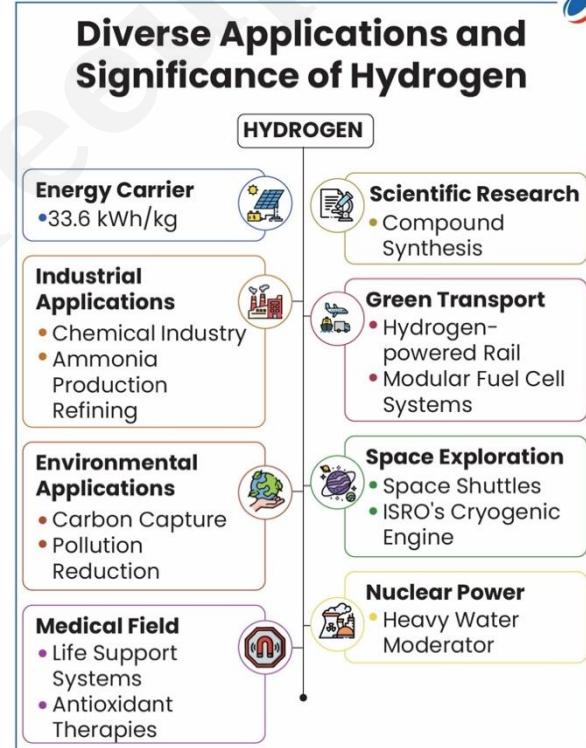
Indian Railway Minister announced the development of the world's most powerful hydrogen fuel-run train engine with 1,200 horsepower.

###### More about the news

- Only four countries (**Germany (1<sup>st</sup>), France, Sweden, and China**) have hydrogen-powered trains, capable of producing around 500 to 600 horsepower.
- All hydrogen powered rail vehicles**, whether large or small, are categorized as '**hydral**', whether the fuel is used for the traction motors, auxiliary systems, or both.
- They have considerable advantage over electric trains:** Electric trains require **expensive and complex** infrastructure, including overhead gantries to carry power cables and power substations unlike hydral.

###### About India's Indigenous Hydrogen Train

- Designed by:** Research, Design, and Standard Organization (RDSO) in Lucknow.
- Manufactured by:** Integral Coach Factory, Chennai manufacturing coaches for the train.



- **Background:** The Ministry of Railways, announced the “**Hydrogen for Heritage**” project in 2023.
  - **Union Budget 2023–24:** Announced and allotted funds for developing **35 hydrogen fuel cell trains**.
  - As part of this venture, **existing Diesel-Electric Multiple Unit (DEMU)** rakes will be retrofitted with green hydrogen fuel cells.
- **Trial Route:** Jind-Sonipat in Haryana.

#### **Global initiatives for Hydrogen production**

- **World Bank's 10 GW Clean Hydrogen Initiative**
- **The Clean Energy Ministerial (CEM):** International clean energy leadership platform.
  - **The Clean Energy Ministerial Hydrogen Initiative (CEM H2I):** Coordinated by The International Energy Agency (IEA), developed according to the CEM framework document. **India is member.**
- **Global Programme for Hydrogen in Industry (GPHI):** Launched in 2021 by UNIDO.

#### **India's initiatives for Hydrogen production**

- **National Green Hydrogen Mission (NGHM)**
  - Recently, Prime Minister laid the foundation stone of **India's First Green Hydrogen hub** under NGHM in Vishakhapatnam, Andhra Pradesh.
- **The Green Hydrogen standard for India:** Define emission thresholds for '**Green' classification**', was notified on 19th August 2023.
- **Guidelines for Pilot Projects for utilizing Green Hydrogen in the Shipping and Steel Sector:**

#### **4.4.4.2. END-OF-LIFE VEHICLES RULES, 2025**

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

Recently, Ministry of Environment, Forest & Climate Change (MoEFCC) **notified Environment Protection (End-of-Life Vehicles) Rules, 2025.**

##### **More on the News**

- Rules are notified under **Environmental Protection Act, 1986**, and will come into force from **1st of April, 2025.**
- **End-of-Life Vehicles (EoLV)** means all **vehicles which are no longer validly registered or declared unfit through Automated Fitness Centres** or their registrations have been cancelled.

##### **Key Highlights**

- **Applicability:** Apply to **producer, registered owner of vehicles, Registered Vehicle Scrapping Facility (RVSF), automated testing stations** etc. involved in testing of vehicles, handling, processing and scrapping of EoLV.
- **Exception:** Not apply to
  - **Waste batteries covered under Battery Waste Management Rules, 2022.**
  - **Plastic packaging covered under Plastic Waste Management Rules, 2016.**
  - **Waste tyres and used oil covered under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.**
  - **E-waste covered under E-Waste (Management) Rules, 2022.**
- **Producer Responsibilities:** Fulfil Extended Producer Responsibility (EPR) either through purchase of EPR certificate generated by its own RVSF or by any entity having RVSF.
- **EPR certificate:** Issued by **Central Pollution Control Board** through **centralised online portal** in favour of RVSF.
- **Responsibilities of registered owner and bulk consumer:** They must **deposit EoLV** at any of the **producer's designated sales outlet or designated Collection Centre or RVSF** within **180 days**.
- **Implementation Committee:** Constituted by Central Government and **chaired by CPCB Chairman** for effective implementation of rules.

#### **4.4.4.3. OTHER RELATED NEWS**

##### **4.4.4.3.1. CORPORATE AVERAGE FUEL EFFICIENCY (I) NORMS**

Centre is likely to impose penalties on some carmakers for violation of **Corporate Average Fuel Efficiency (I) norms**.

###### **About I Norms**

- Norms were first notified by the **Government in 2017**, under the **Energy Conservation Act, 2001**.
- **Aim:** Mitigate fuel consumption by **lowering CO<sub>2</sub> emissions, reduce oil dependency and air pollution**.
- Relate the **gasoline equivalent corporate average fuel consumption (in litres/100 km)** to the corporate average kerb weight of all the cars sold by any **original equipment manufacturer (OEM) in a fiscal year**.
- **Applicability:** Petrol, diesel, liquefied petroleum gas, CNG, etc., with gross vehicle weight less than 3500kgs.

##### **4.4.4.3.2. GLOBAL ENERGY ALLIANCE FOR PEOPLE AND PLANET (GEAPP)**

The **GEAPP** and the **International Solar Alliance (ISA)** signed an agreement to establish a **\$100 million fund** to support high-impact solar energy projects.

- **Additional Initiatives Announced:** Digitalization of Utilities for Energy Transition (**DUET**) and Energy Transitions Innovation Challenge (**ENTICE 2.0**)

###### **About Global Energy Alliance for People and Planet (GEAPP)**

- It is a **global, public-private initiative** focused on accelerating **clean energy transition in developing countries**.
- **Goals:** 1 billion people with energy access, 150 million green jobs, 4 billion tons of emissions avoided.
- **Focus Areas:** Distributed renewable energy solutions, energy poverty alleviation, sustainable development.

##### **4.4.4.3.3. AMENDMENT TO ALMM ORDER, 2019**

Recently, **Ministry of New and Renewable Energy (MNRE)** approved amendment to Approved List of Models and Manufacturers (ALMM) Order, 2019.

###### **Key Highlights of Amendment:**

- **Introduction of ALMM List-II (Solar PV Cells):** All solar PV modules used in government-backed projects, net-metering projects, & open-access renewable energy initiatives must source their solar cells from **ALMM List-II**.
  - **List I under ALMM framework was issued in 2021** mandating to source PV modules from models & manufacturers included in ALMM List I.
- **Exemption:** Projects that have already been **awarded/completed their bidding process** before the issuance of this order.
- **Promoting Technology Innovation:** **Thin-film solar modules** manufactured in integrated solar PV module manufacturing units will be considered in compliance with requirement to use solar PV cells from List-II.
- **Implementation:** From **1<sup>st</sup> June 2026**.

#### **4.4.5. MISCELLANEOUS**

##### **4.4.5.1. RIVER LINKING PROJECT**

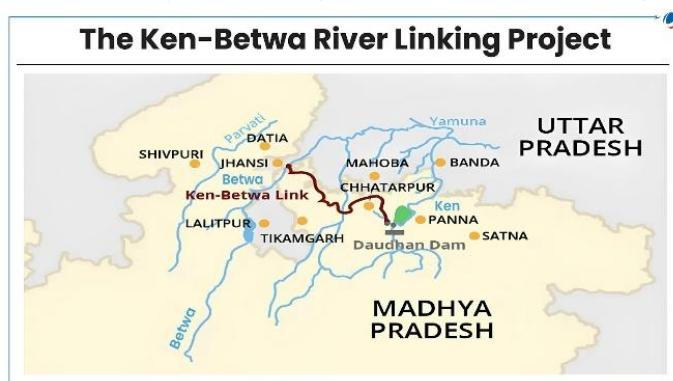
###### **Why in the News?**

Prime Minister laid the foundation stone of the **Ken- Betwa River Linking National Project**.

###### **About Ken-Betwa Link Project**

- **Overview:** Part of India's **National River Linking Project (NRLP)**, aimed to divert surplus water from the **Ken basin** to water-scarce areas in the **Betwa basin**.
- **Completion:** Target by **2030**.

- Location:** Spans **Madhya Pradesh** and **Uttar Pradesh**, focusing on the drought-prone **Bundelkhand region**.
- Key Components:**
  - Phase I:**
    - > **Daudhan Dam** (77 m high) in **Panna Tiger Reserve** for irrigation and power generation.
    - > **Ken-Betwa Link Canal** (221 km) to transfer water.
  - Phase II:**
    - > **Lower Orr Dam, Bina Complex**, and **Kotha Barrage** to address water scarcity in the Betwa basin.



### National River Linking Project (NRLP)

- Background:**
  - First proposed by Sir Arthur Cotton in 1850s, revived in 1972 by K.L. Rao, then India's Power and Irrigation Minister.
  - Initiated in the 1980s under the National Perspective Plan (NPP) and in 1982 National Water Development Agency (NWDA) was set up to study the feasibility of the river linking.
    - > In 2021, the Centre proposed National Interlinking of Rivers Authority (NIRA) as the apex implementing body for NPP to replace NWDA.
- Objectives:** Irrigating 30 million hectares and generating 20,000-25,000 MW of power, mitigating flood droughts, etc.
- National Water Development Agency (NWDA)** has identified following components:
  - > **Himalayan Rivers Development:** 14 links, focusing on northern rivers like the Ganga and Brahmaputra.
  - > **Peninsular Rivers Development:** 16 links, including the Ken-Betwa link.
  - > **Intra-State Links:** For within-state water management.

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VisionIAS introduces the Lakshya Prelims & Mains Integrated Mentoring Programme 2025 & 2026, offering unified guidance for UPSC aspirants across both stages, ensuring comprehensive support and strategic preparation for success

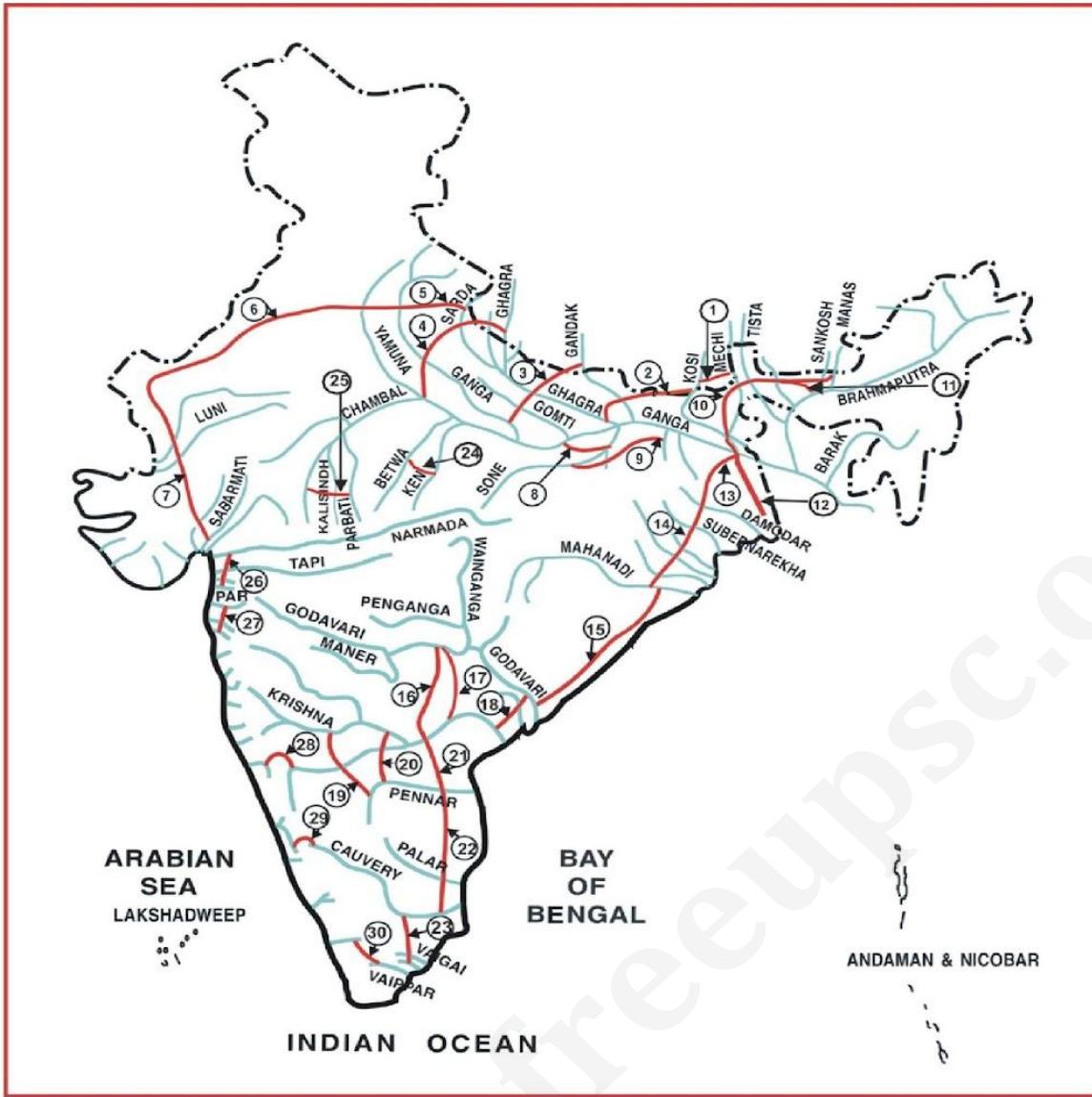
2025 | 5.5 Months | 27 FEBRUARY

2026 | 18 Months | 28 FEBRUARY

#### Highlights of the Program

- Coverage of the entire UPSC Prelims and Mains Syllabus
- Highly experienced and qualified team of senior mentors
- Development of Advanced answer writing skills
- Special emphasis to Essay & Ethics

# PROPOSED INTER BASIN WATER TRANSFER LINKS



## HIMALAYAN COMPONENT

1. Kosi – Mechi
  2. Kosi – Ghagra
  3. Gandak – Ganga
  4. Ghagra – Yamuna \*
  5. Sarda – Yamuna \*
  6. Yamuna – Rajasthan
  7. Rajasthan – Sabarmati
  8. Chunar- Sone Barrage
  9. Sone Dam – Southern Tributaries of Ganga
  10. Manas – Sankosh - Tista - Ganga
  11. Jogighopa – Tista – Farakka (Alternate)
  12. Farakka – Sunderbans
  13. Ganga (Farakka) – Damodar – Subernarekha
  14. Subernarekha – Mahanadi
- \* FR Completed

## PENINSULAR COMPONENT

15. Mahanadi (Manibhadra) – Godavari (Dowlaiswaram) \*
16. Godavari (Inchampalli) – Krishna (Nagarjunasagar) \*
17. Godavari (Inchampalli) – Krishna (Pulichintala) \*
18. Godavari (Polavaram) – Krishna (Vijayawada) \*
19. Krishna (Almatti) – Pennar \*
20. Krishna (Srisailam) – Pennar \*
21. Krishna (Nagarjunasagar) – Pennar (Somasila) \*
22. Pennar (Somasila)-Palar- Cauvery (Grand Anicut) \*
23. Cauvery (Kattalai) – Vaigai – Gundar \*
24. Ken – Betwa \*
25. Parbati – Kalisindh – Chambal \*
26. Par – Tapi – Narmada \*
27. Damanganga – Pinjal \*
28. Bedti – Varda
29. Netravati – Hemavati
30. Pamba – Achankovil – Vaippar \*

## 4.4.6. OTHER IMPORTANT NEWS

### 4.4.6.1. INDIGENOUS HERBAL KNOWLEDGE

Herbal patents were granted to custodians of herbal traditional knowledge from Jammu & Kashmir and Gujarat.

#### About Indigenous Herbal knowledge

- Knowledge holders interact within their **ecological system** and possess **deep understanding of local flora** accumulated through **experiences, experiments and wisdom**.
- In India, of the **17,000 species of higher plants, 7500** are known for medicinal uses (highest proportion of plants known for their medical purposes in any country).
- **Initiatives to protect traditional knowledge in India:** Traditional knowledge digital library; National IPR Policy, etc.

### 4.4.6.2. SVASTIK INITIATIVE

Significance of SVASTIK initiative was highlighted during the **International Conference on Communication and Dissemination of Traditional Knowledge**.

#### About SVASTIK (Scientifically Validated Societal Traditional Knowledge)

- It is coordinated by **CSIR-NIScPR (National Institute of Science Communication and Policy Research)**.
- **Objective:** To preserve traditional practices, promote scientific validation of traditions, etc.
- **Significance:** **Disseminates** scientifically validated traditional knowledge through social media in **17 languages**.

### 4.4.6.3. GRIHA (GREEN RATING FOR INTEGRATED HABITAT ASSESSMENT)

Inland Waterways Authority of India's **Intermodal Terminal at Kalughat in Bihar** received **five five-star SVAGRIHA rating** from GRIHA.

- Terminal is part of **World Bank funded Jal Marg Vikas Project** for capacity augmentation of **National Waterway 1 – River Ganga**.

#### About GRIHA

- **Ministry:** Joint venture of **Ministry of New and Renewable Energy** and **The Energy and Resources Institute (TERI)**
- **Role:** GRIHA is a **rating tool** that evaluates the **environmental performance of a building holistically over its entire life cycle**, thereby providing a definitive standard for what constitutes a '**green building**'.
- **SVAGRIHA (Simple Versatile Affordable GRIHA):** Given to **small-scale stakeholders** (bungalows and small offices).

### 4.4.6.4. CAIRO CALL TO ACTION

World Urban Forum (WUF) concluded its 12<sup>th</sup> edition in Cairo (Egypt), with the adoption of **10-point Cairo Call to Action**.

- WUF, established in 2001 by UN, is the premier **global conference on sustainable urbanization**.

#### Cairo Call to Action

It calls for:

- Urgent action to **address the global housing crisis**, sharing **urban spaces** inclusively, and **Urban planning** to deliver better local outcomes.
- Achieving **global goals through local action**, **Representation of local actors** at all levels, and Building **alliances to scale local impact**.
- **Unlocking finance for cities** and communities, ensuring **equity and justice**, leveraging **local and grassroot data**, **Harnessing culture and heritage** as an asset for sustainability.

#### **4.4.6.5. INDIAN GREEN BUILDING COUNCIL (IGBC)**

Upcoming 'Durgesh Aranya Zoological Park' at Bankhandi in Kangra district (Himachal Pradesh) would become India's first zoo to receive certification from the **IGBC** for its sustainable and eco-friendly initiatives.

##### **About IGBC**

- **Genesis:** IGBC, part of the **Confederation of Indian Industry (CII)** was established in 2001.
- **Vision:** Facilitate **India** to be one of the **global leaders** in the sustainable built environment **by 2025**.
- **Role:**
  - Developing new **green building rating programmes, certification services, green building training programmes**.
  - The council also organises **Green Building Congress**, its annual flagship event on green buildings.

#### **4.4.6.6. NET-ZERO BANKING ALLIANCE (NZBA)**

Recently, Wall Street's biggest banks including Goldman Sachs Group Inc., etc. have announced exit from NZBA.

##### **About Net-Zero Banking Alliance**

- **Bank-led and UN-convened**, it is a **group of leading global banks** committed to aligning their lending, investment, and capital markets activities with **net-zero greenhouse gas emissions by 2050**.
- **No Indian bank** is a member of NZBA.
- It is the **climate accelerator for UNEP Finance Initiative's Principles for Responsible Banking (PRB)**.

#### **4.4.6.7. BHARAT CLEANTECH MANUFACTURING PLATFORM**

Recently, the Union Minister of Commerce & Industry launched the **Bharat Cleantech Manufacturing Platform** at the **Bharat Climate Forum 2025**.

##### **About Bharat Cleantech Manufacturing Platform**

- Designed to **enhance India's cleantech value chains** in the solar, wind, hydrogen, and battery storage sectors.
- Provide an opportunity for the Indian firms to **collaborate, co-innovate** and provide a platform for financing.
  - Help India become an **attractive business case and global leader in sustainability and cleantech sector**.

#### **4.4.6.8. INDIA LAUNCHED THE WORLD'S FIRST GREEN STEEL TAXONOMY**

Recently, Union Ministry of Steel launched the **World's First Green Steel Taxonomy (or classification)**.

##### **Key features of Green Steel Taxonomy**

- **Definition of Green Steel:** Steel with CO<sub>2</sub> equivalent emission intensity of **less than 2.2 tonnes of CO<sub>2</sub>e per tonne of finished steel**.
- **Star Rating System (based on greenness):** Threshold limit for star ratings will be **reviewed every 3 years**. And the current threshold is
  - **Five-star green-rated steel:** Emission intensity lower than 1.6 tonnes; **Four-star, green-rated steel** (between 1.6 and 2.0 tonnes); **Three-star green-rated steel** (between 2.0 and 2.2 tonnes).
- **Nodal Agency:** **National Institute of Secondary Steel Technology (NISST)** for measurement, reporting, and verification (MRV) and issuance of **greenness certificates (issued annually) and star ratings**.
- **Importance of Green Steel Taxonomy:** Advancing National Mission on Green Steel; global competitiveness, etc.

#### 4.4.6.9. CHAMPIONS OF EARTH AWARD, 2024

UNEP has announced **Champions of Earth Award, 2024**.

##### Key Highlights

- 2024 Lifetime Achievement category is awarded to Indian ecologist **Madhav Gadgil**, renowned for his work in ecologically fragile Western Ghats region of India.

##### About Champions of Earth Award

- Awarded annually since its inception in 2005, UN's highest environmental honour.
- In 2024, UNEP honours individuals and organizations working on innovative and sustainable solutions.
- Given in categories like Policy leadership; Inspiration and action; Entrepreneurial vision; Science and innovation.

## 4.5. DISASTER MANAGEMENT

### 4.5.1. 150 YEARS OF INDIA METEOROLOGICAL DEPARTMENT (IMD)

##### Why in the news?

Marking 150 years of IMD, the Prime Minister launched Mission Mausam.

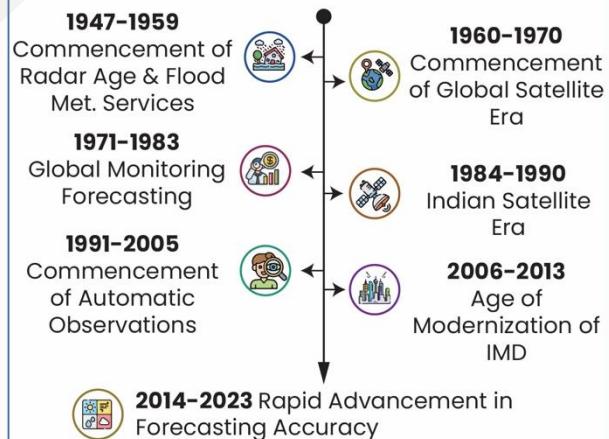
##### About the Mission Mausam

- **Ministry:** Ministry of Earth Sciences (MoES).
- **Aim:** Making India a "Weather-ready and Climate-smart" nation to mitigate the impact of climate change and extreme weather events and strengthen the resilience of communities.
- **Implementation:** The Phase-I of Mission Mausam will be implemented during 2024-26 and Phase-II will be implemented during 2026-31 in the next financial cycle.
- **Implementation:** IMD, the Indian Institute of Tropical Meteorology; Pune, and the National Centre for Medium-Range Weather Forecasting; Noida.
- **Target beneficiaries:** General public and numerous sectors, such as agriculture, disaster management, defense, environment, aviation, water resources, power, tourism, shipping, transport, energy, health etc.
  - It can improve the short- and medium-range weather forecast accuracy by about 5-10%.

##### History and Background of Meteorology in India

- **Background:** In 1636 Halley, a British scientist published treatise on the Indian monsoon, which he attributed to a seasonal reversal of winds due to the differential heating of the Asian land mass and the Indian Ocean.
- **History of IMD**
  - **Genesis:** 1875.
  - **Headquarters:** New Delhi. (Initially it was Calcutta).
  - **The first Director General of Observatories was Sir John Eliot**, who was appointed in **May 1889 at Calcutta headquarters**.
- **Evolution post 1947**
  - **Ministry:** Ministry of Earth Sciences (MoES).
  - **First organization in India to have a message switching computer:** For supporting its global data exchange.
  - **One of the first few electronic computers introduced in the country** was provided to IMD for scientific applications in meteorology.

### Evolution of Meteorological Services in India



- **India was the first developing country** in the world to have its own geostationary satellite, **INSAT**, for continuous weather monitoring of this part of the globe and particularly for cyclone warning.
- **International help:** It provides Cyclone forecast and warning services to 13 north Indian Ocean countries along with forecast and warning services to SAARC nations.

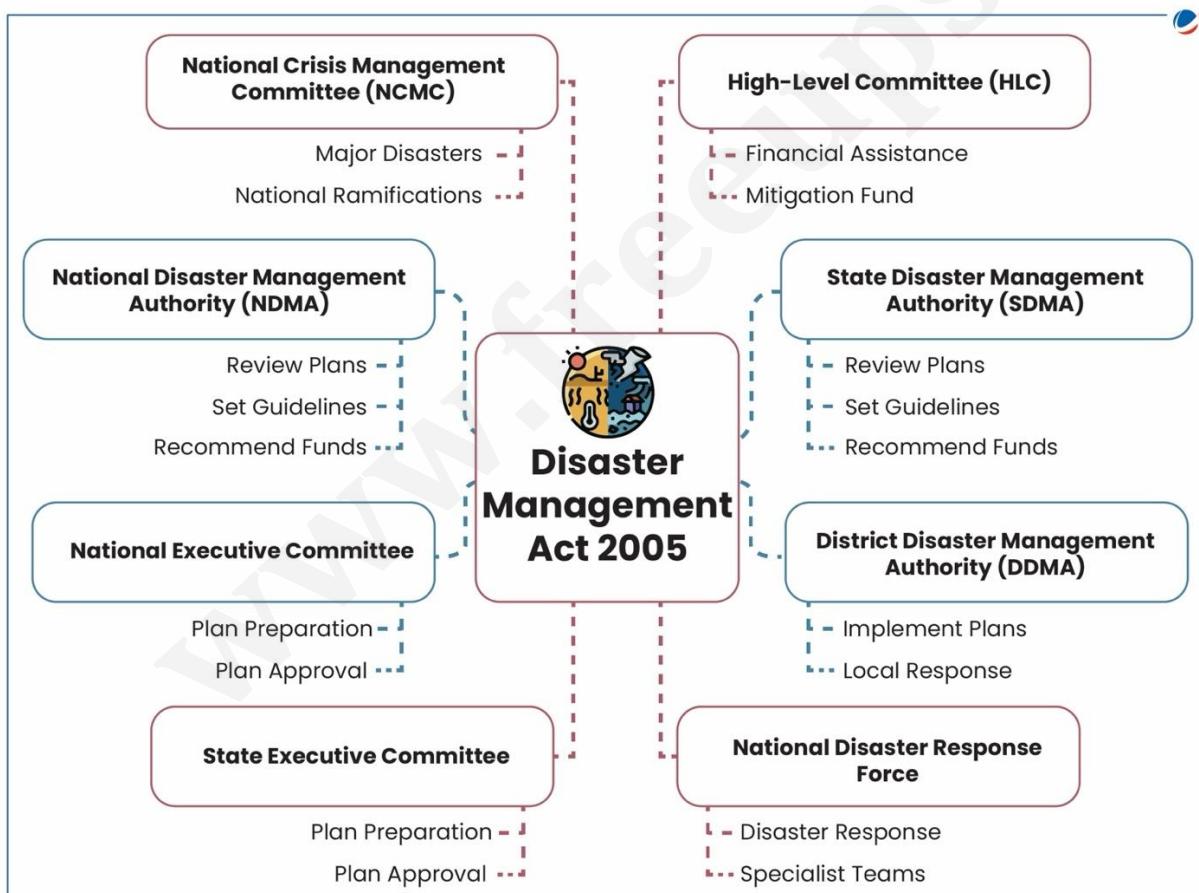
#### 4.5.2. THE DISASTER MANAGEMENT (AMENDMENT) BILL, 2024

##### Why in the news?

Lok Sabha passed Disaster Management (Amendment) Bill, 2024 to amend Disaster Management Act 2005.

##### Key changes in Bill

- **Preparation of plan:** Transfers disaster plan responsibilities from executive committees to National Disaster Management Authority (NDMA) and State Disaster Management Authorities (SDMA).
- **Additional Functions of NDMA and SDMA:** Adds certain functions at their respective levels like, assess disaster risks, provide technical assistance, Recommend relief guidelines etc.
- **State and national disaster database:** Will contain information on type and severity of disaster risks, Allocation of funds etc.
- **Urban DM authorities:** Bill empowers state government to constitute a separate **Urban Disaster Management Authority** for state capitals and cities with a municipal corporation.
- **Formation of State Disaster Response Force (SDRF):** Bill empowers state government to **constitute a SDRF and define its functions and terms of service.**
- **National Crisis Management Committee (NCMC) and the High-Level Committee (HLC):** Bill provides statutory status to NCMC and HLC.
  - NCMC will function as **nodal body for major disasters** while HLC will provide financial assistance to state governments during disasters.



## 4.5.3. MOEF&CC NOTIFIED ENVIRONMENT RELIEF FUND (AMENDMENT) SCHEME, 2024

### Why in the news?

Notification, amending the **Environment Relief Fund (ERF) Scheme 2008**, has been issued in exercise of powers conferred under **Section 7A of Public Liability Insurance Act (PLIA), 1991**.

### More on the News

- Section 7A of PLIA provides for **establishment of Environment Relief Fund (ERF)**, which is utilized for providing immediate relief to victims of accidents involving hazardous substances.

### Key Amendments

- **Administration:** It vests the Environment Relief Fund (ERF) in the **Central Government**.
- **Fund Manager:** **Central Pollution Control Board (CPCB)** replaces **United India Insurance Company Limited** as the fund manager for **five years with effect from 1<sup>st</sup> January, 2025**.
- **Disbursement:** **Fund Manager**, in consultation with Central Government, shall develop and maintain an **online portal** and shall **disburse amount** as per the **order of District Collector or Central Government**.
- **Investment:** ERF amount shall be invested appropriately in **public financial institutions** and in **saving accounts** to ensure timely availability of funds.
- **Restoration of Environmental Damage:** Fund Manager shall earmark the ERF funds for restoration of damage caused **due to** manufacture, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, transfer etc., of **hazardous substances**.
- The accounts of the Relief Fund shall be audited by **an independent auditor appointed by the Central Government** from the **panel approved by the Comptroller and Auditor-General**.

### Related News

#### Public Liability Insurance (Amendment) Rules, 2024

MoEF&CC notified Public Liability Insurance (Amendment) Rules, 2024, in exercise of powers conferred by PLIA 1991.

### Key Amendments

- Persons with **direct and substantial connection** and interest in affected public property can also **claim for restoration** of property.
- It provides for **utilization of ERF** towards **environmental damage restoration**.
- **Increases insurance policy coverage limit** to ₹250 crore for single accident and ₹500 crore for multiple accidents.

## 4.5.4. DAM SAFETY ACT OF 2021

### Why in the news?

In a case, SC observed that the **National Committee on Dam Safety (NCDS)**, as mandated under Section 5 of the Act, had not been constituted since its enactment.

### More on the News

- **Committee is** a part of **four tiered institutional structures** under the Act.
  - It aims to prevent **dam failure related disasters** and to maintain standards of dam safety.
  - It would be chaired by the Central Water Commission (CWC) Chairperson and have representatives from the Centre and States and include three specialists.

### About Dam Safety Act 2021

- **Purpose:** Provide for surveillance, inspection, operation and maintenance of the specified dam for prevention of dam failure related disasters.

- **Four tiers of institutional mechanism**
  - **Centre level:** National Dam Safety Authority (NDSA) and NCDS
  - **State Level:** State Committee on Dam Safety and the State Dam Safety Organization

#### Other Dam Safety Measures Taken in India

- **National Register of Large Dams (NRLD)**, compiled and maintained by CWC.
- **Dam Rehabilitation and Improvement Project (DRIP)**, Supported by the World Bank (WB), and Asian Infrastructure Investment Bank (AIIB)
- **Other:** National Centre for Earthquake Safety of Dams, Dam Health and Rehabilitation Monitoring Application (DHARMA), etc.

#### Dams in India and Associated safety Concerns

- India is **3rd largest dam-owning nation** in the world after China and USA.
- About **5000 large dams** are in India.

#### Key Dam safety Concerns

##### Ageing Dams:



Over 80% of large dams are already over 25 years old.

##### Sedimentation:



Sediment accumulation reduces storage capacity

##### Seismic Risks:



Face earthquake-induced vulnerabilities. E.g. Chang Dam during the 2001 Bhuj earthquake

#### 4.5.5. RAT HOLE MINING

##### Why in the News?

9 workers were trapped in a flooded **rat-hole coal mine** in Umrangso, Dima Hasao district, Assam.

##### About Rat Hole Mining

- **Mining Mechanism:** Rat-hole mining involves **digging narrow horizontal tunnels**, usually 3-4 feet high, where workers (often children) enter and extract coal.
  - Termed "**rat-holes**", as each just fits one person, practiced mostly in **Meghalaya**.
- **Reasons for prevalence:**
  - **Natural Factors:** Thin coal seams make rat-hole mining more economical than open-cast methods.
    - > Difficult terrain and high costs discourage advanced drilling methods.
  - **Governance issues:** **Constitution's 6<sup>th</sup> Schedule** protects tribal rights over land.
    - > Landowners are considered owners of **minerals** beneath, and it is believed that **Coal Mines Nationalisation Act of 1973** does not apply to these mines.
- **Legal Status:** **National Green Tribunal (NGT)** banned **rat hole mining** in Meghalaya in 2014 stating it is unscientific and unsafe for workers. The Ban was upheld by Supreme Court.

#### 4.5.6. DISASTERS

##### 4.5.6.1. EARTHQUAKE

##### Why in the news?

Earthquake of Magnitude 7.1 Struck Tibet in the Himalayas.

##### More on the News

The Himalayas remain **one of the world's most geologically active zones**, with a history of significant earthquakes.

- Himalayan region falls primarily in **Seismic Zone IV & Seismic Zone V** of India's seismic zoning map prepared by **Bureau of Indian Standards**.
- It classifies India into 4 zones - V, IV, III and II. **Zone V is seismically most active region**, while **zone II is the least**.

#### **Why Himalayas are prone to frequent earthquakes?**

- **Tectonic Collision of Indian & Eurasian Plate:** Himalayas lie at the **convergent boundary** of Indian & Eurasian plates, where **Indian Plate subducts beneath the Eurasian Plate**, generating immense stress that is released as earthquakes.
- **Active Fault Lines:** Numerous fault systems, like **Main Central Thrust & Main Boundary Thrust**, where sudden slip or movement along these faults causes earthquakes.
- **Young Mountain Range:** Himalayas are **geologically young & structurally unstable**, which amplifies seismic activity.

#### **Consequences of Earthquakes in Himalayas**

- **Landslides & Avalanches:** **Steep terrain** exacerbates landslides, leading to significant infrastructure damage & loss of life.
- **Glacial Lake Outburst Floods (GLOFs):** Earthquakes can **destabilize glacial lakes**, leading to catastrophic floods.
- **Tectonic Uplift and Faulting:** Sudden **changes in elevation, affects ecosystems**, human settlements etc.
- **Cultural & Heritage Loss:** The region has **ancient monasteries, temples, & cultural sites**.

#### **4.5.6.2. TSUNAMI READY' VILLAGES (DISASTER MANAGEMENT)**

##### **Why in the news?**

Villages in Odisha conceptualised by **Intergovernmental Oceanographic Commission** of UNESCO (UNESCO-IOC) as '**Tsunami Ready**'.

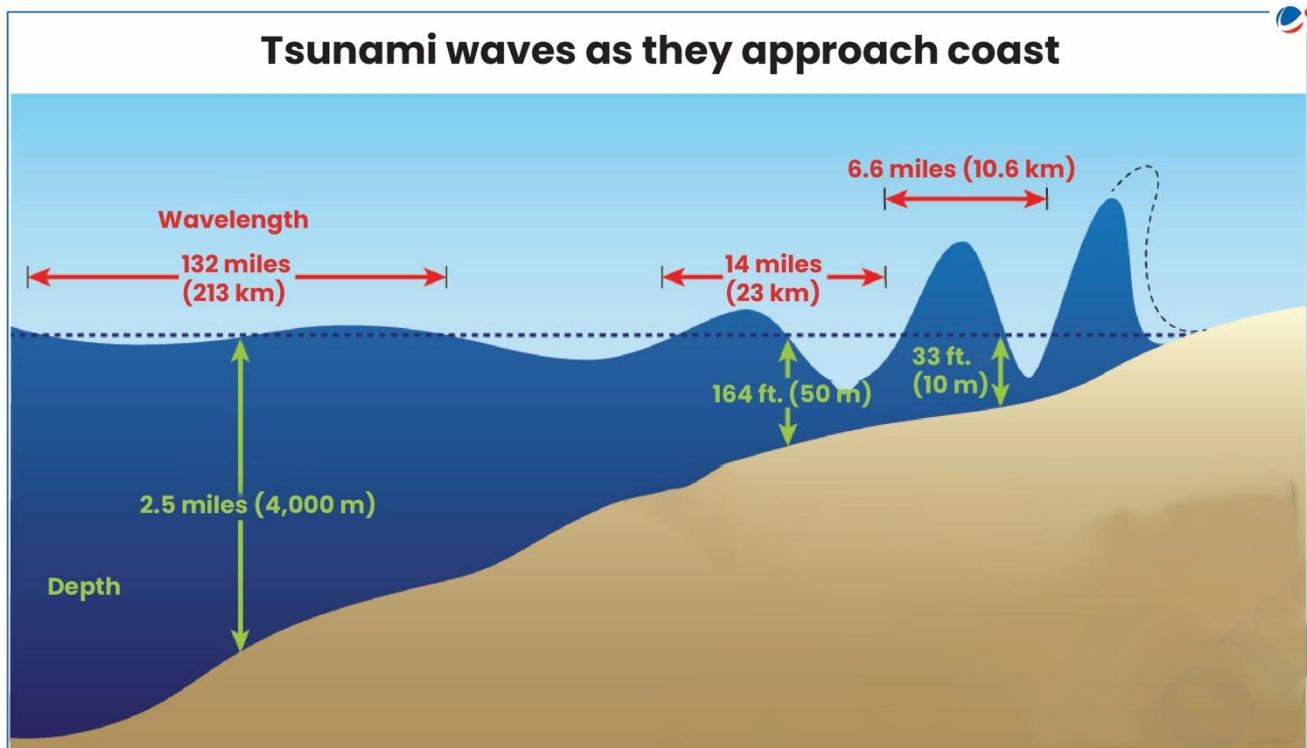
##### **More about in News**

##### **UNESCO-IOC Tsunami Ready Recognition Programme (TRRP)**

- TRRP is a **voluntary, international community-based** effort to bolster risk **prevention** and **mitigation** across **global coastal zones**.
- **Aim:** Build **tsunami resilience** through awareness and preparedness strategies.
- **Methodology:** It has **12 preparedness indicators** for a consistent evaluation.

##### **About Tsunami**

- **Series of enormous waves** created by an underwater disturbance **caused by violent seafloor movement** associated with earthquakes, landslides, lava entering sea, seamount collapse, or meteorite impact.



- Features of Tsunami Waves:**
  - Not noticed by ships in deep oceans because their **amplitude is negligible** when compared with their wavelength.  
However, when tsunamis approach shallow water, **wave amplitude increases**.
- Their **speed depends on ocean depth**, not distance from wave's source.

#### Steps taken for Tsunami preparedness

- Globally**
  - UNESCO-IOC Tsunami Ready Recognition Programme:** Voluntary, international community-based effort to bolster risk prevention across global coastal zones.
  - Tsunami United Programme:** Flagship initiative of UNESCO to increase preparedness.
  - Global Tsunami Early Warning and Mitigation Programme:** IOC-UNESCO Programme supports Member States in assessing tsunami risk, implementing Early Warning Systems etc.
- India**
  - Indian Tsunami Early Warning Centre (ITEWC):** Established at Indian National Centre for Ocean Information Sciences, Hyderabad is national authority to issue tsunami advisories.
  - Development of Apps and devices:** E.g. GEMINI device for warnings and alerts in sea.

#### 4.5.6.3. STAMPEDE

##### Why in the news?

Stampede caused by overcrowding at Tirupati resulted in the loss of lives.

##### More on the News

Stampede is “an **impulsive mass movement of a crowd** that often results in injuries and deaths” due to Traumatic asphyxia (cessation of respiration) or other injuries.

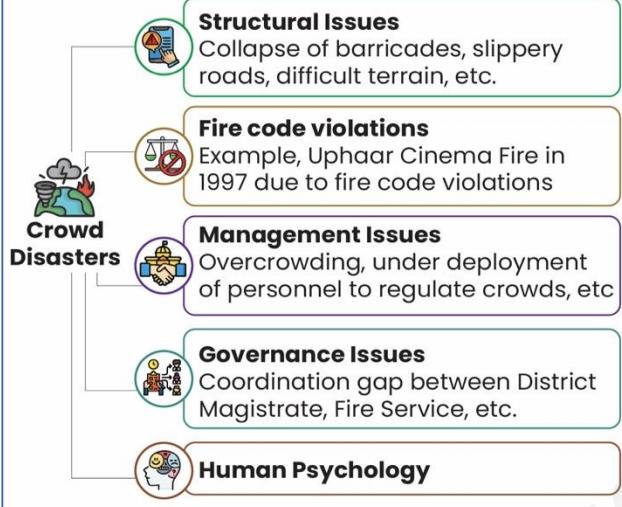
- Reportedly, **religious gatherings** accounted for **79% of India's stampedes between 1954-2012**.
- Recent examples include the 2024 incidents at **Hathras and Kalkaji temple**.

## Crowd Management

Highlights of National Disaster Management Authority (NDMA) Guidelines on crowd management:

- Crowd management strategies and arrangement:** Capacity Planning (infrastructure development), Understanding of crowd Behaviour and Crowd Control by restricting or limiting group behaviour.
- Risk Assessment & Mitigation:** Identify and address potential hazards.
- Information Management:** Clear communication with visitors and stakeholders.
- Safety & Security:** CCTV surveillance and emergency exits.
- Medical Services:** Equipped facilities and trained personnel.
- Traffic Management:** Efficient transportation and clear route marking.

## Triggers of Stampede



### 4.5.6.4. WILDFIRES

#### Why in the news?

A 2023 study, published in journal Proceedings of National Academy of Sciences revealed that **10 of the largest California wildfires have occurred in the last 20 years.**

#### Reasons for wildfires:

- Anthropogenic activities:** Nearly 85% of all forest fires across the US are started by humans, either deliberately or accidentally, according to the US Forest Service.
- Dry winter:** Since October, Southern California has received negligible rain.
- Santa Ana winds:** These winds blow from October to January due to pressure difference between Great Basin i.e. area between Rocky Mountains and Sierra Nevada in USA (high pressure) and California's coast (low pressure).
  - As it comes down mountains, it compresses and heats up leading to drop in humidity making vegetation dry and prone to burning.
- Climate change:** Rise in global temperatures over the years has led to warmer springs and summers.
  - Such conditions cumulatively cause longer and more intense dry seasons, putting more moisture stress on vegetation.
- Consequences of Wildfires:** Toxic pollutants, Intensify climate change, Result in loss of timber, biodiversity and have severe impacts on indigenous communities and tourism.
  - Wildfire also affects soil Biome, organic matter and increases soil erosion.

#### Related News: Hydroclimatic Whiplash

Experts attribute the severity of the wildfires in USA to hydroclimate whiplash, a phenomenon intensified by climate change.

#### About Hydroclimate whiplash

- Rare meteorological Hydro climatic volatility condition wherein an extremely wet season is succeeded by an extremely dry season.
- Impact:** Amplification of hazards like flash floods, etc., affects water quality, food security, etc.

### 4.5.6.5. CHEMICAL DISASTER

#### Why in the news?

This year marked the completion of 40 years to the Bhopal Gas tragedy.

### About Bhopal Gas Tragedy

- On 3rd December 1984, **highly toxic Methyl Isocyanate (MIC) gas leaked** from a pesticide plant owned by Union Carbide India Limited (UCIL).
  - Even after four decades of tragedy, hundreds of tonnes of toxic waste remain on premises of UCIL.
- It was **India's first major Chemical (industrial) disaster**.

### Other Chemical Disasters in India

- Ammonia Gas Leak at Chennai (2024):** Due to damaged gas pipeline caused by cyclone Michaung.
- Vizag Gas Leak (2020):** Styrene gas leak at LG Polymers in Visakhapatnam.
- Tughlakabad Gas Leak (2017):** Chemical Chloro methylpyridine (used in pesticides manufacturing) leaked from container.

### Reasons for Chemical Disasters

- Process and safety systems failures due to Human, Technical, and Management errors; Induced effect of natural calamities; Hazardous waste processing/ disposal; Terrorist attack/ unrest leading to sabotage etc.

### Impact of Chemical Disasters

- Health:** Exposure to toxic chemicals can lead to **reproductive health of women, respiratory issues, cancer, and genetic mutations**.
- Environmental:** Soil, water, and air contamination, further **disrupting ecosystems and biodiversity**.
- Crop health:** Exposure to hazardous chemicals damages plant cells, **inhibits photosynthesis, stunting growth, and decreased productivity**.
- Bioaccumulation:** Released **toxins can enter food chain**, leading to bioaccumulation.

#### About Methyl Isocyanate (CH<sub>3</sub>NCO)

- Volatile, colorless liquid** that is **extremely flammable, and potentially explosive** when **mixed with air**.
- Reacts with water, giving off heat and producing **methylamine and carbon dioxide**.
- Liquid and vapor are toxic when inhaled**, ingested, or exposed to the eyes or skin.

#### Initiatives taken to tackle Chemical accidents

- NDMA guidelines on Chemical Disaster Management:** Inspection System by Regulatory Bodies, Establish Information networking system with states and districts on priority basis etc.
- Explosives Act, 1884:** To control manufacture, possession, use, transportation and importation of Explosives.
- Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules 1996.

## 4.5.7. OTHER DISASTER RELATED NEWS

### 4.5.7.1. SPONGE CITY

The emerging concept and construction of “**sponge cities**” is an effective approach to solving urban floods.

#### About Sponge city:

- It refers to **sustainable urban development including flood control**, water conservation, water quality improvement and natural ecosystem protection.
  - E.g., green roofs, constructed wetlands, increased tree cover etc.
- Benefits:** increase air humidity, regulate urban microclimates, and reduce public health risks.
- Sponge cities around the world:** Tirana in Albania is creating a ring forest to clean the air; Berlin's use of green roofs and vertical gardens

### 4.5.7.2. KAWACHAM

#### Why in the news?

Kerala has launched the **Kerala Warnings, Crisis, and Hazard Management System (KaWaCHaM)** for real-time disaster alerts.

## About KaWaCHaM

- It is **developed** by the Kerala State Disaster Management Authority (**KSDMA**) with support from the **National Disaster Management Authority and the World Bank**.
  - It is supported under the **National Cyclone Risk Mitigation Project (NCRMP)**.
- It offers hazard assessment, alert issuance, and threat-based action planning.
  - **Provides updates for extreme weather events** such as **heavy rain etc.**
- **Key features include:**
  - A network of **siren-strobe light units**.
  - **Emergency operation centers** connected via **Virtual Private Network (VPN)**.
  - Decision support software and a **large data center**.

## 4.6. GEOGRAPHY

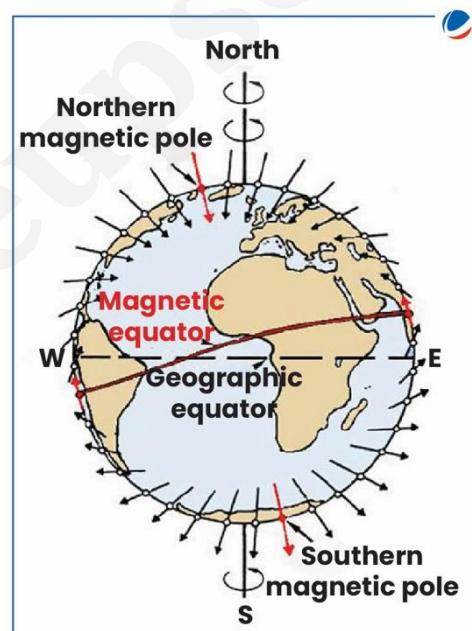
### 4.6.1. EQUATORIAL ELECTROJET (EEJ)

#### Why in the News?

Recently, Indian Scientists have developed a Model to understand the **Equatorial ElectroJet (EEJ)**.

#### About the Equatorial ElectroJet (EEJ)

- **EEJ:** Ribbon of **intense 100 kA** (kiloamperes) current flowing in **Earth's ionosphere** (Earth's Upper atmosphere) at 100km altitude.
  - **EEJ's (North-South) width:** It's of a few hundred kilometres (~600 km).
- **Location of Genesis:** Formed in Earth's **magnetic equator**, where **magnetic field lines run parallel** to Earth's surface, leading to **an intense current density** in the ionosphere.
- **Path of travelling:** EEJ travels along **magnetic equator** (See image).
  - Typically, the EEJ current flows **eastward during the day, and reverses direction in the night-time** & produce a characteristic magnetic signature both on ground and in space (measured by magnetometers).
  - **Magnetic equator** is a **line of zero magnetic dip**, meaning that a **magnetic needle has no dip at these points**.
    - > Unlike Earth's geographic equator, the **magnetic equator is not fixed, but slowly changes**. The geographic equator is a **great circle** around the Earth and it remains fixed at Zero-degree latitude.
- **Effects of EEJ:** Intensifies Earth's geomagnetic field near equator; **EEJ disruptions impact power infrastructure and electricity monitoring systems** across equatorial regions.
- **Significance of the Model:** Understand the EEJ's impact on **orbiting satellite, Global Navigation Satellite System (GNSS)-based navigation/positioning, satellite communication links** as well as **electrical power grids**.



### 4.6.2. TERMS/CONCEPTS IN NEWS

#### 4.6.2.1. DEPRESIÓN AISLADA EN NIVELES ALTOS (DANA)

Recent catastrophic flash floods in Spain are attributed to **DANA**.

#### About DANA:

- It is a phenomenon in which a **mass of very cold polar air becomes isolated** from **polar jet stream** and begins to circulate at very high altitudes (5-9 km).

- Forms independently of polar or subtropical jet streams unlike common storms.
- When it collides with warmer, more humid air in Mediterranean Sea, it generates strong storms, especially at end of northern summer and beginning of autumn.
- Unlike a common storm, which moves eastwards, a DANA can remain stranded in same place or even move westwards.

#### **4.6.2.2. BOMB CYCLONE**

Recently, a bomb cyclone struck North-western US and western Canada.

##### **About Bomb Cyclone**

- Referred to as **bombogenesis**, it describes a **mid-latitude cyclone** (low pressure region) intensifying rapidly over a **24-hour period**.
  - Witness a drop in their central air pressure to **at least 24 millibars in 24 hours**.
- Majority of these **occur over the ocean** and can be **tropical or non-tropical** in nature.
- Usually coupled with weather events, ranging from **blizzards to severe thunderstorms to heavy precipitation**.

#### **4.6.2.3. INDIAN OCEAN DIPOLE (IOD)**

Study finds **mangrove dieback in Maldives linked to sea level rise and extreme Indian Ocean Dipole**.

##### **About IOD**

- Climate phenomenon based on the **difference in sea surface temperatures (SSTs)** between the **Eastern and Western regions of the Indian Ocean**.
- It has **2 phases**:
  - **Positive phase:** Warm waters pushed to the **Western Indian Ocean**, while **cold deep waters are brought up in the Eastern Indian Ocean**.
    - > The high temperatures along **coastal Africa** cause **heavy rains and droughts in Australia**.
  - **Negative Phase:** Temperature and rainfall Pattern is **reversed**.

#### **4.6.2.4. INDIA'S COASTLINE RECALCULATED**

India's coastline has been recalculated from 7,516 km in 1970 to **11,098 km** in 2023-24, reflecting a **48% increase** in past 53 years.

##### **Key Findings**

- **West Bengal recorded highest** percentage increase (357%) while Kerala (5%) reported the smallest increase.
  - **Puducherry's coastline contracted by 4.9 km**.
- **Gujarat retains its position** as the state with the longest coastline followed by **Tamil Nadu** which **overtook Andhra Pradesh** (now 3<sup>rd</sup>).
- **Methodology:** Upward revision is attributed to a new methodology to measure India's maritime established by **National Maritime Security Coordinator**.
  - It **measures complex coastal formations** like bays, estuaries, unlike **older methods using straight-line distances**.

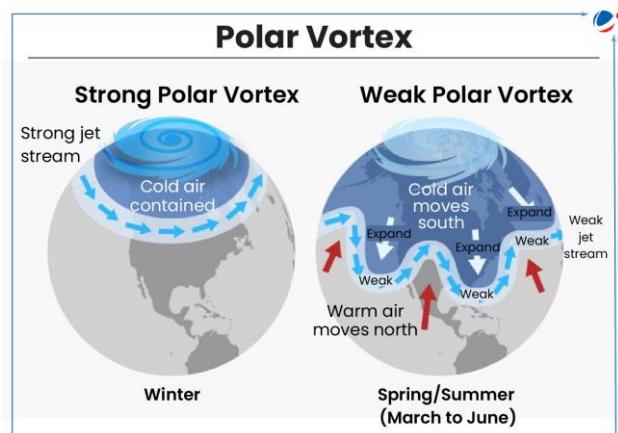
#### **4.6.2.5. POLAR VORTEX**

The ongoing extreme cold spell in **USA & Canada** is attributed to **arctic blast** due to **southward expansion of the polar vortex**.

##### **About Polar Vortex**

- **Definition:** Large **area of low-pressure and cold air** swirling like a wheel (counterclockwise) around both of the **Earth's poles**.

- Types:**
  - Tropospheric Polar Vortex:** Forms in the lowest atmospheric layer, 10-15 km.
  - Stratospheric Polar Vortex:** Forms at around 15 km to 50 km high.
    - Unlike tropospheric one, the **stratospheric polar vortex disappears during summer**, is strongest during the autumn.
- Impacts of Polar Vortex:** **Arctic Blast** (sudden and intense surge of cold air in US); **Extreme Weather Events** (causing jet stream to dip southward bringing cold arctic air to lower latitudes); **Ozone Depletion**; **Impact on India** (Western Disturbances due to weaker polar vortex), etc.



#### 4.6.2.6. ARTESIAN CONDITION

Artesian condition was recently observed in a village in Jaisalmer, Rajasthan.

##### Artesian Condition

- The word “artesian” is specifically used when water is “**confined under pressure below layers of relatively impermeable rock.**”
  - Located deeper below the earth’s surface surrounded by **poorly permeable rocks** causing high pressure underground.
- Artesian Conditions** occur due to the **movement of groundwater** from a recharge area to a **point of discharge** at a lower elevation. E.g., natural spring, drilling industry, etc.
  - Different from water flowing normally through tube wells/wells as this can **sprouts above on its own**.

#### 4.6.2.7. AUSTRALOPITHECUS

New research provides evidence that **Australopithecus**, an important early human ancestor, consumed very little or no meat, relying on a plant-based diet.

- It was revealed by the **Nitrogen isotope** analysis of tooth enamel challenging the previous assumptions about early hominins suggesting **significant meat-eating**.

##### About Australopithecus

- Australopithecus afarensis is one of the **longest-lived and best-known early human species**, inhabiting **eastern and southern Africa** from roughly 4.2 to 1.9 million years ago.

#### 4.6.3. UPDATES FROM PT 365 (APRIL TO OCTOBER)

##### 4.6.3.1. NATURAL MISSION ON NATURAL FARMING (NMNF)

Recently, Union Cabinet approved the launch of the **National Mission on Natural Farming (NMNF)** as a standalone **Centrally Sponsored Scheme** under **Ministry of Agriculture & Farmers’ Welfare**.

##### 4.6.3.2. WORLD'S FIRST CO<sub>2</sub> TO METHANOL PLANT

NTPC announced successful synthesis of CO<sub>2</sub> captured from flue gas with hydrogen produced from a **Proton Exchange Membrane (PEM) electrolyzer**, which was then converted into methanol.

- NTPC has also developed its **first indigenous methanol synthesis catalyst**.
- It is considered to be a historic step in **carbon management and sustainable fuel production**.

#### 4.6.4. REPORTS/INDICES IN THE NEWS

<b>State of the Climate 2024</b>	<p>Released By: World Metrological Organisation.</p> <p><b>Key messages of the report</b></p> <ul style="list-style-type: none"> <li>• <b>Temperature:</b> Jan-Sept 2024 Global average temperature is 1.54 (<math>\pm 0.13</math>) °C above pre-industrial level.</li> <li>• <b>Greenhouse Gases:</b> Atmospheric concentration of CO<sub>2</sub> has increased from around 278 ppm in 1750 to 420 ppm in 2023, an increase of 51%.</li> <li>• <b>Sea level Rise:</b> From 2014-2023, global mean sea level rose at a rate of 4.77 mm per year, more than double the rate between 1993 and 2002.</li> <li>• <b>Sea ice extent:</b> Antarctic sea ice was the second lowest in satellite record (1979-2024) after 2023.</li> </ul>
<b>World Cities Report 2024: Cities and Climate Action</b>	<p>Released By: UN-Habitat</p> <ul style="list-style-type: none"> <li>• UN-Habitat is mandated by <b>UN General Assembly</b> to promote socially and environmentally <b>sustainable towns and cities</b>.</li> </ul> <p><b>Key-findings of Report:</b></p> <ul style="list-style-type: none"> <li>• More than <b>2 billion people</b> could be exposed to an additional temperature increase of at least <b>0.5 °C</b> by <b>2040</b>.</li> <li>• Cities need an estimated <b>\$4.5-5.4 trillion</b> per year for climate-resilient systems.</li> <li>• Some climate interventions have inadvertently worsened conditions for <b>vulnerable communities</b>.</li> </ul>
<b>Climate Change Performance Index</b>	<p><b>Released by:</b> Think tanks Germanwatch, New Climate Institute, and Climate Action Network International.</p> <ul style="list-style-type: none"> <li>• First three places have been kept empty followed by <b>Denmark (fourth place)</b>.</li> <li>• India ranked <b>10<sup>th</sup> on a list</b>.</li> </ul> <p><b>About CCPI</b></p> <ul style="list-style-type: none"> <li>• Tracks the progress of the world's largest emitters in terms of global greenhouse gas (GHG) Emissions, Renewable Energy, Energy Use and Climate Policy.</li> <li>• It covers <b>63 countries and the European Union</b>.</li> </ul>
<b>Asia-Pacific Climate Report</b>	<p>Released by Asian Development Bank (ADB)</p> <ul style="list-style-type: none"> <li>• Report highlighted that India is shifting its focus from an <b>unsustainable dependence on fossil fuel subsidies to fostering clean energy</b>.</li> </ul>
<b>'No Escape: On the Frontlines of Climate, Conflict and Displacement' report</b>	<p>Released by: United Nations High Commissioner for Refugees (UNHCR) at COP29.</p> <p><b>Key findings of the report:</b></p> <ul style="list-style-type: none"> <li>• <b>3 in 4</b> forcibly displaced people live in countries with <b>high-to-extreme exposure to climate-related hazards</b>.</li> <li>• Most refugee settlements and camps are projected to experience <b>twice as many days of dangerous heat by 2050</b>.</li> </ul>
<b>First-Ever Global Freshwater Fauna Assessment</b>	<p><b>International Union for Conservation of Nature (IUCN)</b> conducted the first-ever multi-taxon global freshwater fauna assessment for <b>The IUCN Red List of Threatened Species</b>.</p> <p><b>Key-findings</b></p> <ul style="list-style-type: none"> <li>• <b>24% of the world's Freshwater Species</b> are at <b>risk of extinction</b>.</li> <li>• <b>Major Hotspots:</b> <b>Lake Victoria</b> (Kenya, Tanzania and Uganda), <b>Lake Titicaca</b> (Bolivia and Peru), <b>Sri Lanka's Wet Zone</b>, and the <b>Western Ghats (India)</b>.</li> </ul>
<b>Coal 2024: Analysis and Forecast to 2027</b>	<p>Released by: International Energy Agency (IEA).</p> <p><b>Key Findings</b></p> <ul style="list-style-type: none"> <li>• <b>Coal Demand:</b> It is expected to <b>shrink in advanced economies</b> accompanied with <b>growth in few emerging economies</b> E.g. <b>India, China, Indonesia</b>. <ul style="list-style-type: none"> <li>○ <b>India:</b> It is expected to see the <b>largest increase in coal demand</b>.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li><b>Coal Production: Globally</b>, it is expected to reach an <b>all-time high in 2024</b> and then flatten through 2027.</li> </ul>
<b>Global Water Monitor 2024 Report</b>	<p>Released by: <b>Global Water Monitor Consortium</b></p> <p><b>Key Findings</b></p> <ul style="list-style-type: none"> <li>In 2024, <b>Water-related Disasters</b> caused over 8,700 deaths, displaced 40 million people, and inflicted more than US\$550 billion in damages.</li> <li><b>Soil water</b> showed strong <b>regional contrasts</b>, with extreme dryness in South America and Southern Africa and wet conditions in West Africa.</li> <li><b>Lake and reservoir water storage</b> worldwide declined for the fifth year in a row.</li> </ul>
<b>Global Carbon Budget Report</b>	<p>Published by: <b>Global Carbon Project</b> during UNFCCC's COP29 summit.</p> <p><b>Key Findings:</b></p> <ul style="list-style-type: none"> <li><b>Globally</b>, fossil-based CO<sub>2</sub> emissions are set to touch a record high of 37.4 billion tonnes this year.</li> <li><b>The largest contributions to global fossil CO<sub>2</sub> emissions</b> were <b>China (31%), the USA (13%), India (8%)</b>, and the <b>European Union (7%)</b>, in 2023. <ul style="list-style-type: none"> <li>These <b>four regions account for 59%</b> of global fossil CO<sub>2</sub> emissions, while the <b>rest of the world contributed 41%</b>.</li> </ul> </li> <li>Global emissions from <b>land-use changes</b> like deforestation have <b>dropped 20% over ten years</b>.</li> </ul>
<b>Sustainable nitrogen management in Agrifood Systems</b>	<p>Released by: Food and Agriculture Organization (FAO)</p> <p><b>Key Highlights of Report</b></p> <ul style="list-style-type: none"> <li><b>Alteration in Nitrogen Cycle:</b> Humans currently add approximately <b>150 teragrams (Tg) of reactive nitrogen</b> to the Earth's land surface each year through agriculture and industry. <ul style="list-style-type: none"> <li>Climate change could raise this to 600 Tg per year by 2100, <b>increasing nitrogen loss into the environment</b>.</li> </ul> </li> <li><b>Nitrogen Loss:</b> It occurs through: <ul style="list-style-type: none"> <li>Emissions of <b>ammonia (NH<sub>3</sub>) and nitrogen oxides (NO<sub>x</sub>)</b>, which lead to air pollution,</li> <li><b>Nitrous oxide (N<sub>2</sub>O)</b>, a potent greenhouse gas (GHG), and</li> <li>Leaching of <b>Nitrates (NO<sub>3</sub><sup>-</sup>)</b> in soil and water bodies, causing eutrophication and acidification, harming ecosystems.</li> </ul> </li> </ul>
<b>An Eye on Methane: Invisible but not unseen'</b>	<p>Launched by: United Nations Environment Programme's (UNEP) <b>International Methane Emissions Observatory (IMEO)</b>.</p> <p><b>Key Findings of Report</b></p> <ul style="list-style-type: none"> <li>Human-caused methane emissions are responsible for <b>roughly one-third of the planet's current warming</b>.</li> <li>UNEP's OGMP 2.0, which require its members to report their emissions, covers only 42% of global production.</li> </ul> <p><b>About Methane</b></p> <ul style="list-style-type: none"> <li><b>It is a major greenhouse gas</b> and <b>86 times more potent than CO<sub>2</sub></b>.</li> <li><b>It is a short-Lived Climate pollutant</b> having an atmospheric lifetime of 12 years.</li> </ul>
<b>"Waste to Worth: Managing India's Urban Water Crisis through Wastewater Reuse" report</b>	<p>Released jointly by the <b>Centre for Science and Environment (CSE)</b> and <b>National Mission for Clean Ganga (NMCG)</b>.</p> <p><b>Key Highlights of the Report</b></p> <ul style="list-style-type: none"> <li><b>Decline in India's annual per capita freshwater availability:</b> Currently below 1,700 cubic metres.</li> <li><b>Huge amount of untreated wastewater:</b> Nearly 72% of India's wastewater ends up in rivers, lakes, etc.</li> <li><b>Potential in India:</b> India presents a strong case for circular economy in water, as 20% of groundwater blocks are in critical condition or overexploited, 55% of households have open or no drains.</li> </ul>

<b>District-Level Climate Risk Assessment Report for India: Mapping Flood and Drought Risks</b>	<p>Released by: <b>Indian Institute of Technology (IIT) Guwahati</b>, in collaboration with <b>IIT Mandi and the Centre for Study of Science, Technology, and Policy (CSTEP), Bengaluru</b>.</p> <ul style="list-style-type: none"> <li>It uses the <b>Intergovernmental Panel on Climate Change (IPCC) framework</b>, and identifies the dual challenges posed by <b>floods and droughts</b>.</li> </ul>
<b>Protected Planet Report 2024</b>	<p>Recently, <b>UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC)</b> and IUCN released the report that assesses the global status of Protected and Conserved Areas (PCA) in context of Target 3 of the KGBF</p> <p><b>About Protected and Conserved Areas</b></p> <ul style="list-style-type: none"> <li><b>Protected Area</b> is geographically <b>defined area</b> regulated and managed to achieve specific conservation objectives.</li> <li><b>Conserved Areas</b> are <b>areas outside Protected Areas</b> managed to conserve biodiversity, ecosystem services, and local values.</li> <li><b>Target 3</b> aims to <b>expand global network of PCA to 30% coverage</b> in a way that is equitable and respects rights of <b>Indigenous Peoples and Local communities (IPLC)</b>.</li> </ul>
<b>India Submits Its Fourth Biennial Update Report (BUR-4) to UNFCCC</b>	<p>BUR-4 updates the <b>Third National Communication (TNC)</b> and contains the <b>National Greenhouse Gas (GHG) inventory for the year 2020</b>.</p> <ul style="list-style-type: none"> <li>The <b>Ministry of Environment, Forest and Climate Change</b> is <b>India's nodal ministry</b> for managing and coordinating climate change activities and reporting under <b>Article 4.1 of UNFCCC</b>.</li> </ul> <p><b>Key Highlights of report</b></p> <ul style="list-style-type: none"> <li><b>GHG emissions:</b> It has <b>decreased by 7.93%</b> in 2020 compared to 2019. <ul style="list-style-type: none"> <li>Sector wise Emissions: <b>Energy (75.66%)&gt; Agriculture (13.72%)&gt;Industrial Process and Product Use (8.06%)&gt;Waste (2.56%)</b>.</li> </ul> </li> <li><b>Emission Intensity of GDP:</b> It has reduced by 36% (Between 2005 to 2020)</li> <li><b>Share of non-fossil sources:</b> It constitutes <b>46.52% of installed electricity generation capacity</b> (October 2024)</li> <li><b>Generation of Carbon Sinks:</b> An additional carbon sink of <b>2.29 billion tonnes of CO2</b> have been created through forest and tree cover (2005 to 2021).</li> </ul>

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**25<sup>th</sup> February 1 PM**

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#### 4.6.5. COUNTRIES IN NEWS



## Countries in News



**Georgia (Capital: Tbilisi)**  
Eleven Indians died in Georgia due to **carbon monoxide poisoning**.



**Indonesia (Capital: Jakarta)**  
Mount Lewotobi Laki-Laki volcano has erupted on the Indonesian island of Flores. Active volcano, **Mount Ibu (part of the Pacific Ring of Fire)** erupted 1,000 times in a month.



**Nicaragua (Capital: Managua)**  
India and Nicaragua signed an umbrella agreement to implement **Quick Impact Projects (QIPs)**.



**Cuba (Capital: Havana)**  
India extended **humanitarian assistance** to Cuba in the aftermath of **Hurricane Rafael**.



**Republic of Korea/South Korea (Capital: Seoul)**  
**Final negotiations** on **Global Plastics Treaty** under United Nations Environment Program were underway in **Busan, South Korea**.



**Azerbaijan (capital: Baku)**  
The **2024 UN Climate Change Conference (UNFCCC COP 29)** took place in Baku (Azerbaijan).

## 4.6.6. PLACES IN NEWS

### 4.6.6.1. INDIA

#### 4.6.6.1.1. WATER BODIES IN NEWS

## Water Bodies in News



### Hokersar Wetland

- Arrival of migratory birds in Hokersar wetland is adversely affected due to poor rainfall.

#### About Hokersar wetland

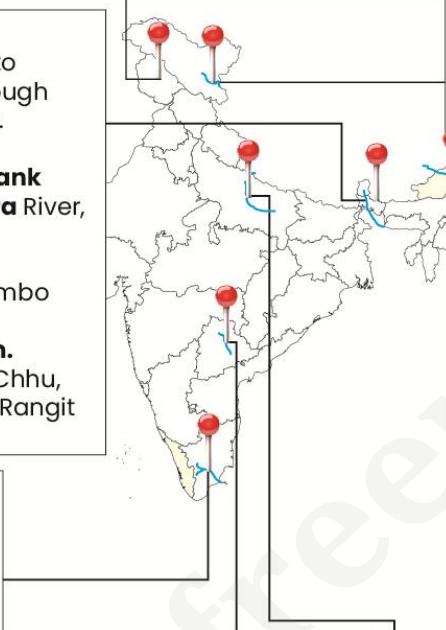
- Designated **Ramsar Site in 2005**, permanent **eutrophic lake** in the flood plains of River Jhelum.
- Lies in the west of **Srinagar**.
- Two perennial streams of **Dood-Ganga and Sukhnag** feed the wetland.
- It is the **only site** with remaining reedbeds of Kashmir.

### Teesta River

- The West Bengal has decided to supply water to farmlands through pipelines from the Teesta River.

#### About Teesta River

- Length:** 400 km long **right bank**
- tributary of the Brahmaputra River**, flowing through **India and Bangladesh**.
- Origin:** It originates as Chhombo Chhu from a glacial lake **Khangchung Chho in Sikkim**.
- Major Tributaries:** Lachung Chhu, Chakung Chhu, Zemu Chhu, Rangit etc.



### Vaigai River

- Recently, Madurai Bench of the Madras High Court directed local bodies to create an action plan for rejuvenating the **Vaigai River**.

#### About Vaigai River

- Origin:** Eastern slope of the Western Ghat mountainous offshoot in the **Varushanad area**.
- Major Tributaries:** Varattar, Nagalar, Varahanadhi, Manjalar, Marudhanadhi, Sirumaliar, Sathaiyar.
- Drains:** Empties into **Palk Bay**.

### Musi River

- Musi River** historic buildings have been kept on **World Monuments Watch 2025**.
- #### About Musi River
- Origin:** Ananthagiri hills, Rangareddy district (Telangana).
  - One of the major tributaries of **Krishna River**.
  - Importance:** major water sources for **Hyderabad**.

### Pangong Lake

- Indian Army installs Shivaji statue on the banks of **Pangong Lake**.

#### About Pangong Lake

- Location:** World's highest saltwater lake, situated at the height of **4350 m in eastern Ladakh**.
- Area:** Extending to almost **160km**, **1/3rd lies in India** and other **2/3rd in China**.
- Features:** ENDORHEIC (LANDLOCKED) LAKE, known to **change colors**.

### Subansiri River

- 2,000 MW Subansiri Lower Hydroelectric Project** on river **Subansiri**, located at Arunachal Pradesh-Assam border, is set to be commissioned.

#### About Subansiri River (also known as Gold River)

- Origin:** It's a Trans- Himalayan River originating in the Tibetan Himalaya.
- River enters India through **Miri Hills in Arunachal Pradesh**.
- It is the **Right Northern bank** and the **longest tributary of Brahmaputra** and join it at **Majuli Island in** (largest river island in Asia) **Assam**.

### River Gomti

- Building on the success of the first **Composite Ecological Task Force (CETF)** for the Ganga, the Indian Army has formed a new company for the revitalization of the River Gomti.

#### About Gomti River

- Origin:** Starts at **Gomath Taal** (also called Fulnar Jheel) near **Madho Tanda in Pilibhit district of UP**.
- Tributary of the **River Ganga** (merges with the River Ganga in Ghazipur district of UP).
- Tributaries:** Kathina, Sai, etc.

## 4.6.6.2. WORLD

### 4.6.6.2.1. WATER BODIES IN NEWS

#### Water Bodies in News



##### Kerch Strait

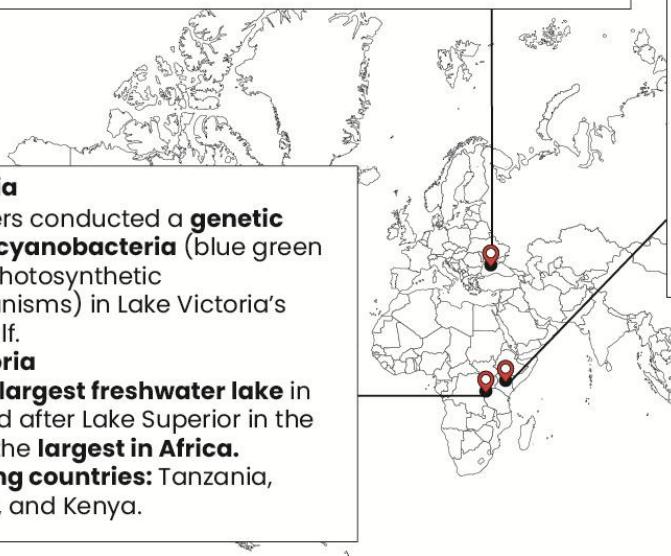
④ Russia forms an emergency task force for **Kerch Strait oil spill**.

##### About Kerch Strait

» **Location:** Connects the inland **Sea of Azov to the Black Sea**.

» Separates the Russia-occupied Crimean Peninsula from the Krasnodar region.

» **Significance:** It is an important global shipping route



##### Lake Victoria

④ Researchers conducted a **genetic survey of cyanobacteria** (blue green algae or photosynthetic microorganisms) in Lake Victoria's Winam Gulf.

##### Lake Victoria

» **Second largest freshwater lake** in the world after Lake Superior in the US and the **largest in Africa**.

» **Bordering countries:** Tanzania, Uganda, and Kenya.

##### Great Barrier Reef

④ Recently, World's First Cryo-Born Baby Corals Successfully Settled on the Great Barrier Reef, Australia

» **Cryo-born corals:** Created using cryopreservation techniques involving freezing coral cells and tissues at very low temperatures

##### Lake Naivasha

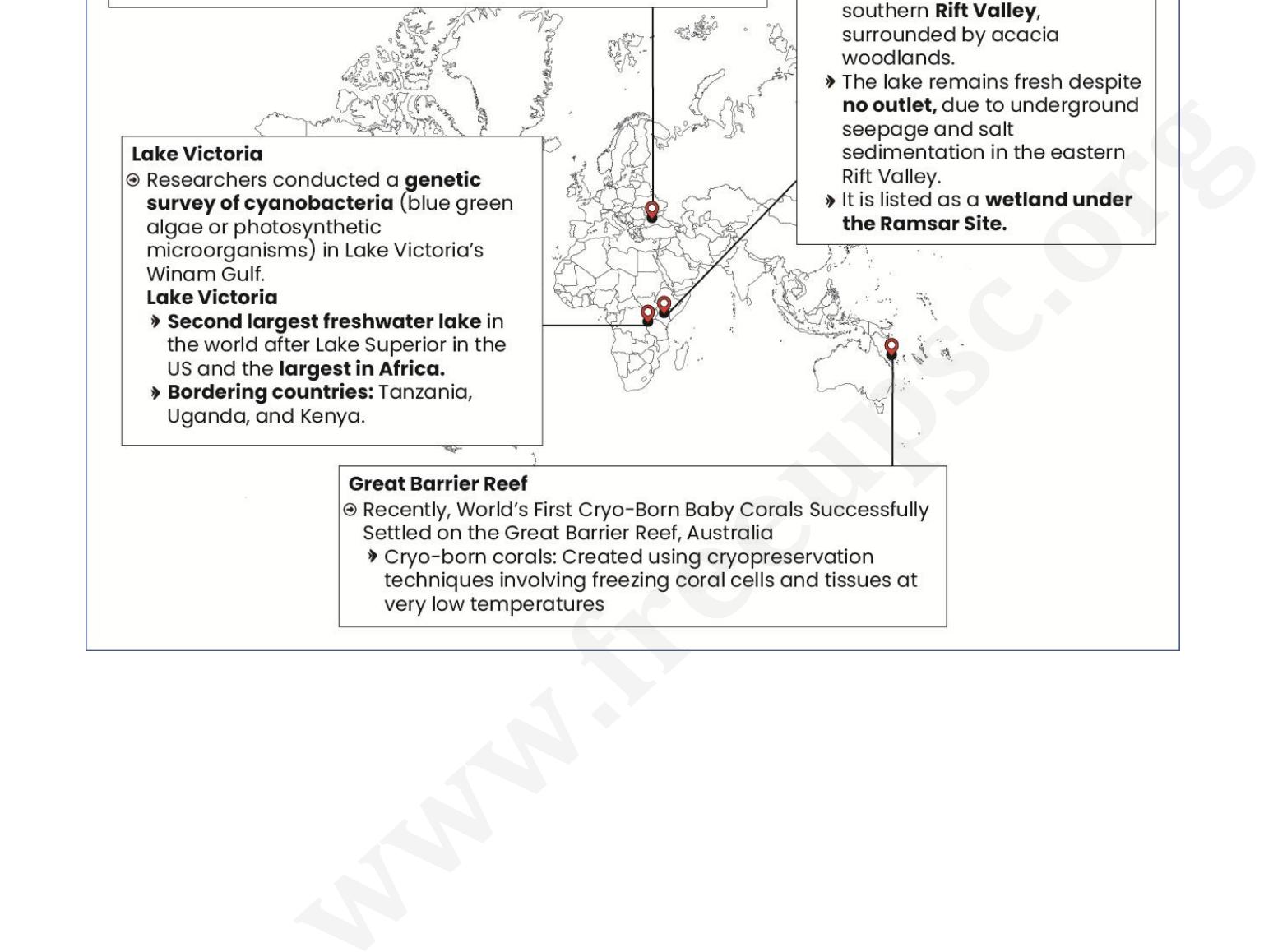
④ **Invasive water hyacinth** threatens fishers' livelihoods on Lake Naivasha

##### About Lake Naivasha (Kenya)

» Shallow **freshwater lake** in the southern **Rift Valley**, surrounded by acacia woodlands.

» The lake remains fresh despite **no outlet**, due to underground seepage and salt sedimentation in the eastern Rift Valley.

» It is listed as a **wetland under the Ramsar Site**.



#### 4.6.6.2.2. OTHER GEOGRAPHICAL FEATURES IN NEWS

### Other Geographical Features in News



#### Arctic-Boreal Zone

Recent findings indicate that 34% of Arctic-boreal zone (ABZ) has become a carbon source rather than sink.

##### About Arctic-Boreal Zone (ABZ)

- It encompasses treeless tundra, boreal forests, and wetlands situated along the Arctic Circle in the Northern Hemisphere.

#### Denali Fault

New research shows that three sites spread along Denali Fault were once a smaller united geologic feature.

- Location:** It is a major strike-slip fault located in Alaska, USA, part of broader tectonic dynamics of Pacific Ring of Fire.

#### Kilauea Volcano

Recently, Kilauea volcano erupted on Hawaii's Big Island.

##### About Kilauea volcano

- About:** Among one of world's most active volcanoes.
- Location:** Southeastern part of the island of Hawaii, Hawaii state, U.S.

Denali Fault

Kilauea

Ring of Fire

#### World's Largest Hydropower Dam

China has approved the construction of the world's largest dam, over three times the capacity of the Three Gorges Dam.

- Location:** Medong Region of Tibet, Lower reaches of the Yarlung Zangbo River (Tibetan name for Brahmaputra).
- Stated Purpose:** Support China's carbon neutrality goals, boost industries, and create jobs in Tibet.

Nord Stream pipeline

World's Largest Hydropower

Ring of Fire

Solomon Islands

#### Nord Stream pipeline

Recently, a UNEP study found the 2022 Nord Stream pipeline explosions caused the largest human-induced methane release on record.

##### About Nord Stream Pipeline

- It is a major natural gas pipeline running under the Baltic Sea from Russia to Germany.

#### Ring of Fire

A strong earthquake with a preliminary magnitude of 6.9 has hit southwestern Japan.

##### About Ring of Fire (Circum-Pacific Belt)

- Horseshoe-shaped string of volcanoes and earthquake sites which runs along Pacific Ocean.
- It is the result of plate tectonics as it traces meeting points of numerous tectonic plates, including Pacific, Juan de Fuca, Cocos, Indian-Australian, Nazca, North American, and Philippine Plates.

#### Solomon Islands

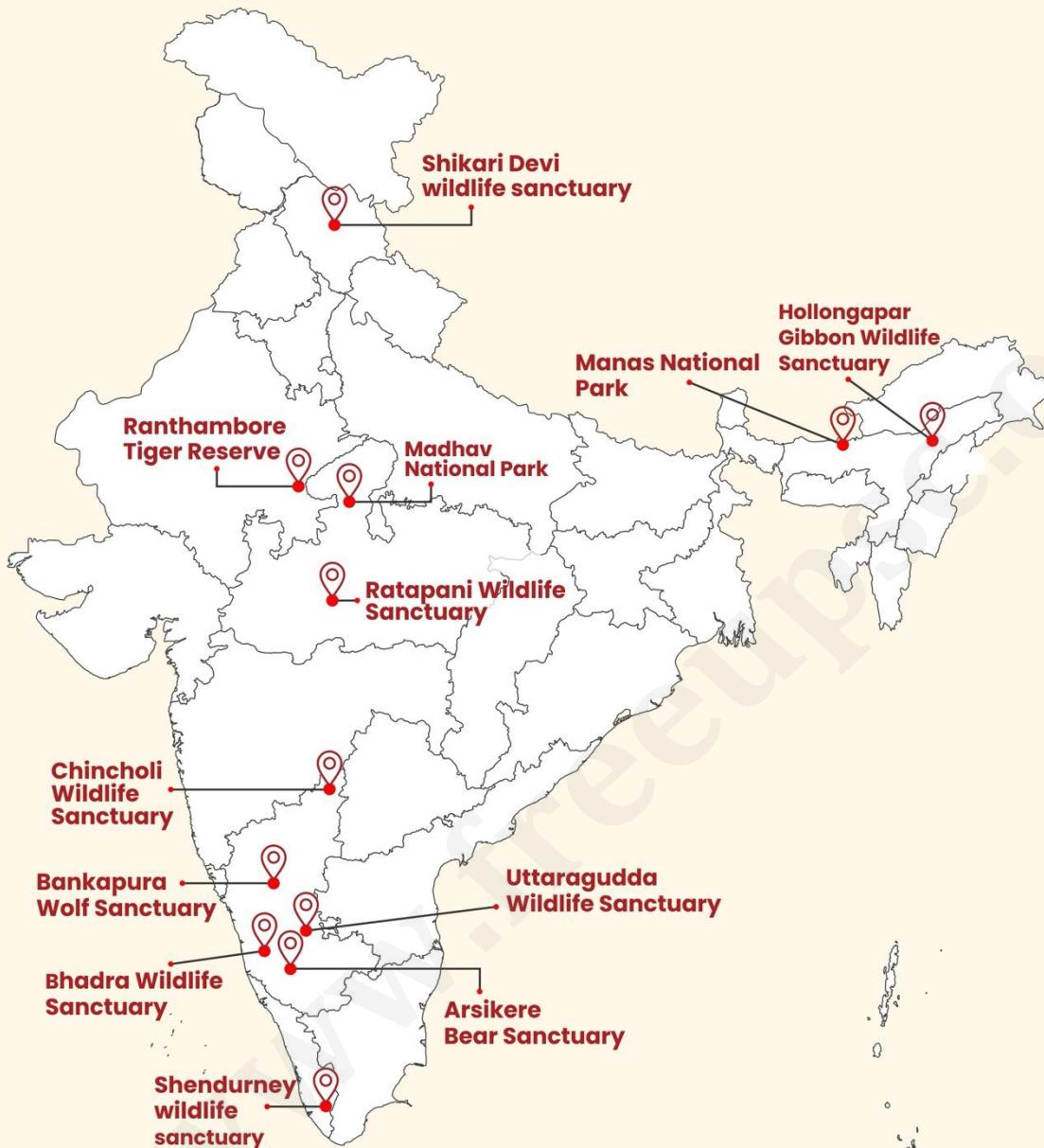
World's largest coral found (as big as two basketball courts and at least 300 years old) near the Pacific's Solomon Islands.

##### About Solomon Island

- Location:** Scattered archipelago of mountainous islands and low-lying coral atolls, it stretches in the south-easterly direction from the Shortlands Islands to the Santa Cruz Islands.
- Climate:** The climate is tropical.

#### 4.6.7. PROTECTED AREAS IN NEWS

## Protected Areas in News



## Madhya Pradesh

### Ratapani Wildlife Sanctuary



- Ratapani Wildlife Sanctuary declared as the 8<sup>th</sup> Tiger Reserve of Madhya Pradesh.
- ▶ The **other tiger reserves** in Madhya Pradesh are Kanha, Satpura, Bandhavgarh, Pench, Sanjay Dubri, Panna and Veerangana Durgavati.

#### About Ratapani Wildlife Sanctuary

- **Location:** Situated in Raisen and Sehore district of Madhya Pradesh.
- **Major sites:** Encompasses a World Heritage Site "**Bhimbetka Rock Shelters**" and many other sites like Ginnourgarh Fort, POW camp, Keri Mahadeo, Jholiyapur dam etc.
- **Flora and Fauna:**
  - ▶ The forest in Ratapani is **dry deciduous and moist deciduous type**, with **55 percent of area covered by teak**.
  - ▶ **Major animals** are tigers, leopard, sloth bear, hyena, spotted deer, sambar deer etc.

### Madhav National Park



- **National Tiger Conservation Authority (NTCA)** approves Madhav National Park as the newest Tiger Reserve of Madhya Pradesh.

#### About Madhav National Park

- **Location:** Situated in northern part of **Madhya Pradesh in Shivpuri District (Upper Vindhyan Hills)**.
- **Background:**
  - ▶ Park was **hunting ground of Mughal emperors and Maharaja of Gwaliora** and got the status of a National Park in 1958.
  - **Fauna:** Antelopes (Nilgai, Chinkara), Deer (Chital, Sambar and Barking Deer), Leopard, Wolf, Jackal, Fox, Wild Dog, Wild Pig etc
  - **Flora:** Represents **Northern Tropical dry deciduous mixed forest** as well as **Dry thorn forest**.
  - **Other Feature:** Sakhya Sagar and Madhav Sagar are the two lakes in the park.
  - ▶ **Madikhera dam** is situated in the North Western part of the Park.

## Rajasthan

### Ranthambore Tiger Reserve



- **Ranthambore Tiger Reserve** faces risk of submergence under water due to proposed **Parbati-Kalisindh-Chambal-Eastern Rajasthan Canal Project (PKC-ERCP)**.

#### About Ranthambore Tiger Reserve

- **Location:** It is located between **Aravali** and **Vindhya** hills.
- It was declared Tiger reserve in **1973**. It comprises Ranthambore National Park, Sawai madhopur Sanctuary, Keladevi sanctuary, part of National Gharial Sanctuary etc.
- **Rivers:** It lies between **Banas River** (north) & **Chambal River** (south).
- **Flora:** Most dominant tree is Dhok (Anogeissus pendula).
- **Fauna:** **Royal Bengal tiger**, leopards, Indian wild boars, chital, serpent eagle, waterfowl, cormorant, painted spurfowl, sarus crane, etc.
- **Cultural Significance:** **Ranthambore Fort** within the reserve is a **UNESCO World Heritage Site**.

## Shikari Devi Wildlife Sanctuary



## Himachal Pradesh

- Government of India has designated areas around Shikari Devi Wildlife Sanctuary as **Eco-Sensitive Zones (ESZs)**.

### About Shikari Devi Wildlife Sanctuary

- Location:** Middle altitudinal range of the **Himalayas** in Mandi District, Himachal Pradesh.
- Named after the goddess Shikari Devi**, to whom a temple is dedicated in the sanctuary.
- Streams:** Juni Khud, a tributary of Beas River.
- It is recognised as an **Important Bird Area** by Birdlife International.
- Vegetation:** Alpine pastures and Temperate Deciduous Forest.
- Fauna:** Asiatic Black Bear, Leopard, Barking Deer, Giant Flying Squirrel etc.

## Manas National Park



## Assam

- As per recent study Tiger population triples in Assam's Manas National Park.

### About Manas National Park

- Location:** Contiguous with the Royal Manas National Park in Bhutan
- Recognition:** UNESCO World Heritage Site (1988), Biosphere Reserve
- Rivers:** Major rivers include the **Manas and Beki**, which flow through the sanctuary and meet the **Brahmaputra** downstream.
- Vegetation:** semi-evergreen forests, mixed moist and dry deciduous forests and alluvial grasslands.
- Key Fauna:** Tiger, Pygmy hog, Indian rhinoceros, swamp deer, Bengal florican, and Indian elephant.

## Hollongapar Gibbon Wildlife Sanctuary



- Recently, the standing committee of **National Board for Wildlife** approved a proposal to carry out oil and gas exploration in the eco-sensitive zone of the **Hollongapar Gibbon Wildlife Sanctuary**.

### About Hollongapar Gibbon Wildlife Sanctuary

- Location:** Located at Jorhat district of **Assam**.
  - Officially extends to the Dissoi Valley Reserve Forest, Dissoi Reserve Forest, and Tiru Hill Reserve Forest.
- Establishment:** 1997.
- Significance:** Contains India's only gibbons - the **hoolock gibbons** and Northeastern India's only nocturnal primate - the **Bengal slow loris**.
  - Other non-human primates found here are **Capped Langur, Rhesus Macaque, Assamese Macaque, Pigtailed Macaque & Stump tailed Macaque**.

## Kerala

### Shendurney wildlife sanctuary



Recently, a **faunal survey** was conducted in the **Shendurney Wildlife Sanctuary**, focussed on **birds, butterflies, odonates (dragonflies and damselflies)**, and other wildlife.

Species like the **Great Indian Hornbill** (State bird of Kerala), **Malabar Banded Peacock (butterfly)** were spotted.

#### About Shendurney Wildlife Sanctuary

- Situated in **Southern Western Ghats in Kollam, Kerala**, it is part of **Agastymalai Biosphere Reserve**.
- It derives its name from the **endemic species, Ghuta Travancorica**, locally known as '**Chenkurunji**'.
- **Major rivers:** Shendurney, Kazhuthuruthy and Kulathupuzha, together forming the **River Kallada**.
- **Common fauna:** Elephant, Gaur, Sambar, Malabar giant squirrel, Nilgiri langur, Lion-Tailed macaque etc.
- **Thenmala**, the **first planned eco-tourism destination in India**, is located here.

## Karnataka

### Chincholi Wildlife Sanctuary



Recently, **Karnataka forest department** initiated talks to **relocate Sheribikanahalli hamlet** located within **Chincholi Wildlife Sanctuary**.

#### About Chincholi Wildlife Sanctuary

- **Location:** Kalburgi District, North Karnataka.
  - ▶ Declared a sanctuary in 2011.
  - ▶ First dry land Wildlife Sanctuary in South India.
- **Vegetation:** Dry deciduous and Moist deciduous forest in the core with **Acacia and Teak plantations** on the fringes.
- **Major Flora:** Red Sanders and Sandalwood.
- **Major Fauna:** Black Buck, Four-horned Antelope, Fruit bat, Hyena, Indian Wolf etc.
- **Key Highlights:**
  - ▶ **Chandrapalli Dam:** Provide water to this wildlife Sanctuary.
  - ▶ **Local Tribes:** Lambani Tandas

### Bhadra, Bankapura, Uttaragudda, Arsikere Sanctuary



- Recently, the Karnataka cabinet sub-committee gave approval to four sanctuaries as eco-sensitive zones.
- **Bhadra Wildlife Sanctuary:** Located along the **Bhadra River**, it is known for its rich tiger population and diverse birdlife.
- **Bankapura Wolf Sanctuary:** Situated in **Haveri district**, it dedicated to protect the endangered **Indian grey wolf**.
- **Uttaragudda Wildlife Sanctuary:** It is known for its dry deciduous forests and serves as an important habitat for **leopards and sloth bears**.
- **Arsikere Bear Sanctuary:** This sanctuary is a crucial refuge for **Indian sloth bears**, providing protection from habitat loss and human-wildlife conflicts.

## 4.6.8. SPECIES IN NEWS

### 4.6.8.1. TERRESTRIAL SPECIES

#### SPECIES IN NEWS



Note: As per the amendments made under the 'Wild life (Protection) Amendment Act, 2022', all species that are covered under Appendices of CITES are now listed under Schedule IV of the Act.

#### Terrestrial Species

##### Pangolin

Protection status	
<b>Indian Pangolin</b>  WPA, 1972 Schedule I	<b>Chinese Pangolin</b>  WPA, 1972 Schedule I

Appendix I

##### Context

- Recently, instances of pangolin poaching is increasing in Telangana.

##### Characteristics

- They are **only mammals wholly-covered in scales** and use those scales to protect themselves from predators in wild.
- They eat ants, termites and larvae and are often **known as the scaly anteater**.
- Solitary, primarily nocturnal animals; long, sticky tongues that are longer than their bodies, toothless.
- Two pangolin species found in India- **Indian and Chinese Pangolin**.

##### Habitat

- India:** Found throughout country, south of Himalayas, excluding north-eastern region.
- Chinese:** Ranges through Assam and eastern Himalayas.

#### Eurasian Otter(Lutra Lutra)

Protection status	
	 IUCN STATUS NT

##### Context

- An Eurasian Otter was sited in **Pune, Maharashtra**, for the **first time**.

##### Characteristics

- Solitary** and **nocturnal** creatures.
- As **apex predators in river ecosystems**, they help **regulate fish populations** and maintain **ecological balance**.
- It is **one of the three otter species found in India**, alongside Smooth-coated Otter and small-clawed otter.

##### Habitat

- Europe, Asia and Africa.**
- In **India**, it is mainly confined to **Himalayan foothills, parts of Northeast India, and Western Ghats**.



## Markhor

### Protection status



WPA, 1972  
Schedule I



### Context

- In Rare Appearance, **Markhor** Spotted In Kashmir.

### Characteristics

- It is World's largest wild goat.

### Habitat

- Pakistan, Afghanistan, Uzbekistan, Turkmenistan, Tajikistan.
- In India it is found only in Union Territory of Jammu and Kashmir (J&K).

### Conservation Measures

- Global: UNGA proclaimed 24 May the International Day of the Markhor, starting in 2024.
- India: Kashmir Markhor Recovery Project (Wildlife Trust of India), J&K notified Tattakuti wildlife sanctuary for the Markhor.

### Protection status



WPA, 1972  
Schedule I



### Context

- Recently, Jharkhand Forest department initiated a study to revive the dwindling population of Bison at **Palamu Tiger Reserve**.

### Characteristics

- Massively built, very strong, and social animal.
- Grazing animal** and munches on leaves, fruits, stems, flowers and seeds.
- Diurnal by nature** and remain active during the daytime. Their **pregnancy period** is 9 months same as humans.

### Habitat

- Western Ghats.
- Prefer evergreen forests and moist deciduous forests.
- They generally stick to the foothills.



## Fishing Cat

### Protection status



WPA, 1972  
Schedule I

### Context

- Wildlife Institute of India, Dehradun, is launching **India's first Fishing Cat Collaring Project** at Coringa Wildlife Sanctuary.



### Characteristics

- A powerful feline, about twice the size of a house cat.
- Nocturnal hunters that prey on fish, frogs, crustaceans, snakes, birds, and scavenged carcasses.



### Habitat

- Inhabit wetlands and mangroves.
- In India, found mainly in **Sundarbans, Himalayan foothills** along Ganga & Brahmaputra valleys, and **Western Ghats**.

## Aquatic and Amphibian Species

### Gangetic River Dolphin

### Protection status



WPA, 1972  
Schedule I



Appendix I



### Context

- India conducts first-ever Ganges River Dolphin Tagging in Assam.



### Characteristics

- Essentially blind, rely on Echolocation** (determining the location of objects using reflected sound) for biological needs.
- Breathes through a **blowhole**, surfacing every 30-120 seconds.



### Habitat

- Restricted to freshwater** (Ganges-Brahmaputra-Meghna and Karnaphuli-Sangu river systems of Nepal, India, and Bangladesh)
- Presently, India houses **about 90% of the global population** of the dolphins.



### Conservation Measures

- The **Vikramshila Gangetic Dolphin Sanctuary**, Bihar is the only wildlife sanctuary for its protection.
- It is India's **National Aquatic Animal** and is **endemic to the Indian sub-continent**.
- Project Dolphin announced** on 15th August 2020.



## Sperm Whales (*Physeter macrocephalus*)

### Protection status



### Context

- For the first time, Scientists have outlined that sperm whales **communicate using bursts of clicking noises**- called codas- sounding a bit like Morse code.

### Characteristics

- Largest of the **toothed** whales and **only males** tend to be observed closer to poles.

### Habitat

- Found in **deep open waters**, or around **islands and coastal areas** with deep canyons or very narrow continental shelves.
- Found in India, Argentina, Bangladesh etc.

## Olive Ridley Turtle

### Protection status



Appendix I

### Context

- A high-level review meeting to be held by Tamil Nadu Chief Secretary amid increase in deaths of Olive Ridley Turtles.

### Characteristics

- Gets its name from **olive green color of its heart-shaped shell**.
- Carnivores, and feed mainly on jellyfish, shrimp, snails, crabs, molluscs and a variety of fish and their eggs.
- Best known for their **unique mass nesting called Arribada**, where thousands of females come together to lay eggs on the same beach.

### Habitat

- Among **smallest & most abundant sea turtles** and is found primarily in the **tropical regions of Pacific, Indian, and Atlantic oceans**.

### Conservation Measures

- Odisha's Rushikulya, Gahirmatha, and Devi river rookeries** are protected through **seasonal fishing bans and community involvement**.
- Marine Turtle Action Plan (2021)
- Operation Olivia** by Indian Coast Guards.



## Indian Star Tortoise (*Geochelone elegans*)

### Protection status



Appendix I

### Context

- The Indian star tortoise faces threats from illegal wildlife trade and habitat loss.

### Characteristics

- Solitary animals, do not hibernate** but stay inactive when it is very dry/hot/cold.
- Mainly Herbivores** and exhibit distinctive obsidian shell with sun-yellow star patterns.

### Habitat

- Endemic to arid regions of **northwest India, southern India, and Sri Lanka**.

## Plant Species

### Utricularia (Bladderworts)



### Context

- Recently, Plant '**Utricularia**' has been found in Rajasthan's **Keoladeo National Park** in large numbers.

### About Utricularia

- Tiny hairlike projections** at the opening of the **bladder** are sensitive to the motion of passing organisms sucking in prey.
- Preys on **small organisms** (such as protozoa, insects, larvae, mosquitoes, and even tadpoles).
- Habitat:** Found in **lakes, streams, and waterlogged soils**.
- Significance:** Boosts biodiversity and **maintains environmental balance** by controlling the population of small insects.



## Sea buckthorn



### Context

- Women in Ladakh play a key role in sea buckthorn cultivation



### About sea buckthorn

- It was given GI Tag in 2023
- In Ladakh, it is grown completely organically without any pesticides. The berries are harvested in September-October every year.

- Every part of the plant, including fruit, leaf, twig, root and thorn, has been traditionally used as medicine, nutritional supplement, etc.
- Therefore, It is popularly known as 'Wonder Plant, Ladakh Gold, Golden Bush or Gold Mine of cold deserts'.

## Water Hyacinth



### Context

- Women from flood-prone Borchila in Assam are transforming water hyacinth into eco-friendly products and creating jobs under SBM-Urban.



### About Water Hyacinth

- Water Hyacinth is a non-native aquatic invasive plant that has become widespread in India.
- Water Hyacinth is a non-native aquatic invasive plant that has become widespread in India.

#### Positive Impact/Usage of Water Hyacinth

- It can reduce water pollution (Absorb heavy metals, toxins) and process animal feed, compost, and bioenergy.
- It can be harvested and processed into eco-friendly products like crafts and furniture.

#### Negative Impacts of Water Hyacinth

- Water Quality Degradation:** It depletes oxygen in water, harming aquatic life.
- Ecological Imbalance:** It can outcompete native plant species, leading to a decline in biodiversity in freshwater ecosystems.



## Kashmir Chinars



### Context

- Recently, Kashmir Chinars got digital protection through **geo-tagging** with QR-code.



### About Kashmir Chinars

- Native:** Originated in **Greece**, found throughout Kashmir, grows characteristically in **Eastern Himalayas**.
- Char Chinar**, an Island on the Dal Lake, Srinagar is named after it.

#### Key Features

- Large and deciduous**, growing up to 30 meters tall, takes about 150 years to reach to full height.
- Known for its **longevity** and its **leaves changes colors**, i.e., deep green (summer), blood-red, amber and yellow (autumn).
- Applications:** Used for **medicinal** purposes, **wood** for interior furniture, and making **dyes**, etc.

## Tropical Plant Subabul



### Context

- Recently, researchers at the **Institute of Advanced Study in Science and Technology (IASST), Guwahati** have identified the therapeutic potential of Subabul in **managing insulin resistance related to type II diabetes**.



### About Subabul

- It is a **fast-growing** traditional medicinal leguminous tree native to tropical and subtropical regions.

It is traditionally used by ethnic communities for its **nutritional value**, with **leaves and seeds** consumed raw or cooked in **soups and salads** as a rich source of protein and fiber.

## Dicliptera polymorpha



### Context

- Scientists from Agharkar Research Institute (ARI), Pune discovered a new **species of Dicliptera** in the Western Ghats (one of India's four global biodiversity hotspots)



### About Dicliptera polymorpha

- Unusual dual-blooming pattern:** Blooms twice a year, once **post-monsoon** (From early November to March or April) and again **after grassland fires** (in May and June).
- Spicate inflorescence:** It is the **only known Indian species** with this spicate inflorescence structure, with its closest allied being found in Africa.

# 5. SOCIAL ISSUES

## 5.1. ISSUES AND DEVELOPMENTS RELATED TO WOMEN AND CHILDREN

### 5.1.1. GLOBAL ONE-STOP CENTRES (OSC)

#### Why in the news?

The Empowered Committee of the Ministry of Women and Child Development has approved **9 global OSCs** for Indian women in distress proposed by **Ministry of External Affairs**.

#### About Global OSCs

- **Aim:** To provide comprehensive assistance to women in vulnerable situations, addressing their immediate needs and offering critical support.
- They include **7 OSCs with provision of shelter homes** in Bahrain, Kuwait, Oman, Qatar, UAE, Saudi Arabia (Jeddah & Riyadh) and **2 OSCs without shelter homes** in Toronto and Singapore.
- **Indian Community Welfare Fund (ICWF)** will play a vital role in extending welfare measures to distressed Indian nationals, particularly women.

#### About ICWF

- ICWF, set up in **2009**, stands extended to **all Indian Missions and Posts abroad**.
- **Aim:** Assisting **Overseas Indian nationals in distress** situations in the '**most deserving cases**' on a '**means tested basis**'.
- **Function:** Provides critical support in **emergency evacuation** of Indian nationals from **conflict zones**, countries affected by **natural disasters** etc.
- **Eligibility for ICWF fund assistance:** Only **Indian citizens** residing in the host country or those in distress while visiting a foreign country.
  - **Persons of Indian Origin (PIO)** and **Overseas Citizens of India (OCI)** Card Holders are **not eligible**.

### 5.1.2. 'NAYI CHETNA – PAHAL BADLAAV KI' CAMPAIGN

#### Why in the news?

**Union Minister of Rural Development and Agriculture & Farmers' Welfare** has launched third edition of national campaign 'Nayi Chetna – Pahal Badlaav Ki'.

#### About Nayi Chetna – Pahal Badlaav Ki campaign

- **Aim:** To raise awareness and promote **targeted action against all forms of gender-based violence** through SHG-led grassroots initiatives, adopting a **whole-of-society** and **whole-of-government** approach.
- Organized by **Deendayal Antyodaya Yojana - National Rural Livelihoods Mission (DAY-NRLM)** under aegis of Ministry of Rural Development.
- As part of initiative, **227 new Gender Resource Centers** were inaugurated across 13 states.
- **Campaign's slogan:** 'Ek Saath Ek Awaaz- Hinsa Ke Khilaaf.'

### 5.1.3. PROTECTION OF CHILDREN FROM SEXUAL OFFENCES (POCSO) ACT, 2012

#### Why in the News?

**Supreme Court (SC)** penalised the possession and storage of **Child Sexual Exploitation and Abuse Material (CSEAM)** under the **Protection of Children from Sexual Offences (POCSO) Act, 2012**.

#### Judgement of Supreme Court

- **Change in Terminology:** SC directed Courts across the country to **abstain** from using the term "**child pornography**" and instead **use "Child Sexual Exploitative and Abuse Material" (CSEAM)**.
  - Court suggested Parliament should amend the **POCSO Act** for the same.

- **Violation of Fundamental Rights:** SC held CSEAM to be violative of the fundamental rights of children, especially right to live with dignity (Article 21).
- **Criminalized physical** as well as **constructive** (power to control with knowledge of that control) possession of CSEAM.
  - **Section 15 of POCSO Act** penalizes the storage or possession of pornographic material involving children.

#### **POCSO Act, 2012**

- It is a **gender-neutral Act** passed in lieu of ratification of the **Convention on the Rights of the Child (1992)**.
- **Definition of Child:** Any individual **below 18 years of age**.
- **Three broad categories of sexual offences punishable:** Sexual assault, sexual harassment and using a child for pornography.
- **Objective:** Enforcing the rights of all children to safety, security and protection from sexual abuse and exploitation.
- **Key Provisions:**
  - **Child-friendly procedures:** Establishes **special courts, in-camera trials, no direct confrontation** with the accused, and child-friendly reporting and recording mechanisms.
  - **Stringent Punishments:** **2019 Amendment** introduced more stringent punishment including **death penalty for committing sexual crimes on children**.
  - **Mandatory reporting:** Anyone who has knowledge of sexual offenses against children must report to the authorities; **failure to report is punishable**.
    - > Punishment for false complaint or false information.
  - **Presumption of guilt:** **Burden of proof** lies on the accused rather than the victim in certain circumstances.
  - **Speedy trials:** The **evidence** of the child shall be **recorded within 30 days** of the Special Court taking cognizance of the offence and **reasons for delay**, if any, shall be recorded by the Special Court; the **disposal** of the case is to be done **within 1 year**.

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## Other Measures to protect Children



### CONSTITUTIONAL

- > Article 15(3) (empowers the State to make special provisions for children)
- > Article 21A (right to free education for all children aged 6 to 14)
- > Article 24 (Prohibits the employment of children under the age of 14 in factories, mines)



### LEGAL

- > Juvenile Justice (Care and Protection of Children) Act, 2015
- > Information Technology (IT) Act, 2000: Provides the legal framework for cyber laws in India. E.g. cyber-crime, harassment and content regulation.
- > Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021: Aims to curb the circulation of CSEAM on social media platforms through age restricted access for minors, reporting mechanisms etc.
- > Bharatiya Nyaya Sanhita: Chapter V deals with offences against woman and child, especially sexual offences.



### POLICY

- > National Action Plan for Children 2016



### GLOBAL

- > UN Convention on the Rights of the Child (CRC), 1990.
- > INSPIRE Initiative: Seven Strategies for Ending Violence Against Children led by the WHO and UNICEF.
- > UNICEF's Safe to Learn Program
- > 1st Global Ministerial Conference on Ending Violence Against Children (2024) in Bogotá (Colombia) hosted by the Colombia and Sweden, in partnership with UNICEF, the WHO and the UN Special Representative of the Secretary General



### INITIATIVES

- > Operation AAHT: Nationwide operation to curb human trafficking.
- > Operation Nanhe Farishtey: Mission dedicated to rescuing children in need of care and protection across various Indian

### 5.1.4. SOCIAL MEDIA ADDICTION IN CHILDREN

#### Why in the news?

Australia has become the first country to pass a law banning social media use for children under the age of 16.

#### Key Provisions of the Online Safety Amendment (Social Media Minimum Age) Bill 2024

- **Minimum Age Requirement:** Require age-restricted social media platforms to take reasonable steps to prevent Australians under 16 years old from having accounts.
- **Responsibility of Social Media Providers:** Companies are responsible for ensuring children under the minimum age cannot access their platforms.
- **Fines for Non-Compliance:** Impose maximum penalties of up to \$49.5 million for a breach of the minimum age obligation.

#### Child Safety Digital Well-being on Social Media Platforms

- 71 % of youth (aged 15-24) are online compared with 48% of total population globally. (UNICEF)
- One in three young people in 30 countries report being cyberbullied, with 1 in 5 skipping school because of it.

## Initiatives for Digital wellbeing of Children

### Legal

- **Digital Personal Data Protection Act, 2023:** Verifiable consent needed from the legal guardian before processing the personal data of a child.
- **Section 67B of the Information Technology (IT) Act, 2000:** Provides stringent punishment for publishing, transmitting, or viewing Child sexual abuse material online.
- **The National Commission of Protection of Child Rights (NCPCR):** It has established an online complaint management system.

### Initiatives

- **Manodarpan Initiative:** Launched by the Ministry of Education to provide psychosocial support to students for Mental Health and Emotional well-being.
- **Cyber Crime Prevention against Women and Children (CCPWC) scheme:** Launched by the Ministry of Home Affairs to provide a safe and secure online environment for children.
- **Kerala's Digital De-Addiction (D-DAD)** centres offer free counseling for kids struggling with digital addiction.

### Global

#### European Union (EU)

- General Data Protection Regulation (GDPR): Parental consent is required for the processing of personal data for children under the age of 16, though the member states can lower that limit to 13.
- Digital Services Act (DSA): Makes digital companies liable for disinformation, shopping scams, child abuse etc.

#### USA

- Children's Online Privacy Protection Act (COPPA) (1998): Mandates parental consent for collecting personal data from children under 13.
- Children's Internet Protection Act (CIPA) (2000): Restricts inappropriate content in schools and libraries.

#### UK

- Online Safety Act (2023): Sets tougher standards for social media platforms including on appropriate age restrictions.

## 5.2. OTHER VULNERABLE SECTIONS

### 5.2.1. SENIOR CARE REFORMS IN INDIA

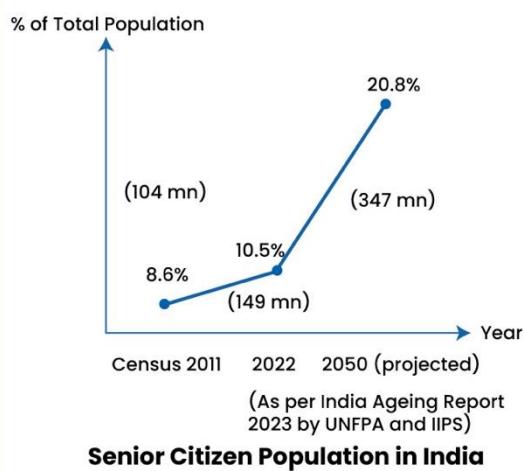
#### Why in the News?

NITI Aayog released a position paper titled “**Senior Care Reforms in India: Reimagining the Senior Care Paradigm.**”

#### Senior care – An overview

- 58% of the total number of elderly are **women**.
- **7 out of 10** elderly persons reside in **rural areas**.
- **Health:** 75% of the elderly have one or more **chronic diseases** and around **20%** have **mental health** issues.
- **Pension:** 78% of the elderly population without a pension.

#### Demographic Shift: Ageing in India



## Status of Ageing

- Global population aged 60+ was **1 billion in 2020**, projected to reach **2.1 billion by 2050**.
- Population aging, initially seen in **high-income countries like Japan**, is accelerating in **low- and middle-income countries**, where two-thirds of the elderly will live by **2050**.

## Senior Care Support Framework in India



### Constitutional Provisions

- **Article 41:** The State shall make effective provisions for securing the right to work, to education, and to public assistance in cases of unemployment, old age, sickness, and disablement, etc.
- **7th Schedule of the Indian Constitution:** Provisions related to old age pension, social security and insurance, and economic and social planning.



### Legal Provisions

- **Maintainence of aged parents:** Obligatory under Section 20 of the Hindu Adoption and Maintenance Act, 1956; Elder parents can claim maintenance from children under Section 125 of the CrPC.
- **Maintenance and Welfare of Parents and Senior Citizens Act, 2007:** Makes maintenance and welfare of senior citizens a legal obligation for children and relatives.
- **NALSA (Legal Services to Senior Citizens) Scheme, 2016.**



### Policy Support

- **National Policy for Older Persons (NPOP), 1999.**
- **National Social Assistance Program (NSAP):** Indira Gandhi Old Age Pension Scheme (IGNOAPS)
- **National Programme for the Health Care for the Elderly (NPHCE), 2010.**



### Welfare Schemes

- **Pradhan Mantri Vaya Vandana Yojana (2015):** Senior citizens pension scheme.
- **Atal Vayo Abhyudaya Yojana (AVYAY):** Integrated Program for Senior Citizens.
- **Rashtriya Vayoshri Yojana (2017):** To provide assisted-living devices and support services to senior citizens (Below Poverty Line category).
- **Senior Able Citizens for Re-Employment in Dignity (SACRED portal):** To connect senior citizens with job providers in the private sector.
- **The Senior Ageing Growth Engine (SAGE) initiative:** Promotion of senior care products and services.
- **Others:** Vayoshreshtha Samman; Accessible India Campaign (Sugamya Bharat Abhiyaan), etc.



### Global

- **UN - Madrid International Plan of Action on Ageing (2002):** Promotes better quality of life for older adults.
- **WHO Global Strategy (2016–2020):** Focuses on healthy aging and age-friendly environments.
- **UN SDGS:** Address aging through Goals 3 (Health) and 10 (Reduced Inequality).
- **UN Decade of Healthy Ageing (2021–2030)**

## South Korea Becomes ‘Super-Aged’ Society

Recently, South Korea has formally declared that it has **become a “super-aged” society** as the share of its **population aged 65 or over surpassed 20%**.

- This makes South Korea only the **second country in Asia, after Japan**, to become a ‘Super-Aged’ Society.
- According to the UN, a country is defined as “aging” when the share of **people aged 65+** is above **7%**, “aged” when it is **14% or more**, and “super-aged” when it exceeds **20%**.

## 5.2.2. MANUAL SCAVENGING

### Why in the News?

Supreme Court (SC) sought an action taken report on each of its directions issued on **Dr Balram Singh V. Union of India & Ors (2023) case**.

## Directions issued by SC

- Directed **the Union and States** to take measures to eradicate manual scavenging and hazardous cleaning in the country.
- Ensure **full rehabilitation** (including employment to the next of kin, education to the wards, and skill training) of sewage workers, and kin of those who die.
- Enhances the compensation payable for sewer deaths** to **₹30 lakh** from the earlier ₹10 lakh.
  - Compensation for **permanent disablement**: ₹20 lakhs; other **disablement**: ₹10 lakhs.
- Conduct a comprehensive **national survey** within one year to identify manual scavengers.
- NCSK, NCSC, NCST and the Union government are required to **coordinate and prepare training and education modules**, under the **2013 Act**.

## About Manual Scavenging

- Defined under **Prohibition of Employment as Manual Scavengers and their Rehabilitation (PEMSR) Act, 2013**.
- Manual scavenging** refers to the practice of manually cleaning, carrying, or handling human excreta from insanitary latrines, open drains, or pits.
- It is officially banned by the **Employment of Manual Scavengers and its Prohibition Act (1993)**.
- Current Status:** India had **58,098** manual scavengers (**75% women**) in **2021**. Between **2018-22**, **339** died cleaning sewers and septic tanks.

## Government Steps to end manual scavenging



### Constitutional Provisions

- > Article 17 (abolition of untouchability)
- > Article 21 (Right to life with dignity)



### Legislative Measures

- > **Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013:** Every offence under act is a cognizable and non-bailable.
- > **Employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act, 1993**
- > **Others:** The Protection of Civil Rights Act, 1955; The SC/ST (Prevention of Atrocities) Act, 1989; etc.



### Schemes

- > **National Action for Mechanised Sanitation Ecosystem (NAMASTE) scheme (2023):** A Central Sector Scheme, to ensure safety, dignity and rehabilitation of hazardous sanitation workers. [Tenure: 2023-24 to 2025-26]
  - > **Nodal Ministry:** Ministry of Social Justice and Empowerment (MoSJE) and Ministry of Housing and Urban Affairs (MoHUA)
  - > Implemented by **National Safai Karamchari Financial Development Corporation**.
- > **Swachh Bharat Mission (Urban 2.0):** Funds (Rs 371 Cr) to be provided to smaller towns to improve mechanization.



### Institutions

- > **National Commission for Safai Karamcharis (NCSK):** Initially created as a statutory body in 1994 for three years, became a non-statutory body under MoSJE.
- > **National Safai Karamchari Financial Development Corporation (1997):** Non-profit company under MoSJE to uplift Safai Karamcharis through loan and non-loan based schemes.

### 5.2.3. PRADHAN MANTRI VANBANDHU KALYAN YOJANA (PMVKY)

#### Why in the News?

Pradhan Mantri Vanbandhu Kalyan Yojana (PMVKY), a landmark initiative **launched in 2014** as a comprehensive strategy to **address the unique challenges** faced by tribal communities in India completes 10 years.

#### Pradhan Mantri Vanbandhu Kalyan Yojana (PMVKY)

Center Sector Scheme for Tribal Development



**Implementation: Ministry of Tribal Affairs (MOTA)**

**Aim:** Improve socio-economic conditions of tribal populations and preserve their cultural heritage and identity

#### Key Initiatives Under PMVKY



##### Pradhan Mantri Adi Adarsh Gram Yojana

Focuses on critical sectors including:

- Road and telecom connectivity
- Education and health services



##### Development of Particularly Vulnerable Tribal Groups (PVTGs)

Pradhan Mantri PVTGs Development Mission launched in 2023-24.

Provides essential amenities like housing, sanitation, education etc.



##### Support to Tribal Research Institutes

Facilitates research and documentation efforts related to tribal communities



##### Other Key Programs

- Pre-Matric Scholarships
- Post-Matric Scholarships
- Administrative Assistance for Project Management Units

#### Tribals in India:

- Scheduled Tribes (ST) constitute approximately **8.6% of population of India. (Census 2011)**
- There are over **730 Scheduled Tribes** notified under **Article 342** of the Constitution of India.
  - There're **75 identified PVTGs in 18 States**, and **Union Territory of Andaman & Nicobar Islands**.

#### Other Steps for Tribal Welfare

- **Eklavya Model Residential Schools:** Established in 1997-98 to provide quality education to Scheduled Tribe students from classes VI to XII.
- **Pradhan Mantri Janjatiya Vikas Mission (PMJVM):** By merging two existing schemes- "**Mechanism for Marketing of Minor Forest Produce through Minimum Support Price**" and the "**Institutional Support for Development and Marketing of Tribal Products.**"
  - **Implementing Agency:** Tribal Co-Operative Marketing Development Federation of India Limited (TRIFED)

### 5.3. EDUCATION & HEALTH

#### 5.3.1. ONE NATION ONE SUBSCRIPTION SCHEME

#### Why in the news?

The Union Cabinet approved the '**One Nation, One Subscription**' (ONOS) scheme to provide **equitable access** to scholarly journals in all public institutions.

## About One Nation One Subscription Scheme

- **Aim:** To provide **country-wide access** to international high impact scholarly **research articles and journal publications** to **students, faculty and researchers** of all government-managed Higher Education Institutions and Research & Development Institutions.
- **Objective:** To acquire **national licenses** for e-journal/database subscriptions from most of the prominent journal publishers.
- It is a **Central Sector Scheme** under **Ministry of Education**.
- **Financial allocation:** Rs. **6,000 crores** for **2025-2027**.
- **Implementation:** The **Department of Higher Education (DHE)** will have a unified **portal “One Nation One Subscription” for institutions to access the journals.**
  - National subscription-based access to journals is **coordinated by Information and Library Network (INFLIBNET) Centre**.
    - > It is an **autonomous inter-university centre** of the University Grants Commission (UGC), Gandhinagar, Gujarat.
  - **ANRF** will **periodically review** the **usage** of ONOS and **publications of Indian authors** of these institutions.

### 5.3.2. NATIONAL TESTING AGENCY (NTA)

#### Why in the news?

Radhakrishnan panel recommends **restructuring of National Testing Agency**.

#### About Radhakrishnan panel

- **Seven-member panel** was appointed in **June 2024** following complaints of **question paper leak** in Common University Entrance Test-Undergraduate (**CUET-UG**).
- **Recommendation of panel for Exam Reforms:**
  - **DigiExam on lines of DigiYatra:** For comprehensive authentication to prevent impersonation.
  - **Restructuring of NTA:** To conduct higher education entrance exams only.
  - **Institutional linkage with state/ district authorities:** To identify suitable testing centres, prepare a list of suspicious elements and keep a close eye on them etc.
  - **Mobile Testing Centres:** To facilitate aspirational candidates from rural, remote and thinly populated areas.

#### About NTA

- **Nodal Ministry:** Set up by **Ministry of Education** in **2017** as a premier, specialist, autonomous and self-sustained testing organization.
  - It is registered as a **Society** in **2018** under **Societies Registration Act (1860)**.
- **Aim:** To conduct entrance examinations for admission/fellowship in higher educational institutions.
- **Mission:** To improve **equity and quality in education** by administering research based valid, reliable, efficient, transparent, fair and international level assessments.

#### Objectives of National Testing Agency



Conduct efficient and **international standards tests** to assess candidates' competency for admission, and recruitment purposes



Undertake **research on educational, professional and testing systems** to identify gaps in knowledge systems and take steps for bridging them



Identify **experts and institutions** in setting examination questions



Produce and disseminate **information and research** on education and professional development standards

- **Functions:**
  - To establish **strong R&D culture** as well as a **pool of experts** in different aspects of **testing**.
  - To **undertake any other examination** that is entrusted to it by Ministries/Departments of Government of India/State Governments.
  - To undertake **reforms and training of school boards** to ensure **testing standards** are comparable with the entrance examinations.

### 5.3.3. THE RIGHT OF CHILDREN TO FREE AND COMPULSORY EDUCATION (RTE) ACT, 2009

#### Why in the News?

Ministry of Education **scraps ‘no detention’ policy** for Classes 5 and 8 for the schools under the Centre.

#### Key points regarding the new policy

- The no-detention policy was **part of the Right to Education (RTE) Act, 2009** aiming to reduce dropout rates but **abolished in 2019** (implementation delayed).
- The new policy allows schools to fail students who do not pass their year-end exams under the **Right of Children to Free and Compulsory Education (RTE) (Amendment) Rules, 2024**.
  - If a student fails to meet promotion criteria, they will receive **additional instruction** and a chance for **re-examination within two months** from result declaration.
  - **No child can be expelled** from school until they complete elementary education.
- **16 states and 2 Union Territories** have already adopted this policy, as education is a **State subject**.

#### About Right to Education in India

- **Article 21-A** (inserted by **86<sup>th</sup> Amendment, 2002**): Fundamental right to **free and compulsory education** to every child of the age **6-14 years**.
- **RTE Act, 2009**
  - The Act aims at realizing the fundamental right guaranteed by **Article 21-A**.
  - **Key Provisions of the Act:**
    - > It specifies **minimum norms in elementary schools** like **Pupil Teacher Ratios (PTRs)**, infrastructure, school-working days, teacher-working hours.
    - > Provision for a **non-admitted child to be admitted** to an age-appropriate class and **special training of school drop-outs**
    - > **Government schools:** To provide **free education** to all children and the schools will be managed by **School Management Committees (SMC)**.
    - > **Private Schools:** Reserve **25% of seats** for children belonging to **disadvantaged sections**. (reimbursed by the state as part of the **public-private partnership plan**).
    - > **Prohibition of deployment of teachers for non-educational work**, other than decennial census, elections, and disaster relief.
    - > **Prohibits physical punishment** and mental harassment; **screening** for admission of children; **capitation fee**; **private tuition by teachers** and **running of schools without recognition**.
    - > **No child shall be held back, expelled, or required to pass a board examination** until the completion of **elementary education**.
    - > Education being a **concurrent subject**, the Act lays down **specific responsibilities for the centre, state and local bodies** for its implementation.
    - > The **National Council of Educational Research & Training (NCERT)** is the academic authority to lay down the **curriculum** and **evaluation procedure** for elementary education.

#### UDISE+ 2023-24 Report on School Education

Ministry of Education released Unified District Information System for Education Plus (UDISE+) 2023-24 Report on School Education.

- UDISE+ system of **online data collection from schools** was developed by **Department of School Education & Literacy** in the **2018-19**.

- It collects information through an **online Data Collection Form** on parameters ranging from school, Infrastructure, teachers, enrolments, examination results etc.
- UDISE+ has attempted collection of **national level individual student wise data** for the first time in 2022-23 to **align it with recommendations of NEP 2020** as compared to school-wise comparable data till 2021-22.

#### **Key findings of UDISE+ 2023-24**

- **Student Enrolments:** Overall dip in school enrolments, falling from 25.18 crore in 2022-23 to **24.8 crore** in 2023-24. (Reduction of **1.55 crore students** (nearly 6%) from 2018-19 to 2021-22)
- **Dropouts:** Zero-dropout rate at **Foundational level** (pre-primary to Class 2) is due to admission of students from Anganwadi, standalone private pre-primary school directly to Class I in recognized schools.
  - Maximum dropout rates were at **Secondary level (Classes 9 to 12)**.
  - Bihar, Uttar Pradesh and Maharashtra saw among **highest drop in enrolments**.
- **Gross Enrollment Ratio (GER):** Minor dip at all levels except at the secondary level.
  - GER compares **enrolment** in a specific level of education to **population of age group** that is age-appropriate for that level of education.

### **5.3.7. PM-VIDYALAXMI SCHEME**

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

Union Cabinet approved **PM-Vidyalaxmi Scheme** to provide **financial support to meritorious students** for **higher studies**.

#### **PM-Vidyalaxmi Scheme**

- It is a **Central Sector scheme** in line with the **National Education Policy, 2020** recommendation of **financial assistance** to meritorious students in **both public and private Higher education institutions**.
- **Objective:** Providing **collateral free, guarantor free loans from banks and financial institutions** to cover full amount of tuition fees and other expenses related to the course in higher education.
- **Eligibility:** Any student who gets admission in **Quality Higher Education Institution (QHEIs)**.
- **Coverage:** **860 qualifying QHEIs (Based on NIRF ranking)**, covering more than 22 lakh students every year.
- **Benefits:** Loan amounts **up to Rs.7.5 lakhs** will be provided a **75% credit guarantee** by the **Government of India**.
  - For students with **up to Rs. 8 lakhs** annual family income, **3% interest subvention** for loan **up to Rs.10 lakhs**.
  - This is in addition to the **full interest subvention** already offered to students with **up to Rs. 4.5 lakhs annual family income**.
- **Unified portal “PM-Vidyalaxmi”:** For simple, transparent, student-friendly and inter-operable system that will be **entirely digital**.
  - Payment of interest subvention will be made through **E-voucher and Central Bank Digital Currency (CBDC) wallets**.
- The Scheme is applicable for all Scheduled Banks/Regional Rural Banks (RRBs)/Cooperative Banks.
- It will supplement **Pradhan Mantri Uchchatar Shiksha Protsahan (PM-USP) Scheme**.
  - **It provides a maximum of 82,000 fresh scholarships per annum to meritorious students** from poor families to meet a part of their day-to-day expenses while pursuing higher studies.
  - **Components:** Central Sector Interest Subsidy (CSIS) and Credit Guarantee Fund Scheme for Education Loans (CGFSEL).

### **5.3.8. OTHER IMPORTANT NEWS**

#### **5.3.8.1. UGC DRAFT (MINIMUM STANDARDS OF INSTRUCTION FOR THE GRANT OF UG AND PG) REGULATIONS, 2024**

UGC Draft (Minimum Standards of Instruction for the Grant of UG and PG) Regulations, 2024 released in exercise of the powers conferred by the **University Grants Commission Act, 1956**.

## About the Regulations

- **Aim:** To match **global standards in Higher education** alongside upholding **inclusivity and adaptability** to diverse learner needs, in line with **NEP, 2020**.
- **Major Changes proposed:**
  - **Biannual admission** in Higher Education Institutes (HEIs).
  - **Flexibility:** Irrespective of disciplines opted in schooling (12th grade), a student is eligible for **admission in any discipline** based on a National/University level **entrance examination**.
    - > Pursuing **2 UG/PG programmes simultaneously** with **flexibility** in terms of change of **discipline/institution/mode** of learning.
    - > **Multiple entry and exit options.**
  - **Recognition of Prior Learning (RPL):** Admission based on RPL i.e. learnings outside formal education, training at workplace or community post-assessment.
  - **Credit structure: Minimum 50% credits** to be earned from the **discipline** with the **remaining 50%** to be earned from **Skill Courses** and **Apprenticeships**. **Provided SOP for Accelerated Degree Programme (ADP) and Extended Degree Programme (EDP)**, in line with **National Credit Framework (NCrF)**.
    - > **ADP** allows students to complete the degree in a **reduced time by earning additional credits per semester**, while **EDP** enables an **extended timeline** with fewer credits per semester.
    - > It is Applicable to **only UG level**, to be opted at the **end of 1st or 2nd semester only**.

### 5.3.8.2. STRENGTHENING TEACHING-LEARNING AND RESULTS FOR STATES (STARS) PROGRAM

World Bank releases “**Jobs at Your Doorstep**” Report, commissioned as a part of **STARS Program**.

#### About STARS Program

- It is a **centrally sponsored scheme** supported by the **World Bank** and approved in **2020** for five years i.e. till **FY 2024-25**.
- Implemented in **six states** i.e. Himachal Pradesh, Maharashtra, Odisha, Rajasthan, Madhya Pradesh, and Kerala.
- Aim: To **improve quality and governance of school education** with focus on early education, learning assessments, teacher performance, school-to-work transitions, and decentralized management.
- Aligned with the **Samagra Shiksha scheme**, it also supports operationalization of the NEP, 2020.

### 5.3.8.3. KENDRIYA VIDYALAYAS AND JAWAHAR NAVODAYA VIDYALAYAS

Cabinet Committee on Economic Affairs approved setting up of 85 new **Kendriya Vidyalayas** (KVs) and 28 new **Jawahar Navodaya Vidyalayas** (JNVs).

#### About KVs

- Set up under **Kendriya Vidyalaya Scheme** (Central Sector Scheme) approved in **1962** on the recommendations of the **Second Central Pay Commission**.
- **Mission:**
  - To cater to **educational needs of wards of transferable and non-transferable employees of Central Government** and for **children of floating population** including those living in remote and undeveloped locations;
  - To develop the **spirit of national integration** among children.
- **Key Features:**
  - **Common textbooks, bilingual medium** of instruction, **co-educational**, comprehensive schools.
  - All KVs are affiliated to the **Central Board of Secondary Education (CBSE)**.
  - **No tuition fee** for boys up to class VIII, girls up to class XII, SC/ST students and children of KVS employees.

- **Kendriya Vidyalaya Sangathan**
  - **Registered Society** under the Societies Registration Act (XXI of 1860) in 1965 wholly funded by the Government of India.
  - **Aim:** To provide, establish, endow, maintain, control and manage the KVs located all over India and abroad.

#### About JNVs

- Set up under **Navodaya Vidyalaya Scheme** (Central Sector Scheme) as envisaged under the **National Policy on Education, 1986**.
- JNVs are **fully residential, co-educational schools** providing good quality modern education from **Class VI to XII** to the talented children, **predominantly from the rural areas**.
- As per policy, **one JNV** is to be established in **each district**.
- **Navodaya Vidyalaya Samiti:** Autonomous body under Ministry of Education to establish, endow, maintain, control, and manage NVs.

**Note:** Almost all KVs and JNVs have been designated as **PM SHRI schools** (exemplar schools that showcase the National Education Policy 2020).

#### 5.3.8.4. PATIENT SAFETY RIGHTS CHARTER

The Charter was developed by World Health Organisation (WHO) at Global Ministerial Summit on Patient Safety.

##### Patient Safety Rights Charter

- Developed within the framework of **World Patient Safety Day 2023** under theme “**Engaging patients for patient safety**”.
- **Aim:** Provide healthcare workers, leaders and governments with the **tools to build patient-centric healthcare systems, improving patient safety and reducing risk of harm**.
- It is intended to support implementation of **Global Patient Safety (GPS) Action Plan 2021–2030**. (India is a signatory)

#### Patient Safety Initiatives: India and Global Efforts

##### Patient Safety Initiatives



- > National Patient Safety Implementation Framework (2018-2025)
- > Under National Health Mission
  - > National Quality Assurance Standards
  - > Kayakalp (cleanliness in healthcare)
  - > LaQshya (Labour room quality improvement to reduce MMR/NMR)
- > Pharmacovigilance Programme of India



- > WHO World Alliance for Patient Safety
- > Global Patient Safety Challenge
- > Global Patient Safety Action Plan 2021-30

#### 5.3.8.5. CHARAK (COMMUNITY HEALTH: A RESPONSIVE ACTION FOR KOYLANCHAL) INITIATIVE

Under guidance of Ministry of Coal, Singrauli-based **Coal India arm Northern Coalfields Limited** has launched ‘CHARAK’ initiative.

##### About CHARAK Initiative

- **CHARAK**- “Community Health: A Responsive Action for Koylanchal”, is an innovative **health-centric CSR Initiative**.

- Aim: Providing **free treatment for patients** belonging to Economically Weaker Sections **suffering from identified Life-threatening diseases in Singrauli region** (covers MP and UP).
  - Singrauli is situated at **northern-most part of Son Mahanadi Master Basin** in Central India.
- Under this, Malignancy, TB and related complications, HIV and related complications, Organ Transplant, Neurological Disorders, Connective Tissue disorders, etc. are covered.

## 5.4. ORGANIZATIONS IN NEWS

### 5.4.1. WORLD URBAN FORUM (WUF)

The **10-point Cairo Call to Action** was adopted at the 12<sup>th</sup> edition of the **World Urban Forum (WUF)** held in Cairo (Egypt).

#### About WUF

- Established in **2001** by **United Nations (UN)**.
- **Convened by UN-Habitat**, as a high level, open and inclusive platform for addressing the challenges of **sustainable urbanization**.
- **Aim**: To address issues of rapid urbanization and its impact on communities, cities, economies, climate change and policies.
- The first WUF was held in **Nairobi, Kenya** in **2002**.

#### About Urbanisation

- **World**: Cities are projected to house **70% of the world's population by 2050**.
- **India**: By **2036**, India's towns and cities will be home **40%** of the population, up from **31% in 2011**.

### 5.4.2. UNITED NATIONS ALLIANCE OF CIVILIZATIONS (UNAOC)

The **10th Global Forum of United Nations Alliance of Civilizations (UNAOC)** adopted **Cascais Declaration** in Portugal.

#### About Cascais Declaration

- **Objective**: To promote principles of **tolerance** and **peaceful existence** and build bridges between cultures.

#### About UNOAC

- Established in **2005** to serve as a **soft-power political tool** of UN Secretary-General for **conflict prevention & conflict resolution**.
- **Five Priority Areas for action**: Education, Youth, Migration, Media, and Women as peace mediators.
- **Objectives**:
  - Facilitate the **global conversation** on the challenges and opportunities of **intercultural interactions**, promoting innovation to uphold **mutual respect and cooperation**.
  - Prevent intercultural tensions and crises; combat **stereotypes, misperceptions, discrimination and xenophobia**.
- **Group of Friends**: A community of countries and international organizations which actively promotes the UNAOC's objectives. It consists of 160 members (**India** is a member).

## 5.5. MISCELLANEOUS

### 5.5.1. 'RIGHT TO DISCONNECT' IN INDIA

#### Why in the News?

Recently, various sections in India have raised voices on the **need to bring a law on 'Right to Disconnect'** in the backdrop of **death of a young female employee due to work stress**.

### 'Right to Disconnect' in India

- 'Right to Disconnect' means that **employees are not obliged to reply to calls** made by employers after work hours and such an employee shall not be subject to any disciplinary action by employers.
- Currently, India **lacks specific laws** recognizing right to disconnect from work.
- **Constitutional Provisions:**
  - Article 38 (directs state to promote welfare of people)
  - Article 39(e) (directs state to secure strength and health of its workers).
- **Judicial pronouncements:**
  - **Vishakha v State of Rajasthan, 1997:** On safe working environment for women.
  - **Ravindra Kumar Dhariwal and Ors v. UoI, 2021:** Accommodate persons with disabilities.
- **Recent Initiative:** In 2018, a **Private Member's Bill** was introduced in Lok Sabha, which aimed to delineate the right to disconnect from work after working hours.

### How the 'Right to Disconnect' is implemented globally?



**France's Approach**  
Employees are not obligated to work from home or take work home, ensuring work-life balance.



**Portugal's Law**  
Prohibits employer contact outside work hours, promoting employee privacy



**Spain's Policy**  
Allows public workers and employees to disconnect devices, enhancing personal time.



**Australia's Right**  
Parliament grants employees the right to disconnect, supporting work-life boundaries.

### 5.5.2. CONJUGAL RIGHTS

#### Why in the News?

SC recently ruled that proceedings on **restitution of conjugal rights** and **those on maintenance** are entirely independent of each other.

#### About Conjugal rights

- **Conjugal rights are rights created by marriage**, i.e. right to live together, right of the husband or the wife to the society of the other spouse.
- **Law recognises these rights**, both in personal laws dealing with marriage, divorce etc, and in criminal law requiring payment of maintenance and alimony to a spouse.
- **Hindu Marriage Act, 1955:** Deals with **conjugal rights**, which says if either husband or wife without reasonable excuses withdraws from society of other, aggrieved party may approach court for **restitution of conjugal rights**.
  - Similar provisions exist in **Muslim personal law** as well as the **Divorce Act, 1869**, which governs Christian family law.

### 5.5.3. OTHER IMPORTANT NEWS

#### 5.5.3.1. DOMESTIC MIGRATION IN INDIA

Report titled '**400 Million Dreams**' released by Economic Advisory Council to the Prime Minister (**EAC-PM**) highlights the **changing patterns of migration** in India since **2011 Census**.

#### Internal/Domestic migration

- It refers to movement of people **within a country** from one region to another.
  - **Push factors:** Lack of job opportunities, natural disaster, lack of quality education and healthcare, etc.
  - **Pull factors:** Economic opportunities, higher standard of living, peace and stability, etc.



## Initiatives for Welfare of Domestic Migrants in India



Inter-State Migrant (Regulation of Employment and Conditions of Service) Workmen Act, 1979



Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PMJAY)  
Rs. 5 lakh coverage for migrant workers



One Nation One Ration Card with nationwide portability

### Key findings of report

- Reduction in Domestic Migrant Numbers:** By about 12% from 45.57 crore to 40.20 crore in 2023.
  - Migration rate dropped from ~38% to ~29% (2023).
- Migration Dynamics:**
  - Short-distance migration is predominant,**
  - Migration originates primarily from areas around **major urban centers** like Delhi, Mumbai, etc.

### 5.5.3.2. INTERNATIONAL MIGRATION

4th edition of **ILO Global Estimates on International Migrants in the labour force** released.

#### International Migrants

- International migrants** are defined as persons who are part of the resident population of a country other than their country of birth (foreign-born residents).
- It also includes **refugees, asylum seekers**, and related groups.
- Key Finding of the report:**
  - International migrants reached **284.5 million (2022)**, 255.7 million of them belong to the **global working-age population** (aged 15 and over).
    - Women constituted 38.7 % while men were 61.3 % of international migrants in the labour force.
    - They accounted for 4.7 % of the global labour force in 2022.
    - Unemployment rate** for international migrants was **higher** than for non-migrants.

## Key Initiatives taken for International Migrants



**International Organization for Migration (IOM):** Established in 1951, is the leading inter-governmental organization in the field of migration.



**International Labour Organization (ILO):** Advocates for the rights of migrant workers and promotes fair labour migration practices through conventions.



**Migrant Workers Convention (International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families, 1990)**



**Global compact for safe, orderly and regular migration (2018):** 1st Intergovernmental agreement covering all dimensions of international migration.

### 5.5.3.3. WFP GLOBAL OUTLOOK FOR 2025

#### Why in the news?

World Food Programme (WFP) released 'Global Outlook for 2025' Report providing updates on **global food security** solutions to respond to the crises related to **hunger**.

#### Key Highlights

- **Global Hunger Crisis:** An estimated **343 million people** across **74 countries** are **acutely food insecure**.
  - This is a **10% increase** from last year.
- **Key Factors:** Armed violence is a key driver in 14 out of 16 **hunger hotspots** like Sudan, Gaza, etc.
  - Other factors: **Food Inflation, extreme weather events** etc.
  - **65 %** of acutely food-insecure people live in **fragile/conflict-affected** situations.
- **India Specific:**
  - **India** is home to a **quarter** of all **undernourished** people worldwide.
    - > Around **21.25 %** of population lives on **less than US\$1.90 a day**.
  - **38% of children** aged 6-59 months are grappling with **chronic malnutrition**.



**VISION IAS**  
INSPIRING INNOVATION

**CSAT**

**CRASH COURSE PRELIMS 2025**

**Start**

English Medium | Hindi Medium

21 January, 1 PM | 30 January, 1 PM

(Offline/Online)

(Approach is to revise and strengthen fundamental concepts, enhance problem-solving abilities, hone analytical skills, foster critical thinking, and improve comprehension skills for Prelims 2025.)

**PROGRAM OUTCOMES**

 Efficient Time Management and Exam-taking Strategies	 Problem-Solving Techniques Including Tips and Tricks	 Proficiency in Interpreting and Analyzing Data Presented in Various Formats	 Firm command on Mathematical Concepts and Development of Quantitative aptitude
 Reading Comprehension and Language Proficiency	 Logical and Analytical Thinking Skills	 Reinforced Learning Through Regular Practice and Tutorials	 Development of Confidence to Tackle the Exam

# 6. SCIENCE AND TECHNOLOGY

## 6.1. BIOTECHNOLOGY

### 6.1.1. GENOME INDIA PROJECT

#### Why in the News?

Genome India Project (GIP) has achieved a significant milestone by making the genomic data of 10,000 individuals publicly accessible.

#### More on the News

- Whole genome sequencing data for 10,000 individuals have been archived at **Indian Biological Data Centre (IBDC)**.
  - IBDC, Faridabad is India's **first national life science data repository**, supported by Department of Biotechnology (DBT).
- Framework for Exchange of Data Protocols (FeED)** and the **IBDC Portals** were also launched.
  - 'Framework for Exchange of Data (FeED)' Protocols is under **Biotech-PRIDE Guidelines** and it ensures high-quality, nation-specific data sharing in a transparent, fair, and responsible manner.

#### About Genome India Project

- Genesis:** Initiated in 2020 by DBT with **collaborations of 20 institutions** to map **India's genetic diversity**.
- Primary objective:** Build a **comprehensive catalogue of genetic variations** that reflect unique diversity of Indian population.
- Key Achievements:**
  - 20,000 samples collected from 83 diverse populations, establishing a bio bank.
  - 10,000 genomes sequenced in first phase, creating a reference genome for India.

### Other Key Initiatives for Genome Sequencing



	<b>IndiGen program:</b> Initiated by the Council of Scientific and Industrial Research (CSIR).
	<b>'One Day One Genome' Initiative:</b> Initiated by DBT
	<b>Human Genome Project (HGP):</b> An international collaboration that aimed to map and sequence the entire human genome.
	<b>100,000 Genomes Project:</b> England's very first initiative sequencing 100,000 genomes
	<b>International HapMap Project:</b> Analyzing over a million variants in African, Asian, and European ancestry groups.

To know more about Genome Sequencing, refer to Article 1.1. Genes and Related Concepts in PT365 Science & Technology 2025.

#### Related News

##### Next Generation DNA Sequencing

- Pashmina Certification and Next Generation DNA Sequencing Facilities inaugurated at Wildlife Institute of India (WII).
- About Next Generation DNA Sequencing**
  - Next-generation sequencing (NGS):** A modern method of analyzing genetic material that can rapidly sequence large amounts of DNA or RNA.

- **Benefit:** NGS can sequence an entire genome within days, compared to months with earlier techniques.
- **Key applications of NGS**
  - > **Microbiology:** Helps in pathogen identification, outbreak tracking, and studying antimicrobial resistance etc.
  - > **Medical Research & Gene Therapy:** Identify cancer types, replace defective genes for inherited diseases etc.
  - > **Other: Wildlife conservation** (assessment of population genetic health, etc.), **Agriculture** (Sequence crop genomes to enhance drought resistance), etc.

## 6.1.2. KEY CONCEPTS/TERMS IN NEWS

### 6.1.2.1. EXTRACHROMOSOMAL DNA (ecDNA)

Studies reveal how **ecDNA** drives **cancer progression** and **drug resistance**.

#### About Extrachromosomal DNA (ecDNA)

- **ecDNA** are **small circular DNA fragments that float freely in the nucleus**, separate from chromosomes.
- **Genesis:** Formed due to DNA damage (e.g., chromothripsis) or errors during DNA replication.
- **Role of ecDNA in Cancer:**
  - **Found in up to 90% of certain tumour types**, including brain tumours, liposarcomas, and breast cancers.
  - ecDNA often contains multiple **oncogenes**, **promoting tumour growth and drug resistance**.
    - > **Oncogenes** are mutated genes capable of causing cancer that are required to activate tumour growth.

### 6.1.2.2. SELECTIVE SILENCING

Researchers at Columbia University have revealed impact of selective silencing on disease outcomes.

#### About Selective Silencing

- Every cell in the body (except sperm and eggs) contains two copies of each gene (one inherited from each parent).
- However, certain cells can exhibit a bias, selectively inactivating one parent's copy of a gene, i.e., selective silencing.
  - Silencing means blocking a specific gene's message.
- This **selective silencing could be the reason** why some individuals carrying genes linked to diseases remain symptom-free.

### 6.1.2.3. CIS-REGULATORY ELEMENTS

Researchers have used AI to design new DNA Switches (also called Cis-Regulatory Elements (CREs)) that can precisely control expression of a gene in different cell types.

- It opens the possibility of controlling when and where genes are expressed in human body, for human health and research.

#### About CREs

- CREs themselves are not part of genes, but are separate, regulatory DNA sequences.
- Although every cell in an organism contains the same genes, not all the genes are needed in every cell, or at all times. This gene expression is regulated by CREs.
- These play a crucial role in cellular identity, developmental processes, and stimulus responses.

### 6.1.2.4. BIOFILM

Indian Institute of Science (IISc) has devised a way to break down 'biofilm barriers' to aid entry of drugs.

- Most of the disease-causing bacteria secrete matrix-like layers around themselves called biofilms.
- These biofilms act as thick barriers limiting the entry of drugs and helping the bacteria become resistant to antibiotics.

#### About Biofilm

- A **biofilm** is an assemblage of microbial cells that is **irreversibly associated** (not removed by gentle rinsing) with a surface and enclosed in a matrix of primarily polysaccharide material.
- It may form on a wide variety of surfaces like living tissues, indwelling medical devices, industrial or potable water system piping, natural aquatic systems etc.
- In food industries, usually the surfaces and equipment with food and non-food-contact are regularly annexed by microorganisms that can form biofilms.

### 6.1.3. OTHER IMPORTANT NEWS/DEVELOPMENTS

#### 6.1.3.1. QARTEMI

Central Drugs Standard Control Organisation (CDSCO) has approved **2nd Living drugs, Qartermi, a Chimeric Antigen Receptor (CAR) T-cell therapy** for treating blood cancer.

- NexCAR19 is first **CART-cell therapy**.

#### About Qartermi

- India's first globally benchmarked CAR T-cell treatment specifically designed for adult B-cell non-Hodgkin lymphoma.
- Developed by Immuneel Therapeutics, a Bengaluru-based biotech startup.

*To know more about CART-cell therapy, refer to Article 1.2.1. Chimeric Antigen Receptor (CAR) T-cell therapy in PT365 Science & Technology 2025.*

#### 6.1.3.2. ARCHAEA

Study of archaea have given scientists clues to **survival strategies of microorganisms by adapting to harsh conditions** with the help of their **Toxin-Antitoxin (TA) systems**.

- TA Systems are **found in many bacteria and archaea**, and are usually **composed of a toxin** that inhibits an essential cellular process and **an antitoxin** that counteracts its cognate toxin.

#### About Archaea

- **Archaea are organisms** consisting of a **single cell without a nucleus**.
- Archaea form **one of the three domains** of life; the others are **bacteria and eukaryotes**.
- They inhabit a **wide range of habitats**, including extreme environments such as near rift vents in deep sea or heat springs.

## 6.2. IT AND COMPUTER

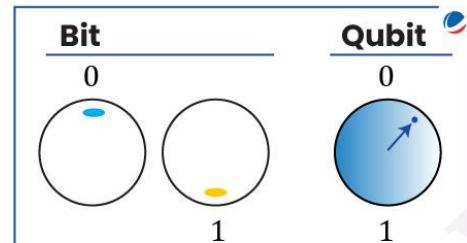
### 6.2.1. QUANTUM TECHNOLOGY

# Quantum Technology



#### Quantum Technology

- » Quantum mechanics explains how extremely small objects simultaneously have the characteristics of both **particles** (tiny pieces of matter) and **waves** (a disturbance or variation that transfers energy).
- A quantum is the smallest possible discrete unit of any physical property.
- » German physicist **Werner Heisenberg's** work led to the discovery of **quantum mechanics**.
- » UN designated 2025 to be the **International Year of Quantum Science and Technology**.



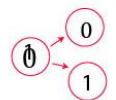
#### Qubit and Coherence

- » Quantum Computing uses qubits as basic units instead of **binary bits**.
- » **Quantum Coherence** is fundamental for Quantum systems.
- **Quantum Coherence** refers to the ability of a quantum system to maintain a well-defined phase relationship between different states.

#### Key Principles of Quantum Technology

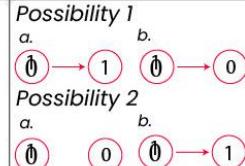
##### Superposition

- » Ability of a quantum particle to be in multiple states at the same time until it is measured.



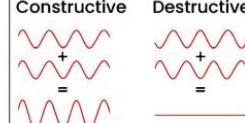
##### Entanglement

- » Two particles become linked so that their states are dependent on each other.
- » Changes to one particle's state will immediately affect the other particle's state, even if they are far apart.



##### Interference

- » Particles can be in more than one place at once, and they can cross their own trajectory to interfere with their path.



#### Key Applications



**Simulations:** E.g. In **Health care & well-being** (advancing medical imaging and diagnosis) and **Quantum chemistry** (developing new vaccines and drugs)



**Communications:** Includes **post-quantum cryptography** (or quantum-proof cryptography) and **Quantum key distribution (QKD)**.



**Sensing & Metrology:** E.g. measurements of forces, gravitation, electric fields, etc.



**Material & Devices:** Design and synthesis of **Quantum Chips** (E.g. Google's quantum chip Willow), etc.

## Key Technological Challenges

- » **Fragile Quantum States:** Qubits are extremely sensitive and collapse easily with slight disturbances.
- » **Noise Problem in Qubits:** Qubits are highly prone to interference and can lose information easily. Even with millions of qubits, many would be redundant, making the system inefficient.
- » **Temperature Control:** Qubits must be cooled to near absolute zero to prevent disturbances that can cause calculation errors.

### 6.2.1.1. MAJORANA 1

#### Why in the News?

Microsoft has launched Majorana 1 Quantum Chip.

#### More on the News

- It is the world's **First quantum chip** to be powered by new **topological core architecture**.
  - While regular chips use 'bits' (0 or 1) to process information, quantum chips use 'qubits'.
- It will revolutionize the development of quantum computers because it creates more **stable** and **scalable** quantum computing components.
- Also, recently, Amazon launched a quantum computing chip named **Ocelot** (refer to box).

#### About Majorana 1

- Uses the first-ever **topoconductor** (**topological superconductor**)
  - A **topoconductor** is a special category of material that can create an entirely new state of matter (not a solid, liquid or gas but a topological state).
  - Material is made from **indium arsenide** (a **semiconductor**) and **aluminium** (a **superconductor**).
- Uses a **superconducting nanowire** to observe the particles and can be controlled with standard computing equipment.
- Relies on a **subatomic particle** called the **Majorana fermion**
  - Majorana **fermion** is a fermion that is both a **particle** and its **antiparticle**; its existence was first theorized in the 1930s.

#### About Ocelot

- A **prototype** that has only a tiny fraction of the computing power needed to create a useful machine.
- **Key features:**
  - It consists of **two integrated silicon** microchips.
  - Its high-quality oscillators are made from a thin film of superconducting material called Tantalum
- It uses **cat qubits**, named after the famous **Schrödinger's cat** thought experiment.
  - **Schrödinger's cat** is a thought experiment where a cat inside a sealed box is both **alive and dead simultaneously** (superposition) until someone observes it.

#### Why Majorana 1 is a Big Development?

- It requires **fewer qubits (or quantum bit)** than rival chips and also has **error rates are lower** compared to other rival chips like Google (Willow), IBM, etc.
- **Combining with AI can deliver transformative and real-world solutions** such as breaking down microplastics into harmless byproducts, etc.

#### Related News

##### Quantum Diamond Microchip Imager

- India's **first Quantum Diamond Microchip Imager** will be developed by Tata Consultancy Services (TCS) in partnership with IIT-Bombay.
- About Quantum Diamond Microchip Imager**
  - An **advanced sensing tool** for semiconductor chip imaging.
  - Uses the **defects** in a diamond's structure, known as **Nitrogen-Vacancy (NV) centers**.

##### Quantum Teleportation

- Researchers successfully teleported a quantum state of light **over 30 kilometers of fiber optic cable**.
  - This breakthrough shows **the potential for quantum and classical networks to share the same infrastructure**.
- About Quantum Teleportation**
  - A method for **transferring quantum information between two points using entangled states & preserving their identities across distances**.
  - Significance:** Paves the way for a quantum internet, offering benefits like faster encryption, improved sensing, and global connectivity for quantum computers.

## 6.2.2. BIG DATA

#### Why in the News?

India joins the UN Committee of Experts on Big Data and Data Science for Official Statistics (UN-CEBD).

#### About Big Data

- Definition:** Data whose scale, diversity, and complexity require new architecture, techniques, algorithms, and analytics to manage it and extract value and hidden knowledge from it.
  - It includes **structured data** (inventory database, list of financial transactions); **unstructured data** (social posts or videos); and **mixed data sets** (used to train large language models for AI).
- Characteristics of Big Data: Volume, Variety, Velocity** (high rate of change) and **Veracity** (uncertainty and incompleteness).

#### Applications of Big Data in Various Sectors

- Healthcare:** Personalized medicine, clinical risk management, disease prediction, drug recommendations, etc.
- Logistics and Transport:** Bolster supply chain performance by fostering proactive and reactive capabilities.
- Marketing and Advertising:** Precise targeting, market analysis, customer insights.
- Smart Cities:** Resource management, improved infrastructure planning, and AI-driven solutions to urban challenges.
- Education:** Personalized learning, improving educational quality.
- Earth Sciences:** Climate and earth studies, weather modelling, and prediction.

### Major Initiatives for Big Data in India



#### National Data and Analytics Platform (NDAP)

NITI Aayog's flagship initiative to improve access and use of government data.



#### FutureSkills PRIME (Programme for Re-skilling/Up-skilling of IT Manpower for Employability)

Under Ministry of Electronics and Information Technology covers big data analytics among one of the technologies.



#### Big Data Initiatives (BDI)

Under Department of Science & Technology for supporting Establishment of Centre for Excellence in Big Data Analytics, etc

#### **UN Committee of Experts on Big Data and Data Science for Official Statistics (UN-CEBD)**

- **Aim:** Provide a strategic vision, direction and coordination for a global programme on big data for **official statistics**.
- **Membership:** consists of **31 member states** and **16 international organizations (Including India)**.

### **6.2.3. KEY CONCEPT/TERMS IN NEWS**

#### **6.2.3.1. NEUROMORPHIC DEVICE**

Indian Scientists have developed a Neuromorphic device.

##### **About Neuromorphic Device**

- **Neuromorphic devices** give ideas about how the **human body senses** and responds to **pain**.
- Inspired by the **habituation** process of human body.
  - In our bodies, special sensors called **nociceptors** detect pain and help us respond to harmful situations.
  - Over time, with repeated exposure, one can actually feel pain less intensely through a process called **habituation**.
- **Benefit:** Make wearable tech smarter, and improve human-machine interactions.

#### **6.2.3.2. BLUETOOTH LOW ENERGY GATEWAY**

State of the **Art Bluetooth Low Energy Gateway and Node System** launched at IIT Ropar.

##### **About Bluetooth Low Energy Gateway**

- Connects **Bluetooth-enabled sensors to cloud platforms**, enabling seamless data transmission, real-time environmental monitoring, and advanced analytics across diverse sectors.
- **Key features include:**
  - **Robust Connectivity:** Offers 4G, Wi-Fi, and LAN compatibility for flexible networking.
  - **Long-Range Communication:** Supports data transmission up to 1 km in line-of-sight (LOS) scenarios.
- **Application:** Precision farming, Logistics, Monitoring work in Smart cities, Industrial sites etc.

#### **6.2.3.3. GLOBAL POSITIONING SYSTEM (GPS) SPOOFING**

As per reports, Israel used GPS spoofing against Iran.

##### **About GPS Spoofing or GPS simulation**

- Refers to the practice of **manipulating or tricking a GPS receiver** by broadcasting **false GPS signals**.
  - This form of **cyber-attack** undermines the reliability of GPS data.
- Spoofing is different from GPS jamming.
  - In the latter, the GPS signals are jammed or blocked.

### **6.2.4. OTHER IMPORTANT NEWS/DEVELOPMENTS**

#### **6.2.4.1. DHARANI**

IIT Madras has become the first research organization in the world to releases an open-source brain mapping dataset named **DHARANI**.

##### **About DHARANI**

- **Largest open-access digital dataset** of the **human fetal brain** (developing brain of a fetus).
- Created with **custom-made Indian technology**.
- **Advances neuroscience research** and could aid in **brain-related health treatments**.

#### **6.2.4.2. SSI MANTRA**

India's indigenous Surgical robotic system, **SSI Mantra**, performed two **world-first robotic cardiac telesurgeries** with latency of only 40 milliseconds.

##### **About SSI Mantra**

- **Only robotic system** worldwide to **receive regulatory approval** for telesurgery and tele-proctoring.
- Performed the robotic beating heart **Totally Endoscopic Coronary Artery Bypass (TECAB)**, considered one of the most complex cardiac surgical procedures.

#### **6.2.4.3. THE BHASHINI PROJECT**

Ministry of **Labour & Employment** launches Multilingual Functionality on e-Shram Portal.

- **The Bhashini project** upgraded the **e-Shram portal** to support **all 22 Scheduled Languages**.

##### **About The Bhashini project (2022)**

- An **AI-based language translation tool**, enabling multilingual support for Indian languages.
  - It is part of the broader **National Language Translation Mission (NLTM)**.
- **Aim:** Bridge language barriers and provides content and services in speech and text to citizens in their native language.
- **Ministry:** **Ministry of Electronics and Information Technology (MeitY)**.

#### **6.2.4.4. GENCAST AI**

Google DeepMind Unveils **GenCast AI Model** for Advanced Weather Forecasting.

##### **About GenCast AI**

- A **weather forecasting model** that claims better accuracy and extended forecasting range compared to existing tools.
- It uses ensemble forecasting, similar to traditional numerical weather prediction (NWP), but is powered by AI rather than simulations.

**To know more about Artificial Intelligence, refer to Article 3.1. Artificial Intelligence in PT365 Science & Technology 2025.**

#### **6.2.4.5. MULEHUNTER.AI**

RBI launched AI tool **MuleHunter.AI** to help financial institutions identify mule bank accounts and curb digital frauds.

- **Mule accounts** are used by criminals for **illicit laundering of funds**.

##### **About MuleHunter.AI**

- Developed by Reserve Bank Innovation Hub (RBIH), a wholly owned subsidiary of RBI.
- **Uses AI/ Machine Learning based solutions** to identify suspected mule accounts efficiently on a **near-real-time monitoring**.

#### **6.2.4.6. SECURE IOT**

IIT-Madras incubated startup Mindgrove launched **Secure IoT**, India's debut high-performance **SoC (system on chip)**.

- SoC combines many electronic parts into one chip, like a **mini-computer**.

##### **About Secure IoT**

- **Secure IoT** is first indigenous **microcontroller chip**.
- **Applications:** In **deep embedded** applications like smart variants of fans, speakers, wearables, etc.

#### 6.2.4.7. MOIRÉ SUPERCONDUCTORS

Recent study reported that **moiré materials** made from semiconductor materials can be **superconducting**.

##### About Moiré Materials

- **About:** They are a type of **superlattice material** (periodic structure formed by alternating layers of materials) with unique structures and properties.
  - Created by **stacking two layers** of a semiconductor, and rotating one layer by a **small angle**.
- **Benefits:** Tunable electrical and optical properties, exhibit **superconductivity, orbital magnetism, and quantum properties**, etc.



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## 6.3. SPACE TECHNOLOGY

### 6.3.1. CRYOGENIC ENGINE

# Cryogenic Engine



#### Cryogenic Engine

- » A Cryogenic engine uses both cryogenic fuel and oxidizer, liquefied at a very low temperature.
- » **Uses:** Used in the last stage (or upper stage) of a rocket.
- » **Fuel:** The fuel and oxidizer are liquefied gases, stored at extremely low temperatures.
  - Generally liquid hydrogen liquefied at -253° Celsius is used as fuel and liquid oxygen liquefied at -183° Celsius is used as oxidizer.
- » **The working principle:** The thrust is produced by an internal combustion/pressure difference.
  - This follows Newton's Third law of motion- "Every action has an equal and an opposite reaction".

#### Advantages of cryogenic engine

- » **Efficiency and Thrust:** Cryogenic propulsion offers superior thrust, with LOX+LH<sub>2</sub> producing maximum energy and lightweight water vapor, resulting in higher performance.
- » **Fuel Efficiency:** ISRO's PSLV Vikas engine burns 3.4 kg/sec, while cryogenic engines need only 2 kg/sec for the same thrust.
- » **Eco-Friendly Technology:** Hydrogen-oxygen combustion emits only steam.
- » **Heavy Payloads & Space Missions:** High efficiency makes cryogenic fuel ideal for heavy payloads and long missions.

#### Comparison of Cryogenic Engine with other engines

Charac- teristics	Cryogenic Engine	Jet Engine	Solid Propellant Engine	Liquid Propellant Engine
Air Intake	No air intake is required.	Air intake is required.	Air intake is required as oxidizer.	Air intake is required as oxidizer.
Fuels	Generally super cooled Hydrogen and Oxygen.	(Jet A-1, kerosene), Kerosene-gasoline mixture, Aviation gasoline (avgas), Bio-kerosene.	Fuels for composite propellants are generally metallic powders, with aluminium being the most common.	Hydrazine, mono-methyl hydrazine (MMH), unsymmetrical dimethyl hydrazine (UDMH) etc.
Fuel temperature	Temperature of fuel must be Very low.	Fuel storage does not require low temperature.	Fuel storage does not require low temperature.	Fuel storage does not require low temperature.
Efficient working	It runs efficiently when low temperature fuel transforms and mixes correctly and ignites.	It runs efficiently at supersonic speed that forcefully compresses air before combustion.	It runs efficiently when fuel is provided with sufficient oxidizer.	It runs efficiently when fuel is provided with sufficient oxidizer.
Purpose	Third stage/ last stage of rocket.	Used in the Airplanes etc.	Used as boosters in initial liftoff.	Act as main stage of rocket after booster separation.

### 6.3.1.1. CE20 CRYOGENIC ENGINE

#### Why in the News?

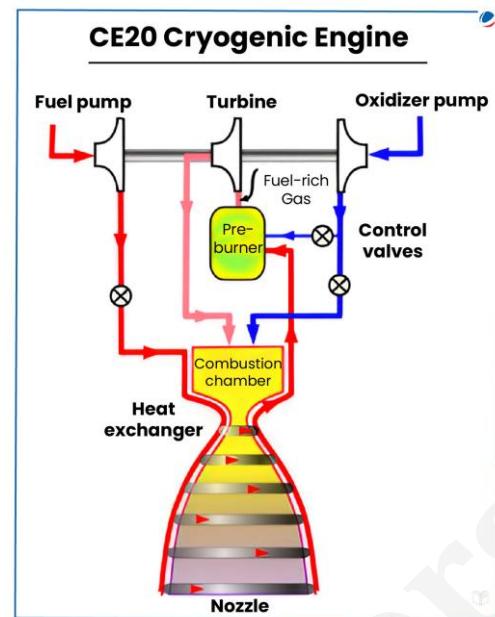
The ISRO's CE20 cryogenic engine passed a critical sea-level test, a breakthrough in its propulsion technology.

#### More on the News

- **Test Location:** ISRO Propulsion Complex in Mahendragiri, Tamil Nadu.
  - The sea-level test introduced an **innovative 'Nozzle Protection System'** to address technical challenges in engine restart capability.
- ISRO has been working on the engine in view of its **Gaganyaan mission**.

#### About CE20

- **Developed by:** The Liquid Propulsion Systems Centre (LPSC), Valiamala, Kerala.
- **Output:** It has been upgraded to produce a thrust level of 20 tonnes.
- **Successful Mission:** It has demonstrated its capability by successfully operating in six successive LVM3 missions, including the **Chandrayaan-2, Chandrayaan-3, etc.**
  - LVM3 (**Geosynchronous Satellite Launch Vehicle Mk III**) is three-staged vehicle, capable of lifting 4000kg payload.



#### Related News

##### Semi-Cryogenic Engine (SCE)-200

- ISRO successfully conducted the first Pre-Burner Ignition trial for semi-cryogenic engine (SCE)-200
  - The **SCE ignition** is achieved using a **start fuel ampule** which uses a combination of **Triethyl Aluminide and Triethyl Boron** developed by Vikram Sarabhai Space Centre (VSSC).
- **Semi-Cryogenic Engine (SCE)**
  - SCE uses refined kerosene instead of liquid hydrogen which offers advantages of lighter weight and storage at normal temperature.
  - **ISRO is developing a powerful SCE** that produces a thrust of **2,000 kilonewtons (kN)**.

##### Vikas engine

- ISRO successfully carried out demonstration of **restarting its Vikas liquid engine**.
  - It is a step towards developing technologies for recovery of stages, **leading to reusability in future launch vehicles** which could substantially **reduce cost of future space missions**.
- **About Vikas (Vikram Ambalal Sarabhai) Engine**
  - It has been conceptualized and designed by ISRO's **Liquid Propulsion Systems Centre (LPSC)**.
  - It is **workhorse engine** that **powers liquid stages of ISRO's launch vehicles**.
  - It improves payload capability of **Polar Satellite Launch Vehicle (PSLV), Geosynchronous Launch Vehicle (GSLV)** and **GSLV Mk-III launch vehicles**.

### 6.3.2. BLACK HOLE

## Black Holes



### Black Holes

- » It is a place in space where **gravity** pulls so much that even light cannot get out. The gravity is so strong because **matter** has been squeezed into a tiny space.
- » **Formation:**
  - Most black holes form from the remnants of a large star that dies in a supernova explosion.
  - Our sun will never turn into a black hole as it is not big enough to make a black hole.
- » **Other Features:**
  - **Invisible** and can be **big or small**.
  - In 2019, scientists got the first **optical image of a black hole**, at the centre of a galaxy named Messier 87, through Event Horizon Telescope.
  - Cannot be directly observed.
  - But the **area just outside the boundary of the black hole** (Event Horizon), emits all kinds of radiation, including even visible light.

### Importance of studying Black Holes

-  **Laboratories for testing fundamental theories** that explain how the Universe works like formation and evolution of galaxies.
-  **Enhances the understanding of gravitational force** which can be useful for the Global Positioning Satellites.
-  **Detection of gravitational waves** which are generated when two black holes collide.
-  **Bending of light around a black hole** helps to see light from material that is behind the black hole.

### Types of Black Holes (according to their mass)

Primordial Black Holes	Stellar Black Holes	Intermediate Black Holes	Supermassive Black Holes
<ul style="list-style-type: none"><li>» Formed in the first second after the birth of the universe.</li><li>» Masses ranging from 100,000 times less than a paperclip to 100,000 times more than the Sun's.</li></ul>	<ul style="list-style-type: none"><li>» Mass up to 20 times more than Sun.</li><li>» Formed when centre of a very big star falls upon itself or collapses.</li><li>» When this happens, it causes a supernova.</li></ul>	<ul style="list-style-type: none"><li>» Range from around one hundred to hundreds of thousands of times the Sun's mass.</li></ul>	<ul style="list-style-type: none"><li>» Mass more than 1 million suns together.</li><li>» Almost every large galaxy, including our Milky Way (Sagittarius A*black hole), has a supermassive black hole at its center.</li></ul>

### 6.3.2.1. V404 CYGNI SYSTEM

#### Why in the News?

Astronomers discovered the **first black hole triple system “V404 Cygni system”**.

#### About V404 Cygni system

- It holds a **central black hole** in the act of **consuming a small star** that's spiralling in very close to the black hole.
- **V404 Cygni system**, initially believed to be a **binary black hole system**.
  - **Binary black hole systems** often pair a **black hole** with either a **star, neutron star, or another black hole**, orbiting each other due to **gravitational attraction**.
- The new discovery found, a 2<sup>nd</sup> star orbiting the black hole at a vast distance, completing one orbit every 70,000 years (making it a triple system).
- It is located within the Milky Way and around **8,000 light-years from Earth**.

## Significance of the New Discovery

- **Debunks Supernova explosion:** The distant star's presence challenges traditional black hole formation theory.
- **Direct collapse:** Scientists suggest this black hole is formed through "**direct collapse**,"
  - In **direct collapse**, a star quietly implodes, allowing distant objects to maintain their orbital connections.

### Related News

#### LID-568

- According to a study, **LID-568 Black hole** is **expanding at an unprecedented rate** challenging the conventional understanding of black holes.
  - **LID-568** appeared to be **consuming infalling material due to gravitational attraction known as accretion**, at more than 40 times the **Eddington limit**.
    - > **Eddington limit shows** the maximum energy output the black hole can produce through the accretion process.
- **About LID-568**
  - 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**.

### 6.3.3. THIRD LAUNCH PAD

#### Why in the News?

Union Cabinet approved the establishment of 'Third Launch Pad' (TLP) project at **Satish Dhawan Space Centre of ISRO** at Sriharikota, Andhra Pradesh.

#### About TLP

- **Key Features:** Configured to support Launch of **Next Generation Launch Vehicles (NGLV)** and **LVM3** with Semi cryogenic stage as well as scaled up configurations of NGLV.
- **Significance of TLP**
  - **Capacity augmentation:** Enables **higher launch frequencies**
  - **Expanded vision of Indian Space Programme:** Bharatiya Antariksh Station (BAS) and an Indian Crewed Lunar Landing by 2040 require a next generation of heavier launch vehicles with new propulsion systems.

### Factors for Selecting Sriharikota for Satellite Launch Pads



#### Eastern Coast Location

Facilitates launches in an easterly direction.



#### Proximity to Equator

Provides an additional push for payloads.



#### Safety Considerations

Minimizes risks with fewer maritime or airline routes.



#### Other Factors

Includes uninhabited land and sea proximity

#### Existing Launch pads in India

- Currently, ISRO relies on **2 launch pads located at Shriharikota**:
  - **First Launch Pad** provides launch support for **PSLV** and **Small Satellite Launch Vehicle (SSLV)**.
  - **Second Launch Pad** was established primarily for **GSLV & LVM3** and also functions as standby for PSLV.

### **Next Generation Launch Vehicles (NGLV) Programme**

- **About:** Aims to develop a new rocket (also known as **Soorya Rocket**) to launch satellites and spacecraft
- **Features**
  - **3 stage vehicle** with reusable first stage.
  - The booster stages will use **semi-cryogenic propulsion**.
  - It will have **3 times the present payload capability** with **1.5 times the cost** compared to **LVM3**.

### **Other Launch Vehicles of the ISRO**

- **Polar Satellite Launch Vehicle (PSLV):** It is the third generation launch vehicle.
  - First Indian launch vehicle to be **equipped with liquid stages**.
  - It is a 4 stage launch vehicle with 1<sup>st</sup> & 3<sup>rd</sup> stages being solid rocket motors and 2<sup>nd</sup> & 4<sup>th</sup> being liquid engines.
  - Second stage is powered by a Vikas engine.
- **Geosynchronous Satellite Launch Vehicle (GSLV):** Operational **fourth generation launch vehicle with 3-stage**.
  - It is used to launch **communication satellites** in **geo-transfer orbit** using cryogenic third stage.
  - Its second stage is powered by Vikas engines.
- **Small Satellite Launch Vehicle (SSLV):** A 3 stage Launch Vehicle configured with three **Solid Propulsion Stages** and liquid propulsion.
- **GSLV Mk-III (LVM3):** A **three stage** vehicle with two solid strap-on motors (S200), one liquid core stage (L110), and a high thrust **cryogenic upper stage** (C25).

### **6.3.4. ANALOG SPACE MISSION**

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

ISRO has launched **India's first analog space mission** in Leh (Ladakh) **to plan lunar mission experiments**.

#### **About Analog Space Mission**

- Analog space missions are **field tests** done in locations that have physical similarities to that of the extreme space environments.
- **Developed by joint collaboration** of ISRO's Human Spaceflight Center, and other partner.
- **Other major analog missions:** NEEMO (NASA), SIRIUS Program (UAE), etc.

#### **Why is Ladakh ideal as Analog Site?**

- **Geomorphological similarities to an early Mars and Moon:**
  - **Dry, cold, arid desert**, with abundant rocky ground.
  - **Vast flat land devoid of vegetation, dunes**, and drainage networks.
  - Segregated **ground ice and permafrost**, and rock glaciers.
- **Geochemical similarities to Martian surface:** Volcanic rocks, saline lakes, and hydrothermal systems.
- **Exobiological similarities:** Permafrost (evidence of water in past), increased UV and cosmic radiation flux, reduced atmospheric pressure, hot springs (rich in boron) and sufficient isolation.

### **Ladakh as Astronomical Hub of India**



**Indian Astronomical Observatory (IAO):** Located in Hanle, Ladakh, with an optical infrared telescope.



**Astro Tourism:** E.g. Hanley Dark Sky Reserve (HDSR).



**Host to various Space Programmes:** NASA's Spaceward Bound India Programme 2016, Field validations of ExoMars 2020 HABIT Instrument etc.

### 6.3.5. DIRECT-TO-DEVICE (D2D) SATELLITE CONNECTIVITY

#### Why in the News?

BSNL launched India's first Direct-to-Device (D2D) Satellite connectivity.

#### More on the News

- It marks a major event in extending **satellite communications** to everyday consumers which were earlier limited to emergency and military use.
- Global initiatives such as **AST Space Mobile**, **Lynk Global**, **Constellation Global**, **SpaceX- Starlink**, also uses D2D technology.
  - Chinese scientists** have developed world's first satellite series (**Tiantong-1**) to make Direct Satellite Calls.

#### Working of Direct-to-Device Satellite Technology

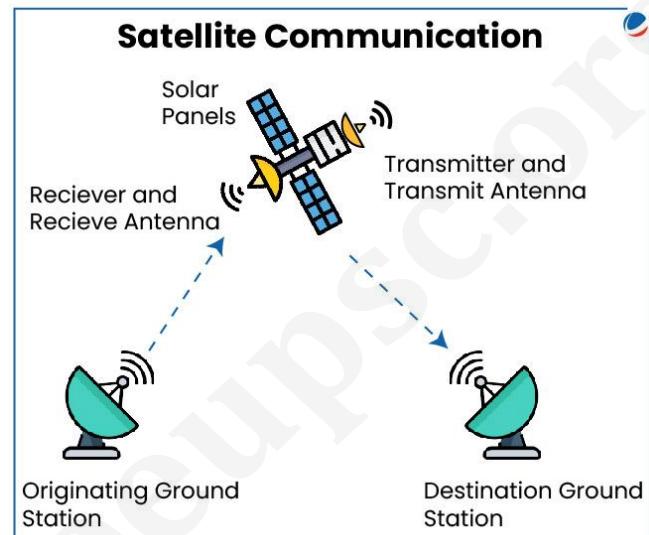
- Principle:** Satellites act as cell towers in space, bypassing the need for terrestrial cell towers.
- Non-Terrestrial Network (NTN) technology:** It allows for seamless two-way communication between devices and satellites.

#### Significance

- Reliable connectivity:** Uninterrupted internet connectivity, regardless of weather conditions.
- High-speed internet and wider coverage** even in the **remotest areas** where cellular or Wi-Fi networks are unavailable.
- Emergency calls and SOS messaging:** Communication in emergency situations where cellular or Wi-Fi networks are unavailable (useful for **adventurers, travellers etc**)

#### Challenges

- Latency:** Ensuring minimal delay for real-time applications like voice calls and video streaming.
- Device compatibility:** Ensuring technology works across various smartphones and operating systems.
- Propagation challenges:** Overcoming signal loss and interference in diverse environments.



### Satellite Communication Technology in India



Under Telecommunications Act, 2023 satellite communication companies can get spectrum without auction for point-to-point communications.



Department of Telecommunication (DoT) issues **Global Mobile Personal Communications by Satellite (GMPCS)** licenses for satellite telephony



Earlier, **Bharati Group** and **Reliance Group** have been issued GMPCS license.

### 6.3.6. SATELLITE CONSTELLATION FIREFLY

#### Why in the News?

Indian private space-tech company **Pixxel** launched India's first private satellite constellation '**Firefly**'.

## More on the News

- First three satellites of the Firefly constellation were successfully launched aboard **SpaceX's Transporter-12 mission**.
- Firefly is Pixxel's flagship **Hyperspectral Imaging (HSI) satellite constellation**, featuring **six of the highest-resolution commercial hyperspectral satellites** to date.

## About Hyperspectral Imaging (HSI) Satellites

- HSI **analyses a wide spectrum of light** instead of just assigning primary colours (red, green, blue) to each pixel, **effectively spectrally fingerprinting the Earth**.
- HSI provide **more information on what is imaged**.
  - For instance, while a **typical satellite can identify a forest** from space, **HSI can distinguish between different types of trees** and determine health of each individual tree.
- **Key Application:** Waste Sorting, environmental monitoring, mineral exploration, etc.

## About Satellite Constellation

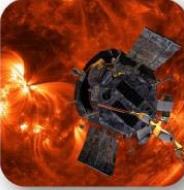
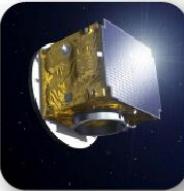
- A network of **identical artificial satellites** with the same purpose and shared control, designed to work as a system.
  - They communicate with global ground stations and, at times, **interconnect to complement each other's functions**.
- **Starlink**, with 2,146 active satellites, is the **largest satellite constellation**.
- **Types:** Based on **orbital altitude** there are three types:
  - **Geostationary orbit (GEO):** At an **altitude of 36,000 km**, it synchronizes with Earth's rotation.
    - > **Geosynchronous orbit** is a low inclination orbit having a period of 23 hours 56 minutes and 4 seconds.
  - **Medium Earth Orbit (MEO):** At **altitude of 5,000 to 20,000 km**, traditionally serving navigation purposes.
  - **Low Earth Orbit (LEO):** At altitude of **500 to 1,200 km**, primarily support research, telecommunication and Earth Observation needs.

## Related News

### TSAT-1A

- Tata Advanced Systems Ltd and Satellogic announced the successful deployment of TSAT-1A into space.
- **About TSAT (Tata Satellite) -1A**
  - India's first **indigenously developed** and **built satellite** capable of **sub-meter resolution optical imaging**.
  - It is equipped with both **multispectral and hyperspectral imaging capabilities**.

### 6.3.7. KEY SPACE MISSIONS IN NEWS

Mission	Key Detail/Features
<b>Parker Solar Probe</b> 	<ul style="list-style-type: none"> <li>⊕ NASA's Parker Solar Probe becomes the first human-made object to fly close to the Sun. It performed solar fly at <b>perihelion</b> point.           <ul style="list-style-type: none"> <li>→ <b>Perihelion</b> refers to the point in the orbit of a planet or other astronomical body, at which it is closest to the sun.</li> <li>→ Also, it traveled at a speed of approximately 700,000 kilometers per hour, making it the <b>fastest human-made object</b> in history.</li> </ul> </li> <li>⊕ <b>About Parker Solar Probe (2018)</b> <ul style="list-style-type: none"> <li>→ <b>Objective:</b> Launched to fly into the <b>outermost part of the Sun's atmosphere, the corona</b>, to improve the <b>understanding of solar wind</b>.</li> <li>→ <b>Key Scientific Instruments:</b> Fields Experiment (FIELDS), Integrated Science Investigation of the Sun (ISOIS ), etc.</li> </ul> </li> </ul>
<b>LignoSat</b> 	<ul style="list-style-type: none"> <li>⊕ The world's <b>first wooden satellite</b>, developed by Japan, has been launched.           <ul style="list-style-type: none"> <li>→ The satellite will study how wood withstands space's extreme conditions.</li> </ul> </li> <li>⊕ <b>About LignoSat</b> <ul style="list-style-type: none"> <li>→ A small, palm-sized satellite made from <b>honoki wood</b>, a type of magnolia tree native to Japan.</li> <li>→ It also incorporates traditional aluminium structures and electronic components.</li> <li>→ <b>Significance:</b> <ul style="list-style-type: none"> <li>○ It will promote use of <b>renewable materials</b> for space structures.</li> <li>○ Wood can <b>better withstand space conditions</b> than metal, as there's no water or oxygen to cause decay.</li> <li>○ When decommissioned, wooden satellites burn up <b>without releasing harmful pollutants, unlike metal ones</b>.</li> </ul> </li> </ul> </li> </ul>
<b>Proba-3</b> 	<ul style="list-style-type: none"> <li>⊕ PSLV-C59 vehicle carried Proba-3 spacecraft into a highly elliptical orbit as a dedicated <b>commercial mission</b> of <b>NewSpace India Limited (NSIL)</b>.           <ul style="list-style-type: none"> <li>→ It is ESA's first launch from India since Proba-1 mission in 2001.</li> </ul> </li> <li>⊕ <b>Proba-3 Mission</b> <ul style="list-style-type: none"> <li>→ An <b>In-Orbit Demonstration (IOD) mission</b>.</li> <li>→ <b>Aim:</b> Observe the Sun's corona through an innovative satellite formation flight.</li> <li>→ <b>Mission</b> will deploy <b>two satellites</b> into a high <b>elliptical orbit</b> that will reach 60,000 km from Earth.           <ul style="list-style-type: none"> <li>○ Twin satellites will maintain an <b>autonomous formation</b> to allow <b>uninterrupted observation</b>.</li> </ul> </li> <li>→ World's <b>first precision formation-flying mission</b>.           <ul style="list-style-type: none"> <li>○ In it, two satellites will fly together, maintaining a fixed configuration.</li> </ul> </li> <li>→ Consists of Coronagraph Spacecraft (CSC) and Occulter Spacecraft (OSC).</li> </ul> </li> </ul>

### 6.3.8. OTHER SPACE PROGRAMME/SATELLITES/ MISSION IN NEWS

Name	Key Detail/Features
IRIS <sup>2</sup>	<ul style="list-style-type: none"> <li>⊕ European Union launched Infrastructure for Resilience, Interconnectivity and Security by Satellite (IRIS<sup>2</sup>), its third major space infrastructure project after Galileo navigation system and Copernicus.           <ul style="list-style-type: none"> <li>• <b>Copernicus and Galileo</b> are the world's largest Earth observation programme and the world's most accurate civilian satellite-navigation system, respectively</li> </ul> </li> <li>⊕ <b>About IRIS<sup>2</sup></b> <ul style="list-style-type: none"> <li>• Developed with the support of the European Space Agency and other partners.</li> <li>• <b>Objective:</b> To provide secure connectivity and high-speed broadband in zones where network connectivity is low or unavailable.</li> </ul> </li> </ul>
Moonlight Programme	<ul style="list-style-type: none"> <li>⊕ ESA has launched the Moonlight Lunar Communications and Navigation Services (LCNS) programme.</li> <li>⊕ <b>About Moonlight Programme</b> <ul style="list-style-type: none"> <li>• <b>Objective:</b> To provide services for &gt;400 moon missions planned by space agencies and private companies over the next two decades.</li> <li>• It will be a constellation of five lunar satellites (satellites that orbit the moon).</li> </ul> </li> </ul>
GSAT-N2	<ul style="list-style-type: none"> <li>⊕ Recently SpaceX's Falcon-9 deployed India's GSAT-N2 satellite into orbit.</li> <li>⊕ <b>About GSAT-N2 (Geostationary Satellite-20)</b> <ul style="list-style-type: none"> <li>• A communication satellite of NewSpace India Limited (NSIL).</li> <li>• <b>Features:</b> Geosynchronous transfer orbit; Life span – 14 years; etc.</li> <li>• <b>Significance:</b> It will enhance broadband services and in-flight connectivity across the Indian region.</li> </ul> </li> </ul>
Perseverance Rover	<ul style="list-style-type: none"> <li>⊕ Recently, NASA's Perseverance Rover climbed to the top of Jezero crater rim on Mars.</li> <li>⊕ <b>About Mars 2020 Perseverance Rover</b> <ul style="list-style-type: none"> <li>• <b>Objective:</b> Seek signs of ancient life and collect samples of rock and regolith (broken rock and soil) for possible Earth return.</li> <li>• <b>Power Source:</b> It carries a radioisotope power system (RPS).</li> </ul> </li> </ul>

### 6.3.9. KEY CONCEPTS/TERMS IN NEWS

#### 6.3.9.1. DARK COMET

NASA researchers have discovered more dark Comets, Oumuamua-like (a messenger from afar arriving first) objects.

##### Dark Comets

- These celestial objects look like asteroids but act like comets and have less **surface area** for material to form **tails**.

- They **deviate from expected orbit**. That deviation **couldn't be explained** by the **Yarkovsky effect**.
  - It is a phenomenon which **changes the path of celestial objects** due to **asymmetric radiation of heat energy**.
- They **spin quite rapidly and disperse escaping** gas and dust in all directions, making them less visible.
- Dark comets follow **elongated, elliptical paths** that bring them close to the Sun before sweeping back out to the farthest reaches of the Solar System.

### **6.3.9.2. GRAVITATIONAL LENSING**

Physicists at Durham University, UK, have **discovered over 44 previously unknown stars located behind a cluster of galaxies** using **Gravitational Lensing (GL)**.

#### **About Gravitational Lensing**

- GL occurs when massive **objects distort and magnify light from objects** behind them (**such as a galaxy or a quasar**), acting as cosmic telescopes and making distant galaxies appear brighter
- This happens because the object's mass curves space and time, causing light to travel along a **curved path**.
  - According to **Einstein's general theory of relativity**, mass causes spacetime to curve, and **light follows the curvature of spacetime**.
- A key effect of this lensing is magnification, allowing us to see distant, faint objects. The **Hubble Space Telescope** uses this effect to study galaxies far beyond its normal range.

### **6.3.9.3. TIDAL TAIL**

A Nascent galaxy was discovered in formation at the end of the **tidal tail of the NGC 3785 galaxy**.

- NGC 3785 galaxy is known to **possess the longest tidal tail discovered so far**.

#### **About Tidal Tail**

- Formed due to **gravitational forces ("tidal forces")** when **two galaxies interact closely**, essentially **pulling material away from each other** during a close encounter or merger process.
  - A seemingly longer-than-average tidal tail consists of a **stream of stars and gas**.
- Tidal tail offers a glimpse into **how galaxies like ultra-diffuse ones, with very low surface brightness, come into being**.

## **6.3.10. OTHER IMPORTANT NEWS/DEVELOPMENT IN NEWS**

### **6.3.10.1. KODAIKANAL SOLAR OBSERVATORY**

**International solar conference** celebrates **125th anniversary** of the Kodaikanal Solar Observatory.

#### **About Kodaikanal Solar Observatory, 1899**

- **Genesis:** Currently owned & operated by Indian Institute of Astrophysics.
- **Objective:** To obtain more data on how the sun heats up Earth's atmosphere and to understand monsoon patterns.
- **Location:** Kodaikanal, Palani range of hills (Tamil Nadu).
  - Kodaikanal was chosen for its **proximity to equator** & its dust-free high-altitude location.
- **Radial motion of sunspots**, better known as the **Evershed Effect**, was discovered from the sunspot observations made at KSO.

### **6.3.10.2. MISSION SCOT**

The Prime Minister congratulated the **Digantara** team for the success of **Mission SCOT**.

#### **About Mission SCOT (Space Camera for Object Tracking)**

- **Aim:** Creating maps for space by tracking object,
- **Benefits:** Precise object tracking and imaging in Low Earth Orbit (LEO).

- **Contribution:** growing Indian space industry towards enhancing space situational awareness.

### **6.3.10.3. KM3NET**

Scientists are deploying two **underwater** telescopes under **Cubic Kilometre Neutrino Telescope (KM3NeT)** to detect **high-energy neutrinos**.

#### **About KM3NeT**

- KM3NeT houses the next generation neutrino telescopes under **Mediterranean Sea**.
  - It will search for neutrinos from distant astrophysical sources such as supernovae, gamma ray bursters or colliding stars.
- Telescopes are similar to **IceCube Neutrino Observatory**, located in frozen ice of Antarctica.

### **6.3.10.4. MEERKAT TELESCOPE**

Astronomers have used the MeerKAT radio telescope to investigate giant radio galaxies in the field of Cosmological Evolution Survey (COSMOS).

#### **About MeerKAT radio telescope**

- **Location:** Northern Cape province of **South Africa**.
- **Features:**
  - It consists of a **connected array of radio telescopes**.
  - It consists of **64 interlinked receptors**, including the main reflector, sub-reflector, receivers, and other electronics.
  - **Benefits:** Extremely **high sensitivity, wide field of view, and unprecedented imaging capabilities**
- It is a precursor instrument to mid-frequency component of Square Kilometer Array (SKA) telescope

### **6.3.10.5. CROPS EXPERIMENT**

ISRO achieved a milestone as **cowpea seeds** aboard **PSLV-C60's CROPS** experiment sprouted leaves in space.

- It was ISRO's **first biological experiment** and part of CROPS (Compact Research Module for Orbital Plant Studies).

#### **About CROPS Experiment**

- An **automated platform** designed to **cultivate and sustain plant life in microgravity** environment of space.
- Developed by the **Vikram Sarabhai Space Centre**.
- Current accomplishment not only **demonstrates ISRO's capability to grow plants in space** but also provides **valuable insights for future long-duration missions**.

## **6.4. HEALTH**

### **6.4.1. DISEASES AND RELATED DEVELOPMENTS**

#### **6.4.1.1. RARE DISEASES**

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

Central Drugs Standard Control Organisation (CDSCO) approves first anti-complement therapy for rare diseases

##### **What are Rare Diseases?**

- WHO defines rare disease as often debilitating lifelong disease or disorder with **a prevalence of 1 or less, per 1000 people**. For E.g. Fanconi Anemia, Osteopetrosis etc.
  - However, different countries have their own definitions to suit their specific requirements.

- Rare diseases also come under the category of '**orphan diseases**'.
  - Drugs to treat such diseases are called "**orphan drugs**" as the number of persons suffering from individual rare diseases is small and do not constitute a significant market for drug manufacturers.
- Currently, **63 Rare Diseases are listed under National Policy for Rare Disease 2021 (NPRD, 2021)**, classified under 3 groups.

Classification of Rare Diseases in India (as per NRPD 2021)		
Group 1	Group 2	Group 3
<ul style="list-style-type: none"> <li>• <b>Amenable to one-time curative treatment</b> <ul style="list-style-type: none"> <li>◦ E.g., Disorders amenable to organ transplantation like <b>Urea cycle disorders</b>, etc.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Long-term treatment needed with relatively lower costs and documented benefits</b> <ul style="list-style-type: none"> <li>◦ E.g., Disorders managed with special dietary formulae like <b>Phenylketonuria</b>, etc.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Definitive treatment is available but challenges in optimal patient selection for benefit, very high cost and lifelong therapy</b> <ul style="list-style-type: none"> <li>◦ E.g., <b>Gaucher Disease, Pompe Disease</b> etc.</li> </ul> </li> </ul>

#### Initiatives taken to tackle rare diseases

- **Global**
  - **WHO's Fair Pricing Forum:** It fosters dialogue between regulators, insurers, pharmaceutical companies and patient groups to ensure sustainable access to medicines, including **orphan drug**.
  - **Rare Diseases International (RDI):** Global alliance of people living with a rare disease of all nationalities.
- **India**
  - **National Policy for Rare Diseases, 2021:** Aims to lower incidence and prevalence of rare diseases.
    - > **Financial support of up to Rs. 50 lakhs per patient** is provided for treatment.
  - **Rashtriya Arogya Nidhi:** Provides financial assistance for poor patients suffering from rare disease.

#### 6.4.1.2. DIABETES

##### Why in the News?

Ministry of Science & Technology introduces '**PPP plus PPP**' Model to check diabetes in India.

##### More on the News

- "**PPP plus PPP**" is a **two-tiered collaboration** where **India's public and private sectors unite internally** to strengthen healthcare infrastructure while **simultaneously engaging with international counterparts**.
- Also, recently, **Indian Council of Medical Research (ICMR)** has set up the **country's first diabetes biobank in Chennai**.

##### About Diabetes or Diabetes Mellitus (DM)

- A **chronic, metabolic disease** that causes **elevated blood glucose levels** (hyperglycemia).
- **Symptoms:** Loss of glucose through urine and formation of harmful compounds known as **ketone bodies**.
  - It can cause **serious damage to the heart, blood vessels, eyes, kidneys, and nerves**.
- **Major Types**
  - **Type 1 (juvenile diabetes or insulin-dependent diabetes):** Autoimmune disorder in which insulin producing cells are destroyed.
  - **Type 2:** Most common type and usually occurs in **adults**. Caused when **body becomes resistant to insulin or doesn't make enough insulin**.
  - **Gestational:** Develops during pregnancy
- **WHO Target:** To **halt the rise in diabetes and obesity by 2025**

### About Insulin

- A peptide hormone secreted by **β-cells of Pancreas**.
- Plays a major role in the **regulation of glucose homeostasis**.
- Nowadays, **recombinant human insulin** is mainly produced either in **E. coli** or **Saccharomyces cerevisiae**.

### Related News

#### IL-35 Protein

- Researchers have discovered a specific protein IL-35 that protects against **type 1** and **autoimmune diabetes**.
- **About IL-35-Protein**
  - Protects the **immune system** by lowering **particular immune cells** that produce inflammatory chemicals.
  - Regulates **macrophage activation, T-cell proteins**, and **regulatory B cells**.
    - > **Macrophages** form from **monocytes** (type of White blood cells (WBC)), which themselves derive from the **bone marrow**.
  - **T cells** and **B cells** are a type of WBC called lymphocytes

#### GLP-1 Receptor Agonists

- Scientists at the WHO have endorsed a **new class of medicines known as Glucagon-Like Peptide (GLP)-1 receptor agonists** to treat **type 2 diabetes and obesity**.
- **About GLP-1**
  - These interact with **GLP-1, a key hormone** that plays an integral role in regulating blood glucose levels, lipid metabolism, and several other crucial biological functions.
    - **GLP-1 is produced in the intestine** and released in response to food.
    - It causes **reduced appetite and release of insulin**.

### 6.4.1.3. POLIO

#### Why in the News?

Recently, India completed 10 Years of Polio Eradication.

#### More on the News

- In **March 2014**, the **WHO** declared India polio-free.
- Eradication was achieved through the initiatives like **Universal Immunization Programme (UIP)**, participation in the **Global Polio Eradication Initiative**, etc.

#### About Poliomyelitis (Polio)

- Highly infectious **viral disease** that largely affects children **under 5 years of age**.
- **Transmission:** Person-to-person spread mainly through the faecal-oral route or by a common vehicle (e.g., contaminated water or food), etc.
- **Vaccine-derived polio** occurs when the weakened strain in oral polio vaccine (OPV) mutates, potentially regaining the ability to cause paralysis in under-vaccinated populations.

#### About Universal Immunization Programme

- It is one of the world's largest public health programs providing **free vaccines for 12 vaccine-preventable diseases**.
- In **1985**, **Expanded Programme on Immunization** was renamed as **UIP**.
- **UIP** is a part of the **Reproductive and Child Health (RCH) Program** under **National Health Mission (NHM)**.

## Related News

### U-WIN portal

- Prime Minister of India launched U-WIN portal.
- **About U-WIN**
  - It captures each & every vaccination event of **all pregnant women** & children under **UIP**.
  - It will ensure timely administration of life-saving vaccines to pregnant women and **children (from birth to 16 years)** against 12 vaccine-preventable diseases.

### 6.4.1.4. OTHER DISEASE IN NEWS

<b>Guillain-Barre Syndrome (GBS)</b>	<ul style="list-style-type: none"><li>• Guillain-Barre Syndrome (GBS) outbreak has been reported in Pune, Maharashtra</li><li>• <b>Campylobacter, a bacterial gut infection</b> that spreads through contaminated food and water, has been linked to the outbreak.</li><li>• <b>About Guillain-Barre Syndrome (GBS)</b><ul style="list-style-type: none"><li>○ A very rare but <b>potentially paralysing nerve disorder</b> caused by the immune system mistakenly <b>attacking the body's own nerves</b>.<ul style="list-style-type: none"><li>&gt; It is often triggered by <b>gastrointestinal or respiratory infection</b>.</li></ul></li><li>○ <b>Symptoms:</b> weakness, sensation changes, sometimes paralysis etc.</li></ul></li></ul>
<b>Human metapneumovirus (HMPV)</b>	<ul style="list-style-type: none"><li>• China experienced a surge in HMPV cases, particularly in children under 14 years of age.</li><li>• <b>About HMPV</b><ul style="list-style-type: none"><li>○ A <b>respiratory virus</b> that causes <b>mild infections</b> similar to that caused by a common cold.<ul style="list-style-type: none"><li>&gt; It belongs to the <b>Pneumoviridae family</b> along with <b>respiratory syncytial virus (RSV)</b>.</li></ul></li><li>○ <b>Transmission:</b> Spreads from person to person or surfaces to person.</li><li>○ <b>Symptoms:</b> Cough, fever, nasal congestion, and shortness of breath.</li><li>○ <b>Treatment:</b> Currently, <b>there is no specific antiviral therapy</b> to treat HMPV and <b>no vaccine</b> to prevent HMPV.</li></ul></li></ul>
<b>Norovirus</b>	<ul style="list-style-type: none"><li>• US Centers for Disease Control and Prevention has reported significant surge in Norovirus cases.</li><li>• <b>About Norovirus</b><ul style="list-style-type: none"><li>○ A <b>highly contagious virus</b> that causes gastroenteritis, commonly known as "<b>stomach flu</b>."<ul style="list-style-type: none"><li>&gt; Noroviruses are <b>relatively resistant in environment</b> as they can <b>survive freezing as well as high temperatures</b> (up to 60°C).</li></ul></li><li>○ <b>Symptoms:</b> Nausea, vomiting, diarrhea, etc.</li><li>○ <b>Transmission:</b> Primarily through <b>faecal-oral route, either by consumption of contaminated food or water</b>, or by spreading directly from person to person.</li></ul></li></ul>
<b>Thrombotic Thrombocytopenic Purpura</b>	<ul style="list-style-type: none"><li>• A recent study found an association between the inactivated COVID-19 vaccine CoronaVac and <b>Thrombotic Thrombocytopenic Purpura (TTP)</b>.</li><li>• <b>About TTP</b><ul style="list-style-type: none"><li>○ A <b>rare blood disorder</b> in which <b>thrombi (blood clots)</b> are formed in <b>small blood vessels</b> throughout the body.</li><li>○ Clots can limit or restrict the <b>flow of oxygen-rich blood to the organs</b> including brain, kidneys and heart.</li><li>○ It can be <b>inherited or acquired</b> and occurs due to <b>lack of an enzyme, ADAMTS13</b>, that controls blood clotting.</li><li>○ Major symptoms may include <b>thrombocytopenia</b> (lower than normal platelet count), <b>purpura</b> (purple bruises under the skin); <b>hemolytic anemia</b> (abnormal destruction of red blood cells), etc.</li></ul></li></ul>
<b>Disease X</b>	<ul style="list-style-type: none"><li>• Recent unclassified outbreak in Democratic Republic of Congo has raised concerns over Disease X.</li></ul>

	<ul style="list-style-type: none"> <li><b>About Disease X</b> <ul style="list-style-type: none"> <li>Refers to a <b>hypothetical disease, unknown pathogen with potential to cause global epidemic or pandemic.</b></li> <li><b>Coined by WHO in 2018</b> and included it in <b>Blueprint for Priority Diseases</b> to focus on risks of emerging diseases.</li> <li><b>COVID-19</b> is regarded as <b>first instance of real Disease X.</b></li> </ul> </li> </ul>
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## 6.4.2. ORAL REHYDRATION THERAPY (ORT)

### Why in the News?

Richard Cash, physician and global health scholar, died who was instrumental in the development of Oral Rehydration Therapy (ORT).

### About ORT

- ORT** is the **administration of appropriate solutions** (glucose, sodium chloride, etc.) by mouth to prevent or correct dehydration.
- ORT consists of:**
  - Rehydration:** water and electrolytes to replace losses.
  - Maintenance fluid therapy** to take care of ongoing losses once rehydration is achieved.
- Richard conducted the **first clinical trials of ORT** in the late 1960s.
  - It demonstrated that this **low-cost intervention could effectively and safely reduce intravenous fluid needs.**
- Dilip Mahalanabis was an Indian public health specialist who pioneered the use of **oral rehydration solution (ORS)** to treat diarrheal diseases.
  - Potent in treatment of **Diarrhoea and Cholera.**
- Efficacy in Adults:** Patients receiving the oral solution required **80% less intravenous fluids** for cure in comparison to other techniques.

### How ORT works?

- ORT works because of the **molecular mechanisms that govern sugar and sodium absorption inside the gut.**
- The cells that make up the lining of the gut have **special receptors on their surfaces that allow them to actively absorb sugar molecules.**
- The increase in sugar and sodium inside the cells leads to **increased absorption of water and chloride ions.**

## 6.4.3. MINISTRY OF AYUSH

### Why in the News?

The Ministry of Ayush recently marked its **10<sup>th</sup> anniversary.**

### More on the News

- Founded in 2014, the Ministry of Ayush aims to revive ancient medical knowledge while supporting the UN's **Sustainable Development Goals and Universal Health Coverage.**
- The Ministry evolved from the **Department of Indian System of Medicine & Homoeopathy.**
- "AYUSH" is an acronym for the traditional medical systems practiced in India: **Ayurveda, Yoga & Naturopathy, Unani, Siddha, and Homeopathy.**

### Key Achievements of Ministry of Ayush in last decade

- Technology Integration:** Digital platforms like **Ayush Grid, e-Sanjeevani, and Ayush Telemedicine** have improved healthcare access, especially in remote areas.
- International Day of Yoga (IDY):** Achieved global recognition, with 24.53 crore participants in 2024.

- **National Ayush Mission (NAM):** launched the Centrally Sponsored Scheme in 2014.
- **Expanding Ayush Infrastructure:** India has over 755,780 registered Ayush practitioners, supported by 886 undergraduate and 251 postgraduate colleges.

#### About National AYUSH Mission (NAM)

- It was launched to promote and develop traditional medical systems: **Ayurveda, Yoga, Naturopathy, Unani, Siddha, Sowa-Rigpa, and Homeopathy.**
- **Objective:** Increasing accessibility to Ayush services, etc.
- **Tenure:** Till 2026.

#### Steps taken by India to promote Traditional Medicines

- **Quality Assurance and Certifications:** Introduced the **Ayush Mark** and **Ayush Premium Mark** certification programs for Ayush products.
  - Provided **WHO Good Manufacturing Practices-Certified Manufacturing Units** for **Certificate of Pharmaceutical Products (COPP)** certifications to 31 Ayurvedic drug manufacturers.
- **WHO Collaboration:** India signed an agreement with WHO to establish the **WHO Global Centre for Traditional Medicine (GCTM)** in Jamnagar, Gujarat.
  - WHO and the Ministry of AYUSH organized the First WHO Traditional Medicine Global Summit in Gandhinagar, Gujarat.
  - WHO released the **Outcome document titled Gujurat Declaration.**
- **Capacity Building:** The **Champion Sector Services Scheme (CSSS)** was launched to develop skilled human resources.
- **Education Reforms:** Under the NCISM Act, 2020, the government established the **National Commission for Indian System of Medicine (NCISM)** and **National Commission for Homeopathy (NCH).**
- **Other:** National Exit Test (NExT) for AYUSH, AYURGYAN Scheme, etc.

### Traditional Medicines (TM)



TM refers to the knowledge, skill, and practices based on the theories, beliefs, and experiences indigenous to different cultures, used in the maintenance of health as well as in the prevention, diagnosis, improvement, or treatment.

#### Related News

##### Varmam Therapy

- **National Institute of Siddha (NIS)** has set a **Guinness World Record** for providing **Varmam therapy.**
- **About Varmam Therapy**
  - A unique and traditional healing modality within **Siddha system of medicine.**
    - > Varmam is one of the **oldest South Indian Martial Arts** which later **evolved into a therapy.** It is an art of unarmed fighting system targeting nerves, veins, joints and organs.
  - **Process:** Involves **therapeutic manipulation of Varmam points** called **Varma Adi (Varmam assault)** wherein pranic energy remains concentrated.
  - **Therapy** is a very unique, non-invasive, cost effective, non-pharmacological form of treatment.

#### 6.4.4. KEY CONCEPTS/TERMS IN NEWS

##### 6.4.4.1. BRAIN ROT

The term brain rot has been named the **Oxford Word of the Year 2024.**

##### About Brain Dot

- Refers to a **decline in mental health and cognitive abilities** due to excessive consumption of **low-quality online content**, particularly on social media.
- **Factors responsible:**
  - It is the **result of overstimulation of human brain.**

- It has been associated with issues like decreased attention span, reduced critical thinking, mental health issues etc.

#### **6.4.4.2. ANTIBIOTICS**

Recently, Union Minister of Science and Technology launched the first indigenous antibiotic “**Nafithromycin**” for resistant infections.

##### **About Antibiotics**

- They are **chemical substances** (produced both synthetically and by some microbes) used as **drugs** to kill or stop the growth of **disease-causing microorganisms**.
- They have **low toxicity for humans and animals** and can be mixed with livestock feed to check microbial infections in animals.
- They work against **bacterial and not viral infections** (like common cold, flu).
  - Viruses lack **cell wall** that is attacked by antibiotics.

#### **6.4.4.3. XPERT MTB/RIF ULTRA**

WHO has granted prequalification to molecular diagnostic test for tuberculosis (TB) called Xpert MTB/RIF Ultra.

- The **test** is the **first to meet WHO's prequalification standards for TB diagnosis and antibiotic susceptibility testing**.

##### **About Xpert MTB/RIF Ultra**

- Detects the genetic material of **MYCOBACTERIUM TUBERCULOSIS** in sputum samples.
- Simultaneously, the test **identifies mutations associated with rifampicin resistance**, a key indicator of multidrug-resistant TB.

#### **6.4.4.4. METHYLCOBALAMIN**

FSSAI provided clarification in Guidelines for usage of Methylcobalamin in health supplements, medical purposes and nutraceutical products under certain conditions.

- FSSAI had **banned Methylcobalamin in 2016** and **lifted** the ban in **2021** but is yet to notify the same

##### **About Methylcobalamin**

- An **activated form of Vitamin B12** essential to regulate vital bodily functions like **cell multiplication, blood formation and protein synthesis**.
  - **Vitamin B12** is a **water-soluble vitamin** integral to **DNA synthesis, RBC production, and neurological function**.
  - Other forms of Vitamin B12 are **cyanocobalamin and hydroxocobalamin**.
- **Source: Milk Products**
- **Uses:** Pain alleviation in diabetic neuropathy, treatment of anaemia, Alzheimer's disease.

#### **6.4.5. OTHER IMPORTANT NEWS/DEVELOPMENTS**

##### **6.4.5.1. INTERNATIONAL PATHOGEN SURVEILLANCE NETWORK (IPSN)**

IPSN has announced first round of grants towards understanding disease threats.

##### **About IPSN**

- Brought together by **WHO Hub for Pandemic and Epidemic Intelligence**, established in 2021.
- **Aim:** Provide world with **better data, analytics and decisions to detect and respond** to health emergencies.
  - It is a new **global network of pathogen genomic surveillance (PGS) actors**.

#### **6.4.5.2. PANDEMIC FUND PROJECT**

It focuses on “Animal Health Security Strengthening in India for Pandemic Preparedness and Response”.

##### **About Pandemic Fund Project**

- A \$25 Million initiative funded by the G20 Pandemic Fund and was established under **Indonesia's G20 Presidency (2022)**.
- Aim: To enhance **low- and middle-income country's** capacity to respond to animal health threats and pandemic through **financing investments**
- **Implementing Entities:** Asian Development Bank (ADB), World Bank, and Food and Agriculture Organization (FAO).

#### **6.4.5.3. GLOBAL ANTIBIOTIC RESEARCH AND DEVELOPMENT PARTNERSHIP (GARDP)**

WHO and GARDP jointly released report on policy and regulatory interventions to address antibiotic shortages in low and middle-income countries.

##### **About GARDP**

- **Genesis:** GARDP is a not-for-profit organization established in 2016 by the WHO and the Drugs for Neglected Disease initiative (DNDi). It was legally formed as a Swiss foundation in 2018.
- **Purpose:** To deliver on WHO's Global Action Plan on Antimicrobial Resistance (2015).
- **Role:** Works with public, private, and non-profit sectors to preserve antibiotics for future generations.

#### **6.4.5.4. GLOBAL HEALTH EMERGENCY CORPS (GHEC)**

WHO and partners, activated the GHEC for the first time in response to a recent Mpox outbreak.

##### **About GHEC**

- **Genesis:** WHO founded the GHEC in 2023 after the response to COVID-19 pandemic.
- **Objective:** Strengthening the response to health emergencies, and a collaboration platform for countries and health emergency networks.
- **Role:** It supports countries on their health emergency workforce, the surge deployment of experts, etc.

#### **6.4.5.5. BHARAT HEALTH INITIATIVE FOR SAHYOG HITA AND MAITRI (BHISHM)**

The **Bharat Health Initiative for Sahyog Hita & Maitri (BHISHM)**, part of **Project Aarogya Maitri**, is an innovative **emergency medical aid** program.

##### **About BHISHM**

- At its core are compact, **portable "mini cubes"** filled with **essential medicines and equipment**, designed for **rapid deployment** in various emergencies.
- **Highly modular and scalable.** 36 **mini cubes** combine to form a **mother cube**, and 2 mother cubes create a **full BHISHM Cube**.
- The system incorporates **advanced technology**, featuring inventory management via **RFID** and digital support in 180 languages.

#### **6.4.5.6. HIGH RISK FOOD**

FSSAI has classified packaged drinking water as ‘High Risk Food Category’.

##### **About High-Risk Food**

- High risk foods are ready to eat foods that support **multiplication of pathogenic bacteria that could be harmful**.
- These include **dairy products**; meat products including poultry; fish and fish products, etc.
- All Central Licensed Manufacturer/Processors under High-Risk Food Categories shall get its business **audited by FSSAI focusing on food safety auditing agency every year**.

## 6.5. DEFENCE

### 6.5.1. SCRAMJET ENGINE

#### Why in the News?

Defence Research and Development Laboratory (DRDL) successfully conducted a 120-seconds ground test of an active-cooled Scramjet combustor for the first time in India.

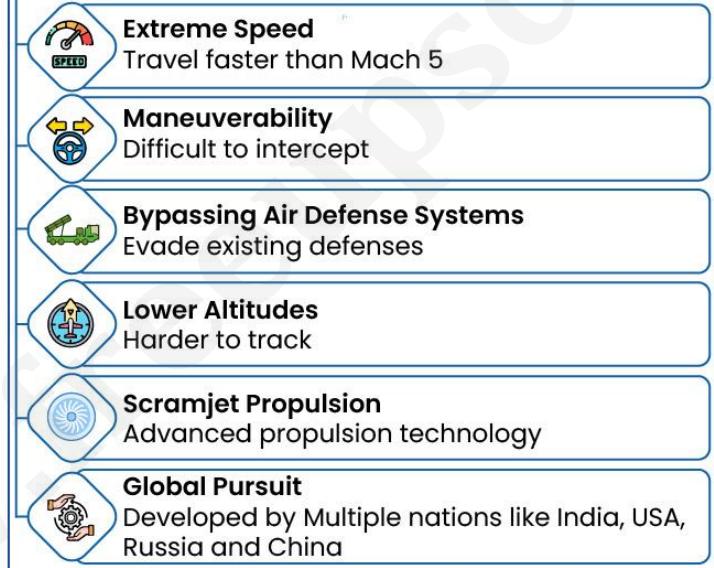
#### More on the News

- Indigenous **endothermic scramjet fuel**, jointly developed by DRDL (Hyderabad based laboratory of DRDO) and Industry, was used.
  - An **endothermic fuel** absorbs heat from its surroundings when it undergoes a chemical reaction.
  - It offers dual benefits of significant **cooling improvement** and **ease of ignition**.
- It used state-of-art **Ceramic Thermal Barrier Coating (TBC)**, designed to withstand **extreme temperatures** encountered during hypersonic flight.
- The test marks a crucial milestone in developing **next-generation hypersonic missiles**.
- Jet engine** (also called gas turbines) is an **internal-combustion engine** that propels aircraft by discharge of a jet of fluid, usually hot exhaust gases generated by burning fuel with air drawn in from the atmosphere.
  - And, it works **only within the atmosphere**.

#### About Scramjet Engine

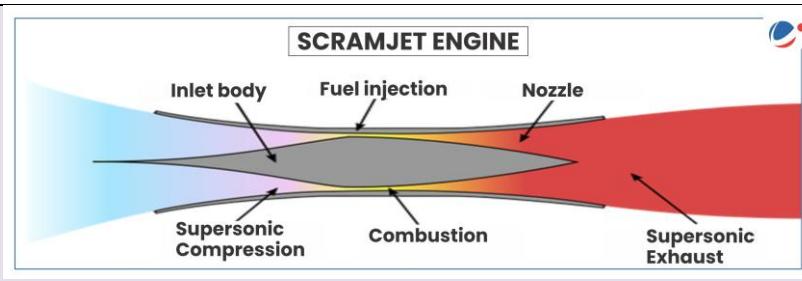
- A scramjet engine means a **Supersonic Combusting Ramjet engine**.
  - It is an improvement over the **ramjet engine**.
    - A **ramjet** is a form of **air-breathing jet engine** that uses the **vehicle's forward motion** to compress **incoming air** for combustion without a **rotating compressor**.
    - Dual Mode Ramjet (DMRJ)** is also a variant of an air-breathing engine, operate both in **subsonic** and **supersonic** combustor modes.
- Key Features:**
  - Uses flame stabilisation technique:** This holds **continuous flame** inside the combustor.
  - Depends on assisted take off:** Both ramjets and scramjets **cannot produce thrust at zero air speed**.
    - Therefore, a **scramjet-powered vehicle** requires an **assisted take off** by a rocket to accelerate it to a speed where it begins to produce thrust.
- India is part of **elite club of nations** that have successfully tested scramjet engines which includes the **USA, Russia, China**, etc.

#### Understanding Hypersonic Missiles



### How does the Scramjet engine work?

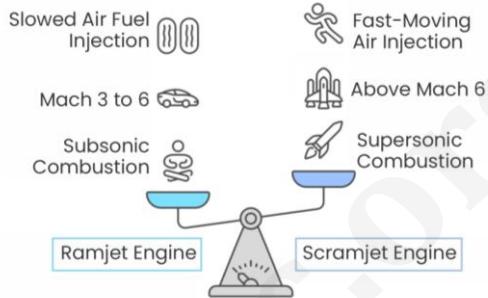
- **Air Intake:** Vehicle must already be moving at supersonic speeds (above Mach 3).
- **Compression:** Incoming air is compressed due to the high velocity of the aircraft.
- **Combustion:** Fuel (typically hydrogen) is injected into the compressed air and ignited while maintaining supersonic airflow.
- **Thrust Generation:** The expansion of hot gases produces thrust, propelling the vehicle at hypersonic speeds (based on **Newton's third law**).



### Advantages of Scramjet Technology

- **Increased Efficiency:** It is a more efficient propulsion system than a rocket.
  - A **rocket engine** carries both fuel and oxidizer, while a **jet engine** relies on **atmospheric oxygen** for combustion.
- **Enhanced Space Access:** It will reduce the cost of space missions as jet engines are re-usable.
  - Also, rockets fitted with **scramjet engines** will be able to carry heavier satellites.
  - An ISRO project called **AVATAR** is aimed at developing a rocket to launch the **ramjets** and **scramjets** engine.

### Comparing Ramjet and Scramjet Engine Features



### DRDO (Defence Research & Development Organisation)

- Formed in 1958, it is the R&D wing of the **Ministry of Defence** for developing cutting-edge defence technologies and achieving self-reliance in defence.
- DRDO constitutes a network of around **41 laboratories** for aeronautics, electronics, combat vehicles, missiles, advanced computing and simulation, etc.



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## 6.5.2. MISSILES IN NEWS

Missile	Key Detail/Features
<b>Pralay missile</b> 	<p>Tactical ballistic missile Pralay was part of Republic Day parade.</p> <p><b>About Pralay missile</b></p> <ul style="list-style-type: none"> <li>⊕ <b>Surface-to-surface</b> short-range ballistic missile (SRBM)</li> <li>⊕ Developed by DRDO.</li> <li>⊕ <b>Range:</b> 150–500 km, can be launched from a mobile launcher.</li> </ul>
<b>k4 missile</b> 	<p>India tests K-4 nuclear-capable ballistic missile from nuclear submarine INS Arighaat</p> <p><b>About K-4 missile</b></p> <ul style="list-style-type: none"> <li>⊕ <b>Type:</b> Nuclear-capable submarine-launched ballistic missile (SLBM)           <ul style="list-style-type: none"> <li>→ Designed to be launched from underwater platforms.</li> </ul> </li> <li>⊕ <b>Developed By:</b> DRDO</li> <li>⊕ <b>Range:</b> 3,500 km</li> </ul>
<b>Anti-Tank Guided Missile (ATGM)- Nag Mk 2</b> 	<p>DRDO has announced that field evaluation trials of ATGM- Nag-Mk 2 were successfully conducted recently at Pokhran Field Range in Rajasthan.</p> <p><b>About ATGM- Nag Mk 2</b></p> <ul style="list-style-type: none"> <li>⊕ Indigenously-developed <b>third-generation</b> ATGM.</li> <li>⊕ It uses <b>advanced fire-and-forget technology</b>, allowing operators to <b>lock onto targets before launch</b> and strike with <b>pinpoint accuracy</b>, even in complex battlefield environments.</li> <li>⊕ It is <b>capable of neutralising modern armoured vehicles</b> equipped with explosive reactive armour.</li> <li>⊕ <b>Range:</b> 500 metres- 4000 metres</li> </ul>
<b>Long Range Land Attack Cruise Missile (LRLACM)</b> 	<p>Defence Research and Development Organisation (DRDO) conducted the maiden flight-test of a LRLACM.</p> <ul style="list-style-type: none"> <li>⊕ Designed as a successor to the Nirbhay <b>cruise missile</b>.</li> <li>⊕ <b>Range: 1,000 km.</b></li> <li>⊕ <b>Launch capability:</b> From both <b>mobile ground launchers</b> as well as from ships.</li> </ul> <p><b>About LRLACM</b></p> <ul style="list-style-type: none"> <li>⊕ It enables <b>long-distance strikes</b> against <b>strategic targets</b> from stand-off distances.</li> <li>⊕ Can perform various <b>manoeuvres while flying at various altitudes and speeds</b>.</li> </ul>

## 6.5.3. OTHER IMPORTANT NEWS/DEVELOPMENTS

### 6.5.3.1. PANTSIR AIR DEFENSE SYSTEM (PADS)

Bharat Dynamics Limited, signed a MoU with Russia's Rosoboronexport for "cooperation on Pantsir variants".

#### About PADS

- Pantsir-S1 system is a **mobile, short-range air defence system** equipped with both missile and gun capabilities.
- Provides **air defence to small military, industrial, and administrative facilities**.

- Defend against **fixed- and rotary-winged aircraft, cruise missiles, and high-precision weapons.**

#### **6.5.3.2. DARK EAGLE ANTI-MISSILE SYSTEM**

Recently, the United States successfully tested the new Dark Eagle Anti-Missile System.

##### **About Dark Eagle Anti-Missile System:**

- A **Long-Range Hypersonic Weapon (LRHW)** jointly developed by **US Army and Navy**.
- It features a **two-stage ballistic missile** equipped with a **gliding hypersonic warhead (C-HGB)**.
- Designed to **challenge** and potentially surpass capabilities of **Russia's S-300V4, S-400**, etc.

#### **6.5.3.3. PINAKA WEAPON SYSTEM**

DRDO completed Flight Tests of the **indigenously developed Guided Pinaka Weapon System**.

##### **About Pinaka Weapon System**

- A **Multi-Barrel Rocket Launcher (MBRL) system**.
- Precision strikes:** It can launch a **salvo of 12 rockets within 44 seconds** covering an **area of 700x500 meters**.
- Range:** 38Km (Pinaka I), 60 Km (Pinaka II), 75 Km (Pinaka III, the latest version)

#### **6.5.3.4. IRON BEAM**

Israel expects its “**Iron Beam**” laser defence system to be operational within one year.

##### **About Iron Beam**

- Aim:** To intercept and destroy various projectiles with precision using high-powered laser.
  - It would be a **significantly cheaper alternative to the interceptor missiles**.
  - It would supplement other **existing aerial defense capacities such as the iron dome**.
- Limitation:** it struggles in poor weather and low-visibility conditions.

#### **6.5.3.5. MH-60R HELICOPTERS**

Recently, U.S. approved \$1.17 billion deal to sell India support equipment for MH-60R helicopters.

##### **About MH-60R helicopters**

- These helicopters provide **Anti-Submarine Warfare (ASW)** and **Anti-Surface Warfare (ASuW)** capabilities.
- These can operate from **shore and ship**.
- Boasts **advanced digital sensors, including multi-mode radar, electronic support measures system, etc.**

#### **6.5.3.6. DHRUV ADVANCED LIGHT HELICOPTERS (DALHS)**

Hindustan Aeronautics Limited (HAL) has stated that DALHs flying safety records are better in comparison to global standards.

##### **About Dhruv ALHs**

- An **indigenously** developed utility aircraft by HAL with a **twin engine**.
- It has a **multi-role, multi-mission dimension** to it.
- It can be used for the **military as well as for civil operations**.

#### **6.5.3.7. INS VAGHSHEER**

Prime Minister commissioned INS Vaghsheer along with INS Surat and INS Nilgiri.

- INS Surat** is **4<sup>th</sup> and final ship** of the **P15B Guided Missile Destroyer Project**.
- INS Nilgiri** is **1<sup>st</sup> ship** of the **P17A Stealth Frigate Project**.

### About INS Vagsheer

- It is named after the sand fish, a deep sea predator of the Indian Ocean.
- It is 6<sup>th</sup> and final submarine of the P75 Scorpene Project built by Mumbai-based Mazagaon Dock Limited.
  - Other five submarines of this class are Kalvari, Khanderi, Karanj, Vela, Vagir.
- It is indigenously constructed submarine of the Kalvari-class based on French Scorpene-class design.

### 6.5.3.8. SANJAY SYSTEM

SANJAY has been launched to enhance the Indian Army's surveillance and reconnaissance capabilities.

#### About SANJAY System

- An advanced Battlefield Surveillance System (BSS).
- Jointly developed by the Indian Army & Bharat Electronics Limited (BEL).
- Creates a unified surveillance picture of the battlefield via the Army Data Network and Satellite Communication Network by processing the gathered information.
  - The system is designed to seamlessly integrate data from both ground and aerial battlefield sensors.

### 6.5.3.9. BHARGAVASTRA

India has successfully tested first indigenous micro-missile system, Bhargavastra, designed to counter the threat of swarm drones.

- Swarm drones are multiple unmanned aerial vehicles (UAVs) working together as a coordinated system.

#### Key Features of Bhargavastra

- Detection Capability: Capable of detecting small incoming drones at distances exceeding 6 kilometers.
- Rapid Response: Designed for rapid deployment on mobile platforms.
- Multi-Target Engagement: can simultaneously detect and track & engage up to 64 targets.
- Guided Micro Munitions: Utilizes micro munitions that can be guided towards identified threats.

### 6.5.3.10. E-TARANG SYSTEM

Ministry of Defence launched the AI-enabled e-Tarang System.

#### About AI-enabled e-Tarang System

- A unique software, developed by Integrated Defence Staff in collaboration with Bhaskaracharya National Institute for Space Applications and Geo-informatics (BISAG-N).
- Key Features:
  - It will enable automated, efficient planning and management of Defence Spectrum.
  - It will ensure interference-free operation of equipment in both peacetime and wartime.
- It will support development of newer technologies in higher frequency bands.

### 6.5.3.11. KAVERI ENGINE

Kaveri engine has been cleared for inflight testing.

#### About Kaveri Engine project

- Developed by: Gas Turbine Research Establishment under DRDO.
- Initiation: The Kaveri engine project began in the late 1980s to power the Light Combat Aircraft (LCA) Tejas.
- Current Capability: The dry Kaveri engine produces 49-51 kilonewton of thrust, suitable for UAVs like the Ghatak stealth UCAV.
- Significance: Marks a strategic achievement, enhancing India's self-reliance in aero-engine technology.

### **6.5.3.12. EURODRONE**

India has joined **Eurodrone programme** as an observer member.

- **Eurodrone or European Medium Altitude Long Endurance Remotely Piloted Aircraft System (MALE RPAS)** is a twin-turboprop MALE unmanned aerial vehicle (UAV).
- It can be used for long-endurance missions such as intelligence, surveillance, target acquisition, and reconnaissance (ISTAR), maritime surveillance, etc.

#### **About Eurodrone programme**

- **Members:** Four-nation initiative involving Germany, France, Italy, and Spain.
- **Led by:** the Organisation for Joint Armament Cooperation (OCCAR).

### **6.5.3.13. SATAN 2**

Russia is set to deploy the RS-28 Sarmat intercontinental ballistic missile, known as 'Satan 2'

#### **About Satan 2**

- A next-generation **intercontinental ballistic missile** (ICBM) considered **one of the most powerful nuclear weapons** globally.
- Equipped with **Multiple Independently Targetable Re-Entry Vehicles** (MIRVs), allowing it to **strike multiple targets simultaneously**.

### **6.5.3.14. SABAL 20 LOGISTICS DRONE**

EndureAir Systems, a private drone manufacturer, has delivered its innovative **Sabal 20 Logistics Drone** to Indian Army for deployment in the Eastern sectors.

#### **About Sabal 20 Drones**

- An advanced **electric** UAV designed for aerial logistics, capable of carrying up to 20 kg of supplies over long distances.
  - Its tandem rotor and **variable pitch technology**, like the **Chinook helicopter**, offer stability, high-altitude performance, and minimal turbulence, making it perfect for **rugged terrains**.
- **Key features:** Vertical take-off and landing (VTOL) technology, a low RPM design for stealth during sensitive military operations, etc.

### **6.5.3.15. UNIFIED COMPLEX RADIO ANTENNA (UNICORN)**

India and Japan signed a Memorandum of Implementation for co-development of UNICORN mast for Indian naval warships.

#### **About UNICORN**

- It is a **mast with integrated communication systems** which will help improve the **stealth characteristics of Naval platforms**.
  - Indian Navy currently uses **Bharat Electronics Limited (BEL)**'s **Advanced Composite Communication System**, a 4th-gen integrated voice/data system for ship communications.
  - This is first case of **co-development and co-production** of defence equipment between India and Japan signed in 2015.

### **6.5.3.16. SONOBOOYS**

India and U.S. will coproduce interoperable sonobuoys for the Indian Navy

#### **About Sonobuoys**

- An **Air-launched expendable electro-mechanical** acoustic sensor.
- Provides crucial water temperature data to **enhance the accuracy of other sonar systems**.

- Sonar, short for Sound Navigation and Ranging, is helpful for exploring and mapping the ocean using sound waves.
- Crucial for anti-submarine warfare and oceanographic research.

## 6.6. MISCELLANEOUS

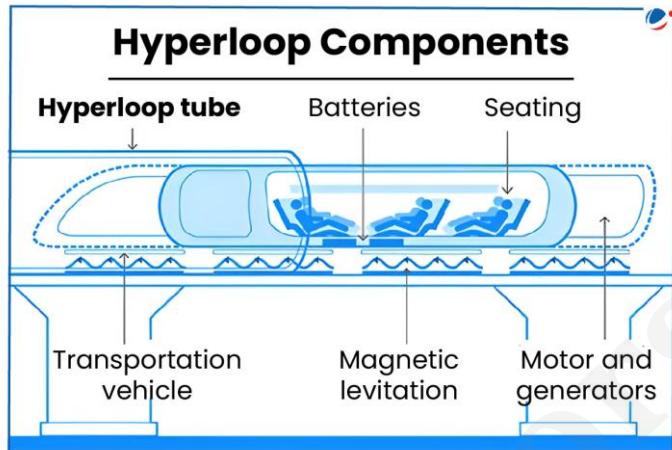
### 6.6.1. HYPERLOOP

#### Why in the News?

Avishkar Hyperloop team of IIT Madras in collaboration with TuTr (a startup) has recently completed a 410-meter Hyperloop test track, the first such experiment in Hyperloop in India.

#### What is Hyperloop Technology?

- **Concept:** In 2013, the CEO of SpaceX, Elon Musk, proposed a concept of **ultra-high-speed rail (UHSR)** called hyperloop and open-sourced it.
- **Hyperloop:** A **high-speed transportation system** in which pods, essentially pressurized vehicles travel at extraordinary speeds through low-pressure tubes.
  - The technology is based on **gravity vacuum tube**, "gravity vacuum transit, or high-speed tube transportation.
- **Functioning:**
  - It is essentially a **magnetic levitation (maglev) train system** that uses one set of magnets to **repel** cars so that they hover above a track and another set of magnets to **propel** them forward over the track.
  - The track is a **low-pressure tube** with built-in vacuums that remove nearly all air from the steel tube.



#### Advantages of Hyperloop Technology



- Less Invasive**
- > Easier Tunnel Integration
  - > Small Stations



- Cutting Carbon Emissions**
- > 2-3 Times More Energy-Efficient than High Speed Rail
  - > Maglev Design plus Low pressure
  - > Store electricity using the batteries



- Speed**
- > Over 1000 km/h
  - > 3x Faster than High-Speed Rail and 10x faster than traditional Rail



- Reshapes Shipping and Logistics**
- > Can Carry Large Containers load equivalent to 40 feet
  - > Alleviates Truck Emissions

### 6.6.2. SATYENDRA NATH BOSE (S. N. BOSE)

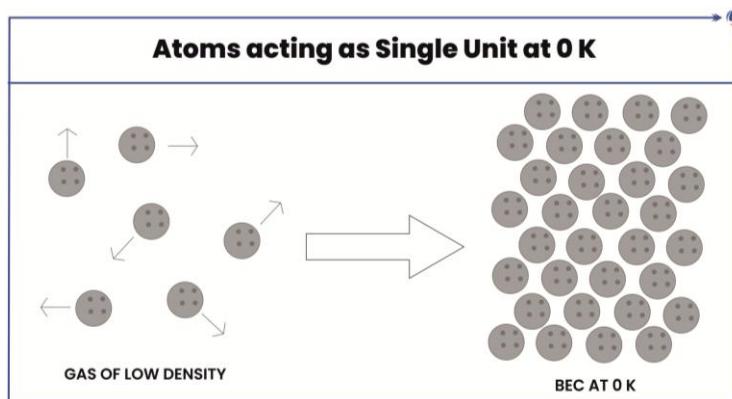
#### Why in the News?

The **Centenary celebration of iconic ‘Bose-Einstein’ (B-E) Statistics** was recently inaugurated by S. N. Bose National Centre for Basic Sciences, Ministry of Science and Technology.

#### Scientific Contributions of S. N. Bose

- **Bose-Einstein Statistics:** Describes how a **collection of non-interacting and indistinguishable particles distribute themselves** among a set of available discrete energy states at thermodynamic equilibrium.
  - The statistics was **extended to gas molecules** by Einstein. And Particles which obey **B-E statistics** are referred as **Bosons**.

- **Bose-Einstein statistics predict phenomena such as Photon Behaviour** (explains **blackbody radiation** and the Planck distribution of energy).
- Also it **enabled first Quantum revolution** in 20<sup>th</sup> century which helped in development of technologies such as lasers, the transistor, etc.
  - > **Second revolution** led to development of quantum computing, quantum sensing, etc.
- **Bose-Einstein Condensates (BEC):** A quantum phenomenon predicted by **Bose and Einstein** (1925).
  - **BEC is a state of matter created when particles are cooled to near absolute zero (-273.15 degrees Celsius/0 Kelvin).**
  - All the atoms become a single entity at this point, and possess quantum properties, wherein each particle together functions as a **wave of matter**.
  - Referred to as the '**fifth state of matter**'
- **Organic chemistry:** X-ray diffraction methods and the differential thermal analysis were employed in order to understand the atomic structure of common clay minerals.
- **Thermoluminescence:** He designed a rapid scanning spectrophotometer of comparatively high sensitivity to meet the requirements of the experimental workers in this field.
- **Discovery of GOD Particle:** The **Higgs Boson**, also known as the **God Particle**, was discovered using scientific principles rooted in Bose-Einstein statistics and the concept of BEC.
  - The fundamental particle 'Bosons' were named after him.
  - Also, he is referred as "Father of the God Particle" along with Peter Higgs.



## Properties of BEC



**Super fluidity:** BEC has zero viscosity and can flow without resistance.



**Super conductivity:** The zero resistance leads to optimal conductivity.



**Coherence:** All particles in the BEC are in the same quantum state behaving as a single entity.



**Macroscopic Occupation:** Shows a macroscopic wave function.



**Super solid:** BECs can form high density 'droplets' that repel each other. These droplets arrange themselves in an ordered lattice.

### 6.6.3. GEOSPATIAL TECHNOLOGY

## Geospatial Technology



### Geospatial Technology

» **Geospatial technology** refers to a set of tools and techniques used to collect, analyze, and visualize spatial and geographic data.

#### Components of Geospatial Technology

Geographic Information System (GIS)	Global Positioning System (GPS)	Remote Sensing (RS)	Cartography and Spatial Analysis
<ul style="list-style-type: none"><li>» Captures, stores, and analyzes spatial data.</li><li>» Helps in mapping and visualization of geographic features.</li><li>» Used in urban planning, agriculture, and disaster response</li></ul>	<ul style="list-style-type: none"><li>» Uses satellite signals to determine precise locations.</li><li>» Essential for navigation, transportation, and military operations.</li></ul>	<ul style="list-style-type: none"><li>» Collects data from satellites and aerial platforms.</li><li>» Monitors environmental changes, land use, and natural disasters.</li><li>» E.g. LiDAR</li></ul>	<ul style="list-style-type: none"><li>» Represents geographic data in maps.</li><li>» Aids in policy-making and resource management.</li></ul>

#### 6.6.3.1. OPERATION DRONAGIRI

##### Why in the News?

Ministry of Science and Technology launched **Operation Dronagiri** and **Integrated Geospatial Data Sharing Interface (GDI)**.

##### About Operation Dronagiri

- A pilot project under **National Geospatial Policy 2022**, and will be **implemented by Geospatial Innovation Cell**, Department of Science and Technology.
- **Purpose:** To demonstrate the **potential applications of geospatial technologies** and innovations in improving the quality of life of citizens and ease of doing business.
- **First Phase Implementation:** In the states of UP, Haryana, Assam, Andhra Pradesh & Maharashtra.
  - Pilot projects and use cases will be demonstrated to showcase **potential applications** of integration of geospatial data and technology in 3 sectors: **Agriculture, Livelihoods, Logistics and Transport**.

##### About Integrated Geospatial Data Sharing Interface (GDI)

- Interface is being built for **making spatial data accessible** with **advanced data exchange protocols and privacy-preserving features**.
- **Significance:** Enabling seamless data sharing, enabling data-driven decisions for public good, fostering responsible use of geospatial data.

## National Geospatial Policy 2022



**Vision:** Position India as global leader in geospatial sector, develop national framework, and enable availability of geospatial data.



**Institutional Framework:** Geospatial data promotion and development committee will be constituted as apex body for formulating guidelines and programs for promotion of Geospatial sector.



**Survey of India:** Overarching nodal agency for geospatial data.



**National Digital Twin:** Geospatially aware ecosystem of interconnected virtual replicas of physical assets and services



**Geospatial Knowledge Infrastructure:** It will provide the critical Geospatial component to knowledge and automation.

### Related News

#### Bhuvan Panchayat and NDEM 5.0

- Ministry of Science and Technology to launch two Geoportals – Bhuvan Panchayat 4.0 and National Database for Emergency Management (NDEM 5.0).
  - **National level geospatial databases** for these two portals are created by **ISRO**.
- **About Bhuvan Panchayat 4.0**
  - An online **geospatial data and services dissemination platform**.
  - **Objective:** Integrate and use space-based information in governance and research initiatives for spatial planning at Gram Panchayat level.
- **About NDEM 5.0**
  - It provides a **comprehensive geospatial database** for entire country for situational assessment and effective **decision-making during disasters/ emergency situations**.

### 6.6.3.2. LiDAR

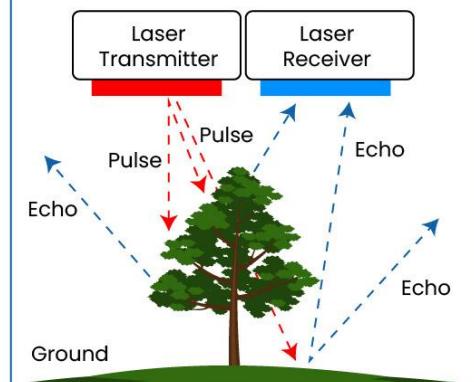
#### Why in the News?

Scientists have detected a lost Mayan city, hidden for centuries by the dense Mexican jungle, using LiDAR.

#### About LiDAR (Light Detection and Ranging)

- A **dual-use optical remote sensing technology** that uses **light in the form of a pulsed laser** to measure distances and map the surrounding environment.
- **Types of LiDAR**
  - **Topographic:** Typically uses a near-infrared laser to map the land
  - **Bathymetric:** Water-penetrating green light to also measure seafloor and riverbed elevations.
- **Working of LiDAR Systems**
  - **Consists of three main components:** Laser emitter, scanning mechanism, and Specialized GPS receiver.
  - **Works on the same principles as RADAR and SONAR, i.e., emits waves of energy to detect and track objects.**
    - > **RADAR** (Radio Detection and Ranging) uses **microwaves** and **SONAR** uses **sound waves**

#### Working of LiDAR Technology



## Key Applications of LiDAR



**Agriculture:** E.g. Measure agricultural landscaping and topography



**Aerospace and Defense:** Terrain mapping, target tracking, etc.



**Automotive:** Advanced driver-assistance systems (ADAS) and autonomous vehicles use 3D LiDAR map data.



**Others:** Weather forecasting, Mapping environments in virtual reality and augmented reality applications, etc.

### 6.6.4. NANOTECHNOLOGY RELATED NEWS/DEVELOPMENTS

#### 6.6.4.1. NANOPORE TECHNOLOGY

Scientists have developed a **nano pore based tool** that could help diagnose illnesses much faster and with greater precision by analyzing signals from individual molecules.

##### About Nanopore Technology

- Refers to **nano-scale holes embedded in a thin membrane structure** to detect potential change when charged biological molecules smaller than nanopore pass through hole.
- Makes **possible to sequence nucleic acids** (DNA or RNA) directly **from biological samples in real time**.
- Potential application:** Can be used for **detection of disease markers**, and non-invasive **early diagnosis of cancer**.

#### 6.6.4.2. NANO-TRANSPORTERS

Breakthrough on Advancements in drug delivery inside cells through Nano-transporters has been reported.

##### Breakthroughs:

- Nano-burflower shaped gold nanoparticles':** Improve the efficiency of intracellular delivery and in treatment of cancer.
- Hydrogels** created using five amino acid protein fragments from SARS-CoV-1.
  - These hydrogels, which are gels without liquid content, are effective for drug delivery.

##### About Nano-transporters

- Designed to **deliver active compounds to a specific target site** (cells or tissues) in a **controlled manner**.
- Significance:** Minimize the damage to the surrounding tissue & allow a lower dose of the drug to be used.

#### 6.6.4.3. NANO BUBBLE TECHNOLOGY

Union Minister of State for Environment launched 'Nano Bubble Technology' for cleaning and purifying water of National Zoological Park, Delhi.

##### About the Nano Bubble Technology

- Nanobubbles:** They are 70-120 nanometers in size, **2500 times smaller than a single grain of salt**.
  - Nanobubbles have a **strong negative surface charge** that prevents them from **coalescing** and **enables them to physically separate small particles** and droplets like emulsified fats, from water.
- Applications:** **Water Purification, Agriculture** (Enhance oxygenation of irrigation water), Healthcare, etc.

## 6.6.5. ALTERNATIVE ENERGY RELATED DEVELOPMENTS

### 6.6.5.1. GRAVITY ENERGY STORAGE (GES)

GES is emerging as an alternative to battery energy storage for solar and wind power.

#### About GES:

- A type of mechanical energy storage system that **uses gravitational potential energy to store and generate electricity**.
  - It involves **lifting a heavy mass during excess energy generation and releasing it to produce electricity** when demand rises or solar energy is unavailable.
    - > Types of weights used are often **water, concrete blocks or compressed earth blocks**.
- **Advantages:** High efficiency, large storage capacity, low environmental impact, longevity etc.
- **Applications:** Renewable energy integration, grid stabilization etc.

### 6.6.5.2. SURFACE HYDROKINETIC TURBINE TECHNOLOGY (SHKT)

Central Electricity Authority has recognized SHKT technology under Hydro Category to drive innovations in alternate technologies.

#### About SHKT

- Unlike conventional hydroelectric systems that rely on potential energy of water, it harnesses kinetic energy of **flowing water with minimal potential**.
- Enables generation of electricity **without the need of large dams**.
- **Significance of SHKT**
  - It is a **cost effective and scalable solution** for generating renewable energy.
  - Turbines are **easy to install, making them highly suitable for locations** like canals, hydropower tailrace channels.
  - They can be **deployed in remote locations** where powergrid might be absent.

### 6.6.5.3. SOLAR- MICRO-HYDROPOWER

In Manipur's Hengbung village, a groundbreaking micro solar pumped storage facility provides 24/7 power to the village.

#### About solar micro hydropower

- Utilizes **solar energy** to pump water from a lower reservoir to an **upper reservoir during periods of high solar irradiance**.
- This stored water can then be released through a **micro-hydro turbine to generate electricity** when **solar power is unavailable**.
- **Key advantages:** Grid stability, reduction in greenhouse gas emissions, etc.

### 6.6.5.4. DIAMOND BATTERY

Scientists from **University of Bristol and UKAEA** have created world's **first carbon-14 diamond battery**, a sustainable power source that can last thousands of years.

#### About Diamond Battery

- Uses a **man-made diamond** that, when placed in a radioactive field, is able to generate a small electrical current.
  - The diamond incorporates **carbon-14 (half-life of 5,700 years)**, an isotope used in radiocarbon dating.
- Uses fast-moving **electrons** from **radioactive decay**.
- **Encased in diamond**, it safely **absorbs short-range radiation**, and generates low levels of electricity without leakage.

- **Potential Applications**
  - Can power devices like pacemakers, **hearing aids**, and **ocular devices**.
  - Ideal for **space missions** because of long-lasting power for satellites, etc.

#### **6.6.5.5. ANEEL (ADVANCED NUCLEAR ENERGY FOR ENRICHED LIFE)**

**NTPC Limited** signed a strategic pact with US-based **Clean Core Thorium Energy (CCTE)** to explore development and deployment of **ANEEL**.

##### **About ANEEL**

- **Developed by CCTE**, ANEEL is a **Thorium based fuel** for Pressurised Heavy Water Reactors (PHWRs).
  - It **combines thorium** with small amounts of **enriched uranium**.
- **Expected Benefits of ANEEL Fuel:**
  - **Utilization of thorium as a fuel** in existing PHWR reactors.
  - **Waste Reduction:** Through high burn up fuel performance, it reduces nuclear waste generation by over 85%.
  - **Cost Savings:** Fewer fuel replacements reduce operational expenses.

#### **6.6.5.6. ATOMIC ENERGY COMMISSION (AEC)**

The Union government has re-constituted the **Atomic Energy Commission (AEC)**.

##### **About AEC**

- **Establishment:** First set up in August 1948 within the Department of Scientific Research, later it was brought under the Department of Atomic Energy (DAE)
- **Mandate:** To plan and implement the various measures required for the expansion of the atomic energy programme and responsible for formulating the policy of the DAE.

### **6.6.6. OTHER IMPORTANT NEWS/DEVELOPMENTS**

#### **6.6.6.1. ATOMIC CLOCK**

Quantum-based atomic clock has been developed in United Kingdom.

##### **About Atomic clock**

- Atomic clock, type of clock that uses certain **resonance frequencies** of atoms (usually cesium or rubidium) to keep time with extreme accuracy.
  - It is claimed that **Quantum-based atomic clock** will lose less than one second over billions of years, allowing scientists to measure time at an unprecedented scale.
- **Benefits of Quantum-based atomic clock:**
  - Increasing accuracy of **Global Navigation Satellite Systems (GNSS)**,
  - Enhance the accuracy of **advanced weapon systems**, like guided missiles etc.

#### **6.6.6.2. DARK OXYGEN**

Recently, Scientist discovered "**dark**" oxygen 13,100 feet deep in the Clarion-Clipperton Zone of the Pacific Ocean.

##### **About Dark Oxygen**

- **Metallic nodules** on the seafloor, rich in manganese and iron, were found to **generate oxygen by splitting seawater ( $H_2O$ ) without sunlight**.
  - This **challenges the belief that photosynthesis is the sole source of oxygen** and suggests oxygen-rich environments could exist on other planets, potentially supporting life.
- It also hints that **oxygen production on Earth may have occurred before photosynthesis**, reshaping our understanding of life's origins.

### **6.6.6.3. TUNGSTEN**

Grant of **tungsten mining rights to Hindustan Zinc Limited** sparked strong opposition from the public, environmentalists, and politicians due to **concerns over the biodiversity-rich heritage area in Melur.**

#### **About Tungsten**

- **Appearance:** A shiny, silvery-white metal.
- **Properties:** highest melting point of all metals.
- **Principal tungsten-containing ores:** Are **scheelite and wolframite.**
- **Uses:** Filaments of light bulbs, arc-welding electrodes, Tungsten carbide as a new ‘painless’ dental drill which spins at ultra-high speeds.
- **Issues:** Not very energy efficient; they produce much more heat than light.
- **As per** Second Schedule of Mines and Minerals (Development and Regulation) Act 1957, **Tungsten is a major mineral**

### **6.6.6.4. ORGANOPHOSPHATE**

Doctors in Jammu & Kashmir expressed the likelihood of **Organophosphates**, used in pesticides, behind the death of few villagers.

#### **About Organophosphates**

- **Formation:** Chemical compounds formed through the **esterification** process involving **phosphoric acid and alcohol.**
  - Esterification is a **chemical reaction** where two reactants like **alcohol** and **acid** combine to create an ester as the reaction product.
- **Applications:** **Herbicides, Pesticides, Insecticides, Nerve agents** in chemical warfare (disrupts the transmission of nerve signals or neuromuscular transmission in exposed organisms), etc.

### **6.6.6.5. ELECTROKINETIC MINING (EKM)**

Recently, a research team has developed Electrokinetic Mining (EKM), an eco-friendly method for extracting Rare Earth Elements (REEs).

#### **About Electrokinetic Mining (EKM)**

- An innovative technique that uses electrokinetics, **the movement of particles or fluids under an electric field** to extract rare earth elements (REEs) from ore bodies.
- **Key Features**
  - **High Recovery Rate:** Over 95% recovery of REEs.
  - **Environmental Benefits:** Reduces chemical leaching by 80% & energy consumption by 60%.

### **6.6.6.6. PINK FIRE RETARDANT (PHOS-CHEK)**

Recently, Los Angeles authorities used pink fire retardant to combat wildfires.

#### **About Pink Fire Retardant (Phos-Chek)**

- Fire retardant is a **mix of chemicals used to extinguish or slow down** spread of fires.
- **Phos-Chek** mostly **contains 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.
  - It is **pink because it most visible** by firefighters against the landscape.
  - Spraying fire retardant using planes is **ineffective, expensive and a growing source of pollution** for rivers and streams.

# 7. CULTURE

## 7.1. TEMPLES AND OTHER ARCHITECTURE

### 7.1.1. RAMAPPA TEMPLE

#### Why in the News?

Centre approves loans for development of Ramappa Circuit under the **Special Assistance to States/Union Territories for Capital Investment** (SASCI) scheme.

#### About Ramappa Temple

- Also known as **Kakatiya Rudreshwara Temple**, located in Telangana.
- It is a **UNESCO World Heritage Site**.
- It is the main **Shiva temple** in a walled complex built during the **Kakatiya period (1123–1323 CE)** under rulers **Rudradeva** and **Recharla Rudra**.
- The temple is constructed with **sandstone**, featuring decorated beams and pillars made of **carved granite and dolerite**.
- It has a distinctive, **pyramidal Vimana** (horizontally stepped tower) made of lightweight, **porous ‘floating bricks,’** which reduces the weight of the roof.

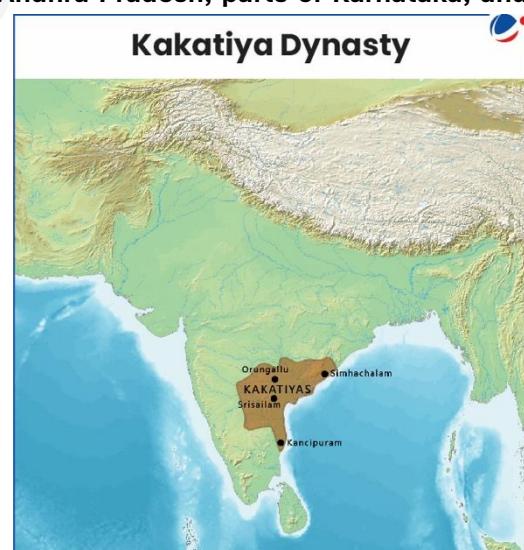


#### About SASCI Scheme by Ministry of Tourism

- Aim:** To infuse **long term interest free loans** for a period of **50 years to States** for comprehensively develop iconic tourist centers in the country, branding, and marketing them at global scale.
- It envisages the **local economy growth** and creates employment opportunities through sustainable tourism projects.

#### About Kakatiya Dynasty (1123–1323 CE)

- Origin:** The Kakatiya dynasty was a prominent **Telugu-speaking kingdom** that emerged independently in 12<sup>th</sup> century after serving as **feudatories to the Western Chalukyas** earlier.
- Region: Eastern Deccan**, including present-day **Telangana, Andhra Pradesh, parts of Karnataka, and southern Odisha**.
- Capital:** Orugallu (modern Warangal)
- Chief Port:** Motupalli, visited by the Venetian traveller, **Marco Polo**.
- Key Rulers:**
  - Prola II:** The **first independent** ruler of the dynasty.
  - Prataparudra I (or Rudradeva) (1163–1195):** Known for his military exploits, as described in inscriptions at the Rudresvara temple in Anumakonda.
  - Ganapati Deva (1199–1262):** Expanded the kingdom significantly, bringing Telugu-speaking lowlands under control.
  - Rudrama Devi (1262–1289):** One of the few queens in Indian history, she successfully repelled invasions by the Pandyas, Eastern Gangas, and Yadavas. **Marco Polo praised her rule** during his visit to India.
  - Prataparudra II (1289–1323):** The **last ruler** of the dynasty. **He resisted invasions by Alauddin Khilji and Ulugh Khan but was ultimately defeated in 1323 CE**, leading to the dynasty's fall.



## Contributions to Art, Architecture & Literature

- Adopted the **Vesara style** of temple architecture with **stellate forms**.
  - Used **innovative materials** like **sand for earthquake-resistant foundations**.
  - Notable structures** other than the Ramappa Temple include
    - Rudreswara Temple:** also known as Veyyisthambala Gudi (Thousand pillars temple) in Telugu is one of the earliest structures of Kakatiya architecture.
      - It was built by **Rudra Deva in 1163 AD.**
      - The temple is known for special icons like **rock-cut elephants** and **monolithic Nandi**.
      - The temple was **desecrated by the rulers of Tughlaq dynasty** during their invasion of the Deccan region.
    - Warangal Fort:** Warangal fort was built by **King Ganapathi in 13th century** and **completed by his daughter Rudrama Devi, in 1261 A.D.**
      - The fort has **four paths** with decorative and lofty gateways known as **Keerthi Thorana or Hamsa Thorana**.
- Irrigation Systems:** Built **extensive water storage tanks** and inspired modern initiatives like **Telangana's "Mission Kakatiya"** to restore ancient tanks.
- Literature and Dance:** **Nritta Ratnavali** by **Jayasenapati (1253 CE)** was inspired by dance sculptures in temples like Ramappa.

## 7.2. OTHER IMPORTANT ARCHITECTURE

### 7.2.1. SUN TEMPLE, KONARK

**Ministry of Mines**, in collaboration with the Government of Odisha, has set up the **District Mineral Foundation Exhibition** at Sun Temple, Konark in Odisha.

#### About the Temple

- Built by:** Narasimha Deva I (1238–1264) of the Ganga dynasty.
- Architecture:** Kalingan temple architecture showcases
  - Vimana:** Once topped by a magnificent shikhara (collapsed in 19th century)
  - Jagamohana:** Pyramidal audience hall
  - Natmandir:** Elevated, roofless dance platform
- Symbolic Design:** Symbolizes Surya's chariot, featuring 24 intricately carved wheels and 7 horses.
- Heritage Status:** Recognized as a UNESCO World Heritage Site.



**Other Sun Temples in India:** Sri Suryanarayana Swamy Temple (Andhra Pradesh), Dakshinaarka temple (Bihar), Modhera Sun temple (Gujarat), etc.

### 7.2.2. ABATHSAHAYESWARAR TEMPLE

Abathsahayeswarar temple has been chosen to receive the **UNESCO Award of Distinction - 2023** for conserving its heritage.

- The award was announced as part of **UNESCO Asia - Pacific Awards for cultural heritage conservation**.

**About Abathsahayeswarar Temple (Location: Thanjavur, Tamil Nadu)**

- It is a 1,300-year-old temple dedicated to **Abathsahayeswarar (Lord Shiva)**.



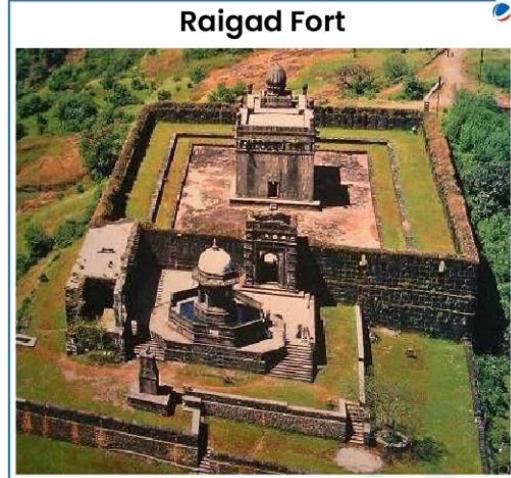
- It is considered a testament to the **Chola dynasty's architecture and spirituality** as it is believed to have been constructed by Kings **Vikrama Chola** and **Kulothunga Chola**.
- The temple has **five prakarams (or enclosures)**, and a **five-tier gateway tower called a gopuram**.
- The temple is home to many deities, including **Soundaryanayaki Ambal**, **Ashtabhuja Durga Parameshwari**, **Aadhi Sarabeshwarar**, **Pillayar**, **Murugan**, **Chandikeswarar**, **two Bhairavars**, **two Suryas** and **two Naagar**.

### 7.2.3. RAIGAD FORT

This year's **Rashtriya Ekta Diwas theme** celebrates the heritage of Raigad Fort.

#### About Raigad Fort:

- **Hill fort** situated in Raigad district, **Maharashtra**.
- **Chhatrapati Shivaji Maharaj** established his **capital** here in 1674 and he was also **coronated in this fort**.
- Surrounded by valleys shaped by the **Kal and Gandhari rivers**.
- Labeled as **Gibraltar of the east** by British historians.
- Nominated for **UNESCO World Heritage** under the "Maratha Military Landscapes of India".
- Main gates: **Nanne Darwaza** and **Maha Darwaza**



## 7.3. SCULPTURES, PAINTINGS AND OTHER FORMS OF ART

### 7.3.1. ETIKOPPAKA DOLLS

Etikoppaka dolls showcased at President's reception for Republic Day.

#### About Etikoppaka Dolls

- **Origin:** 400-year-old craft in Etikoppaka, **Andhra Pradesh**.
- Officially recognized with **Geographical Indication tag in 2017**.
- Made from **wood of Ankudu tree (Wrightia tinctoria)**, known for its **lightweight and smooth texture**.
  - They **do not contain any heavy metal or toxic item**.
- Made purely out of **natural elements like seeds, lacquer, bark, roots and leaves**.
- Process of Etikoppaka toy making is known as '**turned wood lacquer craft**' or '**Tharini**'.



### 7.3.2. KOKBOROK LANGUAGE

Tripura has been conducting language mapping for development of 'Kokborok' language'.

#### About Kokborok Language

- The word "Kokborok" comes from "**Kok**," meaning "verbal," and "**Borok**," meaning "people" or "human."
- It is the **mother tongue** of communities namely **Debbarma (Tripuri) Reang, Jamatia, Noatia, Kalai, Rupini, Murasing, Uchoi** etc.
- It is recognized as **one of the State language of Tripura**.
- It is part of the **Sino-Tibetan language family**.

## 7.4. IMPORTANT SITES IN THE NEWS

### 7.4.1. HARAPPAN WATER MANAGEMENT TECHNIQUES

#### Why in the News?

5,000-year-old Water Management Techniques unearthed at Harappan site, **Rakhigarhi (Haryana)**.

#### More on the news

- A dried riverbed of the **Chautang (or Drishavati) River**, was also discovered.

#### Water management practices of the Harappan Civilization

- Elaborate Drainage:** Underground drains build with precisely laid bricks, connecting houses to wider public drains were found for **sewage disposal** in major cities.
- Small Bunds:** Built by the local people to store rain water for irrigation and drinking in **Lothal**, Gujarat.
- Channels and Reservoirs:** At **Dholavira, Gujarat**, built completely of **stone** for storing fresh water brought by the rains or to store water diverted from the nearby rivulets.
  - They were an example of **advanced hydraulic engineering** for conservation, harvesting and storage of water.
  - At Dholavira, **two seasonal streams (Manhar and Mansar) provided water** to the walled city.
  - Unlike some of the other Harappan cities, **which were divided into two parts, Dholavira was divided into three parts**, and each part was surrounded by massive stone walls.
- Tanks and Wells:** At Mohenjodaro, where rainwater harvested in tanks was brought to the wells of each house through efficient drainage system.
  - The “**Great Bath**” at Mohenjodaro was a large tank made of **brick floor**, probably for mass bathing during religious functions, is a remarkable example of ancient large water tanks.

#### About Rakhigarhi

- Location:** One of the oldest and largest cities of Harappan Civilization located in the **Hissar district of Haryana** on the **Ghaggar-Hakra river plain**.
- Key Findings:** Number of **Archaeological mounds, skeletal remains** which has yielded the only DNA evidence from the Harappan era.
  - Evidence of craft activity areas, residential structures, streets, drainage systems, burial grounds, etc. has also been obtained.

#### Related News: Deciphering Indus Valley Script

Recently, Tamil Nadu announced \$1 Million **prize for experts and organizations for deciphering the scripts of the Indus Valley Civilization**.

#### About Indus Valley Scripts

- Distribution and length:** Currently, ~3500 specimens of this script survive in stamp seals carved in stone, in moulded terracotta and faience amulets, in fragments of pottery.
- Writing direction and style:** The inscriptions discovered are very short, comprising no more than five signs on the average.
  - Generally written **right to left**, longer texts sometimes used **Boustrophedon style (alternating directions between lines)**.
- Composition of the script:** Partially pictographic signs, contains **human and animal motifs, distinctive 'unicorn' symbol etc.**
- Writing media and methods:** Use of seals, tablets, and copper tablets, Materials included terracotta, ceramics, shell, bone, ivory, stone, metals, and perishable materials like fabric and wood.
  - Applied through **carving, incising, chiseling, inlaying, painting, molding, and embossing**.

Indus valley Script



## 7.4.2. BUDDHIST SITES OF KANAGANAHALLI AND SANNATI

### Why in news?

Recently, researchers highlighted the untapped tourism potential of the ancient **Buddhist sites of Kanaganahalli and Sannati**, located in **Kalaburgi, Karnataka** along the banks of **Bhima river**.

### Findings of Kanaganahalli and Sannati

- 2000-year-old **Ashokan edict**.
  - In this inscription the **Emperor is mentioned by his name, unlike elsewhere, where he is referred to as ‘Devanampiya Piyadasi’** ('Beloved of The Gods') as in the rock edict at Maski (Raichur).
- **Adholoka Maha Chaitya** (the Great Stupa of the Netherworlds)
  - **Built: From 3rd Century B.C. to 3rd Century A.D.**
  - **Features:** Elaborate ornamentation, Ayaka platforms, **circumambulatory path, etc.**
  - **Sculptures:** Of Buddha, Yakshas, Jataka stories, Ashoka, Shatavahana monarchs etc.
    - > **Sculpture of Asoka** etched with '**Ranya Asoka**' in **Brahmi script**, the **only surviving image** of the Mauryan emperor.
  - Resembles **Amaravati School of Art**.

### About Amravati School of Art

- The **Amravati School of Art** is a significant style of Indian sculpture and art that flourished during the **Satavahana period (2nd century BCE to 3rd century CE)** in the region of **Amravati**, located in present-day Andhra Pradesh, India.
- This school is renowned for its contributions to **Buddhist art** and is closely associated with the **Amaravati Stupa**, a major Buddhist monument.

### Key Features

- **Material:** Used **white marble** or **limestone**, which gave the sculptures a distinctive, polished appearance.
- **Narrative Art:** The sculptures are known for their intricate storytelling, often depicting multiple scenes in a single panel.
- **Dynamic Poses:** Figures are shown in dynamic, lively poses, with a sense of movement and grace.
- **Symbolism:** Early works **avoided direct representations of Buddha**, using symbols like the **Bodhi tree, footprints, or the wheel of law** (Dharma Chakra) instead.
- **Influence:** The Amravati style influenced later South Indian art, including the **Chalukya** and **Pallava** schools.

## 7.5. OTHER IMPORTANT SITES IN NEWS

### 7.5.1. BUDDHA'S RELICS

Recently excavations began at **Ramgram, UP**, led by the Archaeological Survey of India (ASI), to discover Buddha's eighth relic.

#### About Buddha's Relics:

- These are **Lord Buddha's cremated remains**.
- **Stupas were constructed over them at:**
  - Rajagraha, Vaishali, Kapilavastu, Allakappa, Ramagrama, Vethadipa, Pava, Kushinagar and Pippalvina.
- As per Buddhist beliefs, Lord Buddha attained **salvation (Mahaparinirvana)** in **Kushinagar district (U.P)** and was cremated by Mallas of Kushinagar.

### 7.5.2. MEgalithic Culture

An archaeological discovery attributed to megalithic period has been made in **Kerala's Kasaragod**, featuring rock-cut carvings created with iron tools.

- These carvings include depictions of human figures representing both children and adults.

### About Megalithic Culture

- **Period:** Belongs to Iron Age (1500 BC–500 BC).
- **Megaliths:** Refer to burials made of large stones in graveyards.
  - **Types:** Polylithic (Dolmen, Cairn, Cromlekh, Cist) and Monolithic (Menhir).
- **Sites:** Adichanallur, Kodumanal (Tamilnadu); Thrissur and Kunnattur (Kerala) etc.
  - **Mangadu, in Kerala is also a recently discovered prehistoric site where megaliths** are found in large numbers. The date of the Mangadu megaliths is approximately from 1000 B.C. to 100 B.C
- **Characteristics:** Agricultural economy; pastoralism; metal, wood & ceramic industry & craft, religious practices - Animism.

## 7.6. PERSONALITIES IN NEWS

### 7.6.1. GURU NANAK DEV

#### Why in the News?

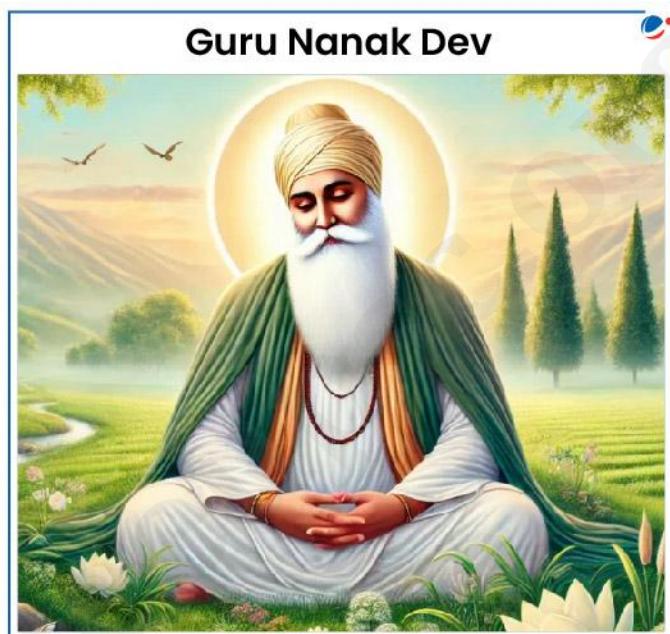
Prime Minister while extending greetings on the 555<sup>th</sup> Guru Nanak Jayanti remarked that **teachings of Sri Guru Nanak Dev inspire us to further the spirit of compassion, kindness and humility.**

#### More on the news

- Guru Nanak Jayanti marks **birth of 1<sup>st</sup> Sikh Guru, Guru Nanak Dev Ji** who laid foundation of Sikhism.

#### About Guru Nanak Dev (1469-1539)

- He was born at **Talwandi (Nankana Sahib in Pakistan),**
- He established a center at **Kartarpur (Dera Baba Nanak on the river Ravi)**
- **His Idea of liberation** was not a state of inert bliss but rather the pursuit of active life with a strong sense of social commitment.
- Before his death, Guru Nanak appointed one of his followers 'Lehna' as his successor.
  - Lehna came to be known as **Guru Angad** who compiled compositions of **Guru Nanak**



#### Major teachings of Guru Nanak Dev Ji

- '**Ik Onkar**': It means 'One God' who dwells in every one of his creations and constitutes the eternal truth.
- **Truthfulness:** Emphasized on truthful living and declared **truth as the highest value in life.**
- **Social inequality:** Led sustained attack on **social inequality** and **criticized the caste system.**
- **Religion as a means of wealth:** He cautioned people **to not use religion for earning material benefits.**

#### Relevance of his teachings in modern times

- **Emphasis on Equality and Brotherhood:** solution to gender and caste discrimination, rising conflicts and war across the globe
- **Vaand Chhako (Share What You Have):** growing inequalities between 'haves and haves not' can be reduced.
- **Kirat Karo (Earn your money righteously and honestly):** can lead to decrease in corruption
- **Sarbat da Bhala(welfare of all):** can help in addressing **climate change and promoting ecological justice.**

## 7.6.2. BIRSA MUNDA

### Why in the News?

Janjatiya Gaurav Divas was celebrated pan-India, marking the **150<sup>th</sup> birth anniversary of Bhagwan Birsa Munda**.

### More on News

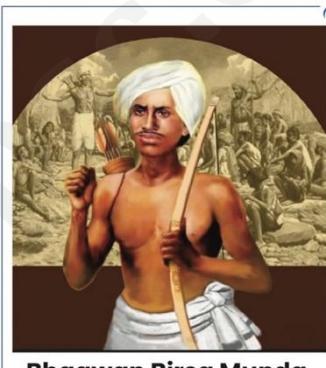
- Indian government declared **15<sup>th</sup> November** as Janjatiya Gaurav Divas during the Azadi Ka Amrit Mahotsav in 2021.
- It marks the birth anniversary of **Bhagwan Birsa Munda** and **honors the contributions of tribal communities, especially in India's freedom struggle**.
- **During the celebrations the foundation stone was laid for development projects** worth over **6640 crores**, aimed at uplifting life of tribal communities under schemes like **Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN)**, Van Dhan Vikas Kendras (VDVKs) etc.

#### About Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN)

- Launched to provide Particularly Vulnerable Tribal Groups (**PVTGs**) households and habitations with **basic facilities** such as safe housing, clean drinking water etc. in 3 years (**2023-24 to 2025-26**).
- Aims to cover **75 PVTG communities** residing in 18 States and 1 UT.
- **Total budgetary outlay: Rs.24,104 Cr**
- It focuses on **11 critical interventions** being implemented by 9 Ministries such as Pucca houses and connecting roads by the Ministry of Rural Development.

### About Birsa Munda

- **Early life:** Born in **Ulihatu Khunti district**, Jharkhand in **1875** with birth name **Daud Munda**.
  - Belonged to the **Munda tribe** of the **Chhotanagpur plateau area**, present day Jharkhand.
  - He spent some time in the company of a **prominent Vaishnav preacher Anand Panre**.
- **His Contributions:** Founded a new sect known as the **Birsait**. It believed in one God, and aimed for **reforming tribal society** by observing a **code of conduct**.
  - Took up a campaign against **alcoholism, witchcraft and sorcery** and promoted among people **awareness about cleanliness**.
  - Educated the tribal's about British atrocities and made them aware of **their culture and heritage regarding community ownership of land**.
  - Provided leadership to Munda rebellion also known as the "**Ulgulan (Great Tumult)** movement.
- Because of his contributions to the Munda tribe, he is remembered as **Bhagwan (God)** and was given the title of **Dharti Aaba (Father of Earth)**.



**Bhagwan Birsa Munda**

#### About Munda Rebellion

- Birsa Munda mobilized tribes belonging to **Chhotanagpur, Bengal and Odisha** against the **Dikus** (outsiders) and Europeans (referred to as **Ravanas**) from **1895 onwards** to establish an **independent Munda Raj**.

#### Major Reasons for the revolt:

- **Introduction of Zamindari system:** Traditional systems like the **Mundari Khuntkatti (community land ownership)** were replaced, reducing **tribals from landowners to landless labourers**.
  - Change in policies led to **Veth begari (forced labour)** and **Bandhua Majdoori (bonded labour)** conditions for tribals.
- **Exploitation by the Dikus:** Colonial land revenue system introduced **intermediaries (thikadars)** from outside, leading to **exploitation through taxation, forced cash payments, excise controls, and other levies**.

- Christian Missionaries criticizing their traditional culture.

#### Methodology:

- **Guerrilla warfare technique:** Used to attack symbols of power like the police station, government buildings and other structures administered by the **Dikus and the British authority**.
- **Use of symbols:** Traditional symbols and indigenous language used to inspire and unite the tribal communities. It included-
- **Slogan by Birsa Munda:** “Abua Raj Setarjana, Maharani Raj Tundujana”. (Let the kingdom of the queen be ended and our kingdom be established.)
- **White Flag** conceptualized as a symbol of independence.

#### Outcomes of the revolution

- **1908 Chhotanagpur Tenancy Act:** It prohibited tribal land transfer to non-tribals.
- Government abolished forced labor called “**Veth Bigari**” system.

## 7.7. OTHER PERSONALITIES IN NEWS

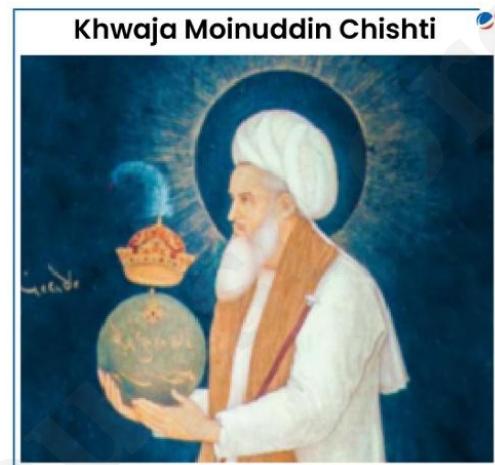
### 7.7.1. KHWAJA MOINUDDIN CHISHTI

The Prime Minister greeted people on ‘Urs’ of Khwaja Moinuddin Chishti.

- Urs is held annually at the shrine of sufi saint **to commemorate his death anniversary**.

**About Khwaja Moinuddin Chishti (1141-1235)**

- Born in 1141 CE in **Chishti in Herat, Afghanistan**.
- He is the most famous saint of the **Chishti order of Sufism** in the Indian Subcontinent.
- **Chishtiya Order was founded in India by him.**
  - A major feature of the Chishti tradition was **austerity**, including maintaining a **distance from worldly power**.
- **Famous disciples:** Khwaja Qutbuddin Bakhtiyar Kaki, Nizamuddin Auliya and Naseeruddin Charagh, etc.

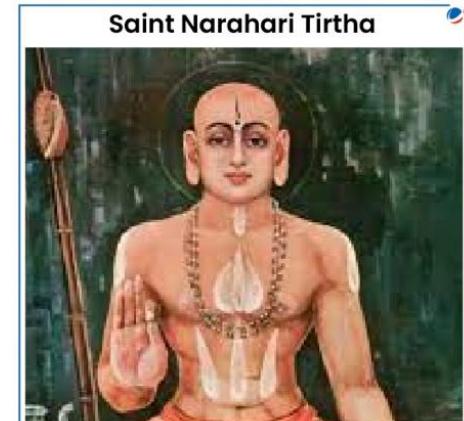


### 7.7.2. SAINT NARAHARI TIRTHA

**Idol of Saint Narahari Tirtha** has been discovered in **Simhachalam Temple**, Vishakhapatnam.

**About Saint Narahari Tirtha**

- Narahari Tirtha was a prominent **Dvaita Vedanta philosopher, scholar, and saint of the 13<sup>th</sup> century**.
- Believed to be born in **Chikakolu town (present Srikakulam, Andhra Pradesh)**.
- He was a **disciple of Madhvacharya**, the proponent of **Dvaita Vedanta philosophy**.
- He introduced **Yaksha Gana and Bayalu Aata** (open theatre drama) as a part of Vaishnava Bhakti Movement.
- He was consecrated near the rock adjacent to Chakratirtha at **Hampi on the banks of river Tungabhadra**.

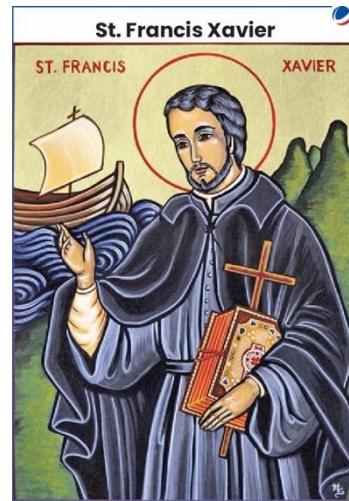


### 7.7.3. ST. FRANCIS XAVIER

Recently, the 18<sup>th</sup> decennial exposition of the **sacred relics of Saint Francis Xavier** was held for 45-days in Goa.

#### About Saint Francis Xavier (1506-1552)

- Born in Spain and revered as the **patron saint of Goa**, St Francis Xavier was the most influential member of the **Society of Jesus (or the Jesuits)**, second only to Ignatius of Loyola, its founder.
  - He is also known as “**Goencho Saib**”(or the Protector of Goa) in Goa.
- He arrived in Goa in 1542 and spent the next ten years **evangelising in India, Malacca and Japan**.
- On his way to China in 1552, he contracted a fever, **died and was buried on the island of Shangchuan**.
- Every year, on the **3rd December**, the **feast of St Francis Xavier** is celebrated which marks the **death anniversary of the Saint**.



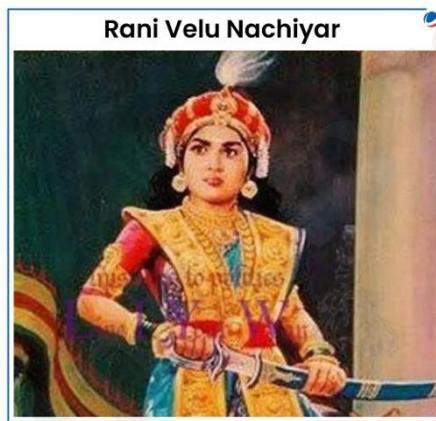
### 7.7.4. RANI VELU NACHIYAR

Prime Minister paid tribute to Rani Velu Nachiyar on her birth anniversary.

#### About Rani Velu Nachiyar (1730 –1796)

She was **princess of Ramanathapuram** (Tamil Nadu) and child of ruler of Ramnad kingdom.

- Known by Tamils as **Veeramangai**.
- Reinherited **Sivagangai kingdom** of her husband.
- She was proficient in languages like **French, English, and Urdu**.



#### Contributions

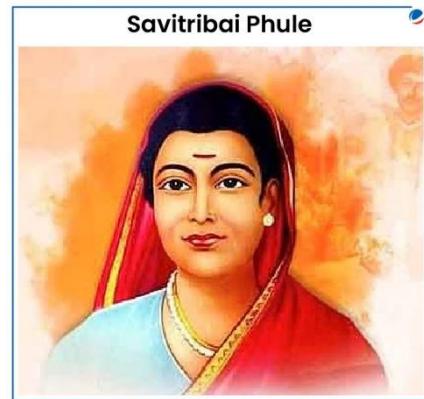
- Was **first queen** to have ever actively **opposed the British rule**.
- In collaboration with Hyder Ali and Gopala Nayaker, waged war against British.
- Went on to produce **first human bomb** and established **first army of trained women soldiers**.

### 7.7.5. SAVITRIBAI PHULE

Recently, eminent social reformer and educationist Savitribai Phule was remembered on her birth anniversary (January 03).

#### About Savitribai Phule (1831 – 1897)

- She was born in Naigaon, Satara district (Maharashtra).
- She was the **first headmistress** of the country's **first school for girls in Pune**.



#### Key Contributions

- She devoted her life to **educating Shudras and Ati-Shudras**.
- In 1873, she, along with her husband Jyotiba Phule, initiated the practice of **Satyashodhak marriage** - a marriage without dowry or a wedding at minimum cost.
  - They also **opposed child marriages** and advocated and **organized widow remarriages**.
- In 1854, she published first collection of poems **Kavyaphule**, making her the first modern poetess of Marathi.

## 7.7.6. DESHBANDHU CHITTARANJAN DAS

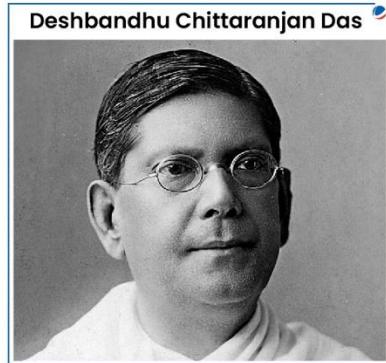
Parliamentarians paid tribute to C. R. Das on his birth anniversary.

- **Born in Calcutta**, he studied at the Presidency College, Calcutta and studied law in London.

### About Deshbandhu Chittaranjan Das (1870-1925)

#### Key Contributions:

- Successfully **defended Aurobindo Ghosh** in the Alipore bomb case in 1909.
- Participated in the **Non-Cooperation Movement in 1920**.
- Served as **Congress President in Gaya Session (1922)**.
- **Founded the Swaraj Party** within the Congress with Motilal Nehru in 1923.
- Also, he was the **1st elected mayor of the Calcutta Municipal Corporation (1924)**.
- Established **National University at Dacca (1921)**.



#### Literary Work:

- **Newspaper**- ‘Forward’, later named ‘Liberty’. (**Subhash Chandra Bose was the editor**).
- **Books**- India for Indians, Freedom through Disobedience.

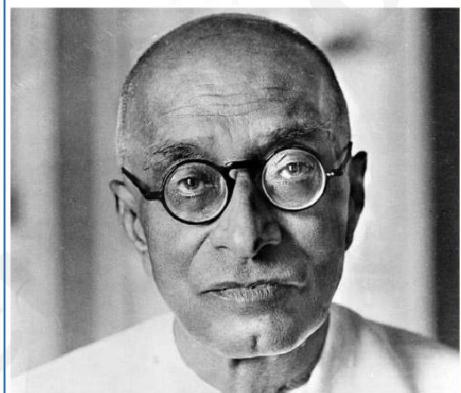
## 7.7.7. C. RAJAGOPALACHARI

C. Rajagopalachari remembered on his birth anniversary.

### About C. Rajagopalachari (1878-1972)

- Chakravarti Rajagopalachari, popularly referred to as Rajaji was born on 10th december in Thorapalli, Tamil Nadu.
- He was a **patriot, social reformer, renowned lawyer & abled administrator** etc.

C. Rajagopalachari



#### Key Contribution

- **Independence Movement**: Participated in agitations against Rowlett Act, Non-Cooperation movement, Vaikom Satyagraha, & Civil Disobedience Movement.
- **Constitution Making**: Rajaji as a **member of Constituent Assembly from Madras** contributed to constitution making.
- **Later Contribution**: Served as the **last Governor-General of India till 1950**, and formed **Swatantra Party**.

## 7.7.8. SUBRAMANIA BHARATI

Mahakavi Subramania Bharti remembered on his **143rd birth anniversary**.

### About Subramania Bharti (1882-1921)

- A great **Tamil poet and freedom fighter**, regarded as the **father of the modern Tamil literary style**.
- He was involved in a faction of the Indian National Congress (INC) party that **favoured armed resistance against the British raj**.
- He began his career as a **journalist** in “**Swadesamitran**”(1882)

Subramania Bharati



### **Key contributions**

- He championed the **empowerment of youth and women** and had immense faith in **science and innovation**.
- **Notable works:** Kaṇṭan pāṭṭu, Panchali sapatham, Kuyil pāṭṭu etc.

### **7.7.9. MAULANA ABUL KALAM AZAD**

National Education Day honoring the **birth anniversary of Maulana Abul Kalam Azad** is celebrated on **November 11** (since 2008).

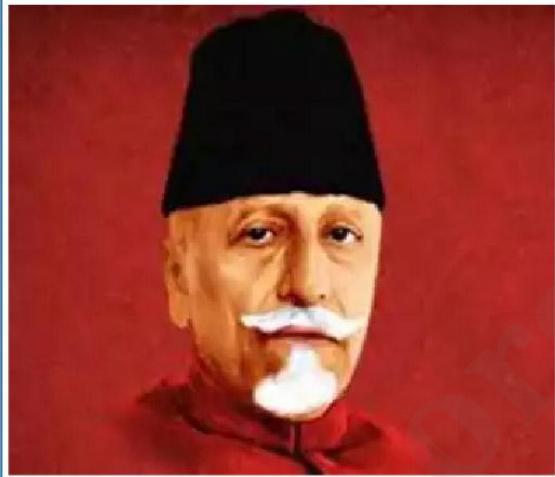
#### **About Maulana Abul Kalam Azad (1888 - 1958)**

- Born in Mecca, Saudi Arabia, he was a noted **educationist, polyglot**.
- He served as **first education minister of independent India** from 1947-1958.

#### **Key Contributions**

- Served as the **President of the Indian National Congress in 1923 (Delhi special session)** and 1940 (**Ramgarh**).
- Served as the **President of All-India Khilafat Committee** during the Khilafat Movement (1920-24).
- Participated in the **Dandi March (1930)** and the **Quit India Movement (1942)**.
- Was a **member of Constituent Assembly** from the United Provinces.
- Played role in establishing institutions like **Indian Council for Cultural Relation; University Grants Commission**; etc.
- **Rewards and Recognition:** Awarded **Bharat Ratna (1992)**, posthumously.

**Maulana Abul Kalam Azad**



### **7.7.10. DR. HAREKRUSHNA MAHTAB**

The 125th Birth Anniversary of Dr. Harekrushna Mahtab (Known as Utkal Keshari) has been celebrated.

#### **About Dr. Harekrushna Mahtab(1899- 1987)**

- He was a freedom fighter, politician, historian, writer, social reformer, and journalist.

#### **Contribution**

- Participating actively in **Non-Cooperation Movement, Salt Satyagraha** etc.
- Played key role in the **integration of Odisha into the Union of India**.
- Influenced by figures like Swami Vivekananda, Ramkrishna Paramhansa and Mahatma Gandhi.
- Served as the **Chief Minister of Orissa** from 1946 to 1950.

**Dr. Harekrushna Mahtab**



### 7.7.11. TULSI GOWDA

The **environmentalist and Padma Shri awardee** Tulsi Gowda passed away recently.

#### About Tulsi Gowda (1944-2024)

- She was born in **Halakki tribal family** of Karnataka's Honnali village.

#### Key Contribution

- She is known as the "**Encyclopedia of the Forest**" and by her tribe as the "**tree goddess**" because of her knowledge of the forest.
- She has been credited with planting and nurturing over **1 lakh trees** across Karnataka.
- In 2021, she was conferred the **Padma Shri** for her exceptional contributions to environmental conservation.

Tulsi Gowda



## 7.8. AWARDS

### 7.8.1. INDIRA GANDHI PRIZE

Former Chile President, Michelle Bachelet is to be conferred the **Indira Gandhi Prize for Peace, Disarmament and Development, 2024**.

- She would be awarded for her work to improve gender equality, human rights and democracy.

#### About Indira Gandhi Prize

- Awarded **annually** to a **person or organization** in recognition of creative efforts towards **promoting international peace and disarmament**, etc.
- It consists of an **award of Rs.10 million** and a **trophy with a citation**.
- Scrutiny of proposals and final selection is made by a **jury of 5 to 9 eminent persons**, named by the Chairperson of the Indira Gandhi Memorial Trust.

### 7.8.2. NATIONAL SPORTS AWARDS

Recently, President of India presented National Sports Awards 2024.

#### 6 Categories of National Sports Awards

- Major Dhyan Chand Khel Ratna Award (Since 1991-92):** Awarded for **outstanding performances in sports spanning over a period of 4 years**.
  - Recently, it has been awarded to **Gukesh D (Chess), Harmanpreet Singh (Hockey), Praveen Kumar (Para-Athletics), Manu Bhaker (Shooting)**.
- Arjuna Award (Since 1961):** Awarded for **consistent good performance over a period of 4 years**.
- Dronacharya Award (Since 1985):** It is **highest sports honour for coaches**.
- Major Dhyan Chand Award (Since 2002):** India's highest honour for lifetime achievements in sports.
- Rashtriya Khel Protsahan Puruskar (Since 2009):** Awarded to **organisations /corporates (private & public) & individuals** for playing a role in area of sports promotion & development **over last 3 years**.

## 7.9. TRIBES IN NEWS

### TRIBES IN NEWS

#### 6. Hatti Tribe:

📍 Himachal Pradesh  
📍 Uttarakhand

#### 8. Bodo Tribe:

📍 Assam

#### 2. Angami Naga Tribe:

📍 Nagaland

#### 3. Koraga Tribe

📍 Karnataka  
📍 Kerala

#### 1. Birhor Tribe

📍 Jharkhand  
📍 Chattisgarh  
📍 West Bengal  
📍 Odisha

#### 5. Mannan Community:

📍 Kerala

#### 7. Gotti Koya Tribe:

📍 Chattisgarh

#### 4. Jarawa Tribe:

📍 Andaman & Nicobar Islands

#### 1. Birhor Tribe



**Jharkhand's Birhor tribe** have joined movement against child marriage for first time.

#### About Birhor Tribe

- ⊕ They are **Particularly Vulnerable Tribal Group (PVTG)**, forest-dependent and belong to a semi-nomadic tribal community.
  - PVTGs are **identified by the ministry of home affairs**. Currently there are **75 PVTGs communities**.
- ⊕ They speak **Birhor language**, which belongs to **Munda group** of languages of **Austroasiatic language family**.
  - Their language has similarities with Santali, Mundari and Ho languages.
- ⊕ Found in **Jharkhand, Odisha, Chhattisgarh and West Bengal**.

## 2. Angami Naga Tribe



The Angami Naga tribe participated in 'Stone Pulling Ceremony' as part of Nagaland's Hornbill Festival.

### Angami Naga Tribe

- ⦿ **Habitat:** They primarily reside in **Kohima and Dimapur districts** of Nagaland.
  - Their Villages are organized into **Khels (Thinuo)** based on clan divisions.
- ⦿ **Language:** **Tenyidie**, written in **Roman script** (Tibeto-Burman origin).
- ⦿ **Festival:** **Sekrenyi**, a prominent **harvest celebration** integral to Angami culture.
- ⦿ **Traditional attire:** Lorumhoushu, Lohe, Ratapfe, and Kilt.
- ⦿ **Religion:** Predominantly Christian.
- ⦿ **Historical Event:** **Angami Rebellion (1879)** against British imperialism is a notable chapter in their history

## 3. Koraga tribe



Koraga tribal community in Kerala is set to receive land titles under **Operation Smile project**.

- ⦿ The project has been **launched by the Kerala government** with the aim **to rehabilitate, support homeless people**.

### About koraga tribe

- ⦿ **Habitat:** It is one of the **Particularly Vulnerable Tribal Groups (PVTGs)** found in **Kasaragod district (Kerala) and Karnataka**.
- ⦿ **Status:** Accorded the status of scheduled Tribe under Presidential order 1956.
- ⦿ **Traditional occupation:** Basket making
- ⦿ **Language:** speaking **Tulu** language but they have their independent language

## 4. Jarawa tribe



Jarawa Tribe of **Andaman & Nicobar Islands** has been **enrolled in Electoral Roll for first time**.

### About Jarawa tribe

- ⦿ The Jarawa tribes with an estimated population of 341 inhabit the **Western coasts of South & Middle Andaman islands**.
- ⦿ **Occupation:** They lead their normal life of **hunting and gathering**.
- ⦿ This community is **one of the original inhabitants of Andaman and Nicobar Island**, others being **Great Andamanese, Onge, Sentinelese and Shompen**.

## 5. Mannan Community



**Raman Rajamannan**, the king of the Mannan community and the **only tribal king in Kerala**, participated in the **Republic Day parade in Delhi**.

### About Mannan community

- ⦿ **Region:** Mainly inhabit **Kumily Panchayat in Idukki district (Kerala)**.
- ⦿ **Language:** They possess a unique dialect that **blends Tamil and Malayalam**.
- ⦿ **Occupation:** They are **skilled agriculturalists**, particularly adept at cultivating crops in mountainous terrains.
- ⦿ **Religion:** Predominantly **follow Hinduism**, incorporating deities like Shiva, Vishnu, Bhagawati, and Sastha into their worship practices.

## 6. Hatti Tribe



Boda Tyohar festival (locally known as **Magho ko Tyohar**), the largest annual celebration for the Hatti tribes of the Trans-Giri region in **Himachal Pradesh** has started.

### About Hatti Tribe

- ⊕ **Notified as Scheduled Tribe under the Constitution (Scheduled Tribe) Order (Second Amendment) Act, 2023.**
- ⊕ **Named after their tradition** of selling homegrown produce, etc. at small markets known as 'Haat' (**weekly markets**) in towns.
- ⊕ Often referred to as **trans-Giri due to their location near the Giri and Tons river**
- ⊕ Live in states of **Uttarakhand and Himachal Pradesh.**

## 7. Gotti Koya tribe



National Commission for Scheduled Tribes has asked Centre, States to submit a detailed report on status of Gotti Koya tribals.

### About Gotti Koya or Guttikoya tribe

- ⊕ These are the **Adivasi tribe of Chhattisgarh**, who had relocated from Chhattisgarh to neighboring States in 2005 to escape violence between Naxals and Indian security forces.
- ⊕ **Language:** Speak their mother-tongue **Gondi, a south-central Dravidian language.**
- ⊕ **Traditional Occupation:** Hunting, food gathering and fishing.
- ⊕ **Festivals and Ritual performances:** They believe in **multiple Gods and Goddesses.**
  - They **worship nature** first which provides food and livelihood to them.
- ⊕ **Political organization:** Villages are politically organized with its head called Patel.

## 8. Bodo Tribe



First Bodoland Mahotsav was inaugurated in New Delhi to celebrate Bodo language, literature, and culture.

### About Bodo Tribe

- ⊕ **Inhabiting areas:** The Bodos are one of Assam's largest indigenous communities concentrated in Assam's **Bodoland Territorial Region (BTR)** covering Kokrajhar, Baksa, Udalguri, and Chirang districts.
  - BTR is governed by **Bodoland Territorial Council** established under the **Sixth Schedule** of the constitution.
  - They also live in **Bangladesh, Nepal** and other states of North-East India.
- ⊕ **Bodo language:** It is part of the **Tibeto-Burman language family** and is also in **8th schedule** Constitution.
- ⊕ **Bodo Peace Accord (2020):** Signed between the Centre, state government of Assam and Bodo Groups.

## 9. Thadou Tribe



Thadou Convention released a 10-point declaration to protect Thadou tribe's distinct culture in Manipur.

### About Thadou Tribe

- ⊕ Thadou are **indigenous non-naga tribe** (Schedule Tribe) of Imphal Valley in **Manipur**.
- ⊕ **Language:** Thadou language belongs to **Tibeto-Burman family** of Sino-Tibetan languages.
- ⊕ **Religion:** **God Pathen** (Folk religion) is believed by Thadou to have created everything.
- ⊕ **Dwellings:** Thadou settlements are located in forests. Villages are not arranged according to an established urban plan with **no marking of perimeter**.
- ⊕ Since 2023, Thadous have been caught in ethnic conflict between Meitei and Kuki-Zo communities.

## 7.10. MISCELLANEOUS

### 7.10.1. IRON AGE IN INDIA

#### Why in the News?

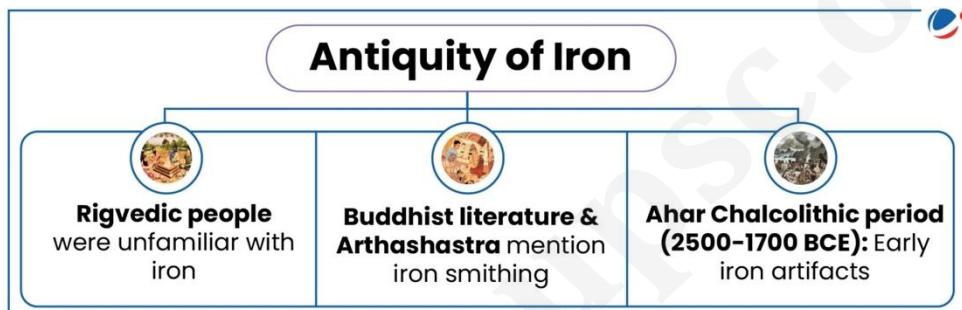
A groundbreaking study has revealed that the Iron Age may have begun in Tamil Nadu as early as 3,345 BCE.

#### More on News

- The report 'Antiquity of Iron: Recent Radiometric Dates from Tamil Nadu' challenges the belief that iron technology first emerged in the Hittite Empire (1300 BCE, Anatolia, Turkey).
- Excavations at Adichchanallur, Sivagalai, Mayiladumparai, Kilnamandi, Mangadu, and Thelunganur provided new scientific dates.

#### Iron Age in India: New Findings

- Background**
  - Earlier, India's Iron Age was thought to begin in the 1st millennium BCE, later pushed to the 2nd millennium BCE with finds from Rajasthan and UP.
  - New evidence from Tamil Nadu now dates it back to the mid-3rd millennium BCE.
- Dating Techniques used in study:** Accelerator mass spectrometry radiocarbon (AMS 14C) and Optically Stimulated Luminescence (OLS) dating.
- Key Findings**
  - Tamil Nadu's Iron Age is the oldest recorded globally.
    - Sivagalai:** Iron-related finds dated 3345–2953 BCE, with a burial urn sample at 1155 BCE, making it the earliest recorded evidence of iron technology globally.
    - Mayiladumparai:** Iron samples from 2172 BCE.
    - Kilnamandi:** Earliest-dated sarcophagus burial in Tamil Nadu, from 1692 BCE marking a significant milestone as the earliest-dated burial of its kind in Tamil Nadu.
  - Advanced Metallurgy:** The sophistication of early Indian metallurgy is evidenced by the discovery of three distinct types of iron-smelting furnaces at sites including Kodumanal, Chettipalayam, and Perungulur.
    - These furnaces could achieve temperatures up to 1,300°C, demonstrating the advanced pyrotechnological understanding necessary for producing sponge iron.
  - Copper and Iron Age were contemporaneous:** When cultural zones located north of Vindhyas experienced the Copper Age, the region south of Vindhyas might have entered into Iron Age due to the limited availability of commercially exploitable copper ore.



#### Key Evidences of Iron Age in Different Parts of India

<b>Iron Age in North India</b>	<p>The Iron Age in North India is archaeologically represented by particular pottery types.</p> <ul style="list-style-type: none"><li><b>Key Pottery Types:</b> Painted Grey Ware (PGW) &amp; Northern Black Polished Ware (NBPW).</li><li><b>Timeline:</b><ul style="list-style-type: none"><li><b>PGW</b> (800–400 BCE): Found in Ghaggar-Hakra River, Rajasthan, and Ganga-Yamuna Divide. Used mainly for weapons.</li><li><b>NBPW</b> (600–100 BCE): Coincides with the Early Historic period (600 BCE–300 CE), Iron use expanded for specialized purposes.</li></ul></li></ul>
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<b>Iron Age in South India</b>	In peninsular India, it is essentially the megaliths, sometimes associated with habitation sites that comprise the Iron Age in the region <ul style="list-style-type: none"> <li>• <b>Megalithic Culture (1000–100 BCE)</b>: Associated with habitation sites.</li> <li>• <b>Key Sites:</b> <ul style="list-style-type: none"> <li>○ <b>Naikund, Vidarbha</b> – Evidence of an iron-smelting furnace.</li> <li>○ <b>Paiyampalli, Tamil Nadu</b> – Large quantities of iron slag found.</li> </ul> </li> <li>• <b>Iron Usage</b>: Technological advancement in <b>fire control for iron extraction</b>.</li> </ul>
<b>Iron Age in Other Regions</b>	<ul style="list-style-type: none"> <li>• <b>Central India (Malwa)</b>: Sites like Nagda, Eran, and Ahar (750-500 BCE).</li> <li>• <b>Middle &amp; Lower Ganga Valley</b>: Post-Chalcolithic pre-NBPW sites like Pandu Rajar Dhibi, Mahisdal, Chirand, and Sonpur (~750-700 BCE).</li> </ul>

### Impact of the Iron Age

- **Technological & Economic Impact**
  - **Metallurgical Advancements**: Improved **agriculture, warfare, and craftsmanship**.
  - **Urbanization**: Led to **India's Second Urbanization (800-500 BCE)**, with town development in the **Ganga Valley**.
  - **Agriculture**: Iron tools like **hoes and ploughshares** boosted productivity.
- **Political & Cultural Influence**
  - **Rise of Mahajanapadas**: Improved food production supported **large kingdoms**.
  - **Art & Architecture**: The **Delhi Iron Pillar (4th century CE)** showcases advanced rust-resistant metallurgy.
  - **Warfare Evolution**: Iron weapons, armor, and chariots transformed **military strategies**.

## 7.10.2. FIRST ASIAN BUDDHIST SUMMIT

### Why in the News?

**Ministry of Culture** and **International Buddhist Confederation** organised the first Asian Buddhist Summit, 2024.

### More on the news

- The summit, themed '**Role of Buddha Dhamma in Strengthening Asia**' saw participation from **32 countries** with over **160 international participants**.

### Significance of First Asian Buddhist Summit

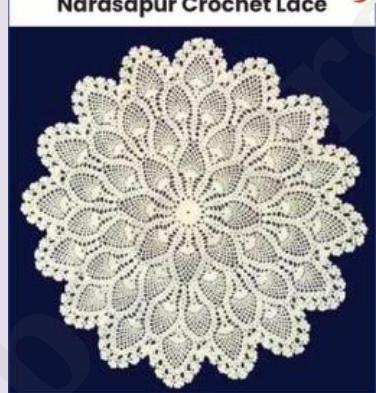
- Emphasized the **profound interconnection** among **Buddha Dhamma, India, and Asia**, showcasing their **complementary relationship**.
  - The summit also adopted '**The Delhi Declaration**' (See box).
- The Summit reaffirmed the **role of Buddha Dhamma** as a guiding framework for **ethical governance, compassionate action, and sustainable development** with mindfulness.
- The Summit aligns with **India's Act East Policy and Neighborhood First Policy**, focusing on **collective, inclusive, and spiritual development** in Asia.

### Delhi Declaration

- **Build stronger connections** between Asian nations based on Buddha Dhamma principles.
- **Focus on preserving and studying Pali texts** and Buddhist philosophy.
- **Involve youth** more actively in cultivating a value-based society.
- **Explore the relevance of Buddha Dhamma** in modern scientific and medical fields.
- **Emphasize Buddha's teachings** as a unifying force for global peace and understanding.

## 7.11. GOVERNMENT INITIATIVES IN NEWS

### 7.11.1. NEW GEOGRAPHICAL INDICATION (GI) TAGS

Product	Description	
Gharchola Sari, Gujarat	A traditional wedding sari from Gujarat, historically crafted in auspicious colors like red, maroon, green, and yellow, it is traditionally worn during Hindu and Jain weddings.	 A photograph of a Gharchola Sari, featuring a red and green patterned fabric with a decorative border.
Narasapur Crochet Lace, Andhra Pradesh	From West Godavari District, Andhra Pradesh, these are Crochets crafted with cotton thread in different colors. Lace work is done using thin threads woven with thin crochet needles of varying sizes.	 A photograph of a circular Narasapur Crochet Lace doily, showing intricate white lace patterns on a dark blue background.

### 7.11.2. PROJECT VEER GATHA

Over 1.76 crore school students from all States & Union Territories participated in Project Veer Gatha 4.0.

#### About Project Veer Gatha

- Ministry:** It is a joint initiative by the **Ministry of Defence** and the **Ministry of Education**.
- Started:** Organized **since 2021**.
- Objective:** Disseminate the inspiring **tales of valour, selfless sacrifice and courage of the Gallantry Awardees** and the life stories among the students **to inculcate the spirit of patriotism**.
- Scope:** The Project is open for all schools in all states and Union Territories as well as all schools affiliated to CBSE.

### 7.11.3. YUGA YUGEEN BHARAT NATIONAL MUSEUM

The **Ministry of Culture** has partnered with **France Museums Développement** (FMD) to develop the Yuga Yugeen Bharat National Museum into a world-class cultural institution.

#### About Yuga Yugeen Bharat National Museum

- It is part of the **Central Vista Redevelopment Project**, and spans across New Delhi's North and South Blocks.
- Museum will **showcase India's heritage**.
- It will be developed using **Adaptive Reuse**, ensuring preservation of architectural heritage of North and South Blocks.
  - This approach mirrors **France's "Grands Projets" initiative**, which saw the transformation of government buildings into iconic cultural spaces.

## 7.12. HISTORICAL EVENTS IN NEWS

### 7.12.1. COMMUNIST PARTY OF INDIA

#### Why in the News?

2025 marks the Communist Party of India's (CPI) **100<sup>th</sup> foundation year**.

#### About Communist Party of India

- **Background**
  - **Formation of CPI outside India (1920):** A group of seven people including leaders like **M.N. Roy, Mohd. Ali, Mohd. Shafiq, etc.** met in **Tashkent** (capital of the then Turkistan Republic of the Soviet Union), to form the **Communist Party of India**.
  - **Reason behind the formation:** Disappointment caused by the **sudden withdrawal of the non-cooperation movement** and inspiration from the **October revolution of 1917**.
  - **Formation of CPI inside India:** A resolution announcing the formation of CPI was adopted during '**Kanpur Communist Conference**' in December **1925**.
  - **First President:** Malayapuram Singaravelu Chettiar. In May **1923**, the **1<sup>st</sup> May Day celebration in India** was organized under his leadership.
  - **First general secretaries:** S.V.Ghate and J P Bagerhatta
  - **Founding members of the party:** Satyabhakta, M.N.Roy, E.T.Roy, Abani Mukherjee, Mohammad Ali, Hasrat Mohani etc.
- **Ideology:** They followed **Marxist and Leninist ideas**. It is a **political ideology and a system of government based on the ideas of Karl Marx and Vladimir Lenin**.
- **Publications supported by CPI:** Ganavani (Bengali weekly), Mehnatkash (Urdu weekly from Lahore) and Kranti (Marathi weekly from Bombay).
- **Key events in the history of CPI:**
  - **Ban:** British government declared **CPI illegal in July 1934** and the ban was **lifted in 1942**.
  - **Split:** In 1964 following the **ideological rift between Soviet Union and China**, CPI split into the CPI (pro-Soviet faction) and CPI (Marxist) (pro-China faction).

#### Role of CPI in Indian Freedom Struggle

- **Mobilization of masses:** CPI led groups like **All India Trade Union Congress (AITUC)**, 1920, **All India Kisan Sabha (AIKS)**, **All India Student's Federation** (1936), and **Mahila Sanghmas** and mobilized workers, peasants, women, and youth into the freedom struggle.
- **Social reforms:** CPI advocated for **Dalit rights, Hindu-Muslim unity, and a united nation** against colonial rule.
  - **Kerala:** Leaders like **AK Gopalan** and **P Krishna Pillai** led the **Guruvayur Satyagraha** for temple entry of Untouchables.
  - **Maharashtra:** **R.B. More** organized **Ambedkar's Chavdar Lake Satyagraha at Mahad in 1927**.
- **Demand for Full Independence:** With **open letters to INC sessions** in Ahmedabad (1921) and Gaya (1922), later adopted at **Lahore (1929)**.
- **Ideological Influence:** Through the **All India Students Federation and Progressive Writers Association**, CPI promoted revolutionary ideas against British rule.
  - **British reaction:** The **Meerut Conspiracy case (1929)** targeted communist leaders due to their growing influence.
- **Role in Constitution making:**
  - **Idea of constitution:** **M.N. Roy** proposed a **constitution in 1934**; CPI suggested a **constituent assembly**.
  - **Ideals of Constitution:** CPI shaped **secularism, justice, equality, suffrage, minority rights, and land reforms in the Constitution**.

*For more on key revolts by the CPI, refer to the Appendix 2 at the end of the document.*

## 7.12.2. HARIDASA MOVEMENT

Mysuru Sangeetha Sugandha festival is celebrating the revered **Daasa traditions of Carnatic music of Haridasa movement.**

### About Haridasa Movement

- **Origin:** In Karnataka, and later spread to eastern states such as Bengal and Assam.
  - This movement was **started by the Haridasas** ("servants of Lord Hari") and took shape in the **13-14th century.**
- **Objective:** To propagate the **Dvaita philosophy of Madhvacharya** (Madhva Siddhanta) through Dasa Sahitya i.e. literature.
  - Madhvacharya's philosophy of **shuddha-dvaita, or pure dualism**, logically established that God is eternally a person and is forever distinct from His creation.

## 7.12.3. 1924 BELGAUM CONGRESS SESSION

**Centenary of 1924 Belgaum Congress Session** was celebrated in **Belagavi (earlier Belgaum)**, Karnataka on December 26-27.

### About 1924 Belgaum Congress session

- It was **39<sup>th</sup> Session of the Indian National Congress** and was the **only session presided over by Mahatma Gandhi.**
- **Significance**
  - Discussed his **dream of 'Swaraj'** and '**Sarvodaya**'.
  - **Revamped organisational structure and functioning of congress** with 90% fee cut, focusing on social change, etc.
  - Held **separate conferences against untouchability**.
  - Strong resolutions were passed to stress upon **Hindu-Muslim unity, paid social service, and making khadi spinning mandatory**.

## 7.12.4. KUKA REVOLT

Recently, tribute has been paid to the martyrs of the Kuka Movement.

### About Kuka Movement (1872)

- The Kuka Movement was the **first major reaction in Punjab against the British political order** established after 1849.
- It was a crucial phase of the **Namdhari Movement**, founded by **Satguru Ram Singh in 1857**, at Bhaini Sahib.
- The **Namdharis, also known as "Kukas"** due to their high-pitched recitation of Gurbani called "Kook" in Punjabi, were urged by Ram Singh to boycott all British goods and services.
  - He organized the Kukas and provided **military training to young men**.
- The movement raised awareness of subjugation, promoted civil disobedience, and encouraged **wearing hand-spun white attire** as a symbol of resistance.

## 7.13. FESTIVALS IN NEWS

### 7.13.1. MAHA KUMBH MELA 2025

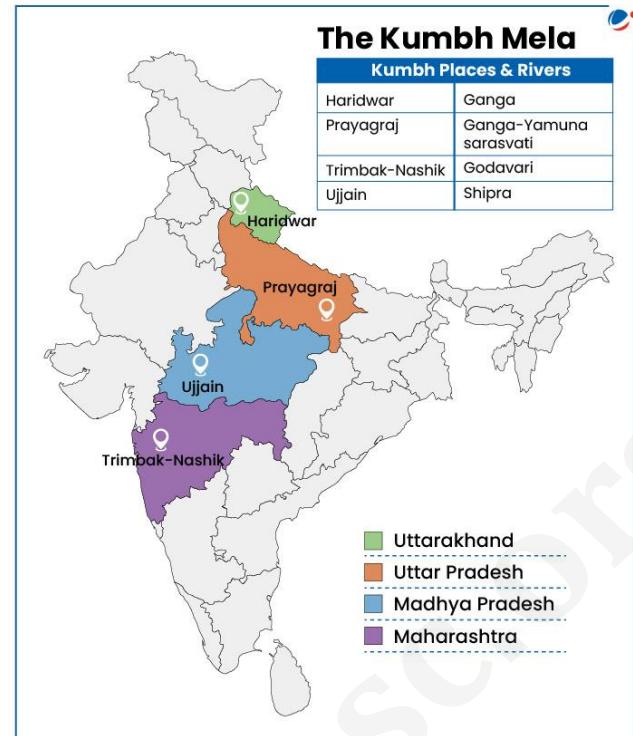
Maha Kumbh mela, the world's largest spiritual gathering, was celebrated from January 13 to February 26, 2025 at Prayagraj, Uttar Pradesh.

#### About Maha Kumbh Mela

- Kumbh Mela, in **Hinduism**, is a religious pilgrimage that is **celebrated four times over 12 years**.
- Key Rituals and Practices:** Shahi Snan, Deep Daan, and Kalpavas (emphasizing discipline and austerity).

#### Other key Facts:

- It has been listed as an **Intangible Cultural Heritage** under **UNESCO** in 2017.
- Chinese traveller **Huen Tsang** (visited India in the 7th century during the reign of King **Harshavardhana**) was the first to mention Kumbh Mela in his diary.
- Saint Shankaracharya** gave Kumbh Mela its final shape in 9<sup>th</sup> century.
- Prayagraj Kumbh Mela 2019** has been placed in the **Guinness World Record** for having the biggest sanitation and waste disposal mechanism among others.



Year	India's Intangible Cultural Heritage List
2024	<b>Nawrouz</b>
2023	<b>Garba</b> of Gujarat
2021	<b>Durga Pooja</b>
2017	<b>Kumbh Mela</b>
2016	<b>Yoga</b>
2014	Traditional brass and copper craft of utensil making among the <b>Thatheras of Jandiala Guru, Punjab</b> .
2013	<b>Sankirtana</b> , ritual singing, drumming and dancing of Manipur
2012	<b>Buddhist chanting of Ladakh</b> .
2010	<b>Chhau dance, Kalbelia folk songs</b> and dances of <b>Rajasthan, Mudiyettu</b> , ritual theatre and dance drama of <b>Kerala</b>
2009	<b>Ramman</b> , religious festival and ritual theatre of the Garhwal Himalayas, India
2008	<b>Kutiyattam</b> , Sanskrit theatre, Tradition of <b>Vedic chanting, Ramlila</b> , the traditional performance of the Ramayana

### 7.13.2. GANGASAGAR MELA

Lakhs of devotees took a dip at Gangasagar Mela on the occasion of Makar Sankranti.

#### About Gangasagar Mela

- Location:** The mela is held at **Sagar Island**, located in the **Sundarbans delta** of West Bengal.
  - The island is situated at the point where the **Ganges River merges with the Bay of Bengal**.
- It is an **annual religious fair** where the main ritual involves **taking a dip in the waters at the confluence**, especially at sunrise on Makar Sankranti.
- The pilgrimage site:** Kapil Muni Temple, dedicated to the sage Kapil Muni.
- Significance:** Second-largest human gathering after Kumbh Mela.

## 7.14. OTHER IMPORTANT NEWS

### 7.14.1. BHARAT RANBHOOMI DARSHAN

Ministry of Defence launched Bharat Ranbhoomi Darshan website and app as part of its 'Battlefield Tourism' plan.

- It will be a **one-stop destination** for information and clearances for **battlefield visits**, featuring virtual tours and historical narratives.
- Indian Army**, in conjunction with **Ministry of Tourism**, has **shortlisted** some other **border sites** that have witnessed military action in the past
  - These include **Kibithoo** and **Bum La Pass** (Arunachal Pradesh), **Rezang La** and **Pangong Tso** (Ladakh), and **Doklam** (site of 2017 conflict).

### 7.14.2. KAILASH MANSAROVAR

In Special Representatives meeting, India and China affirmed implementation **of October 2024 disengagement border agreement**.

- It also provided positive steps **for resumption of Kailash Mansarovar Yatra** and **data sharing on trans-border rivers and border trade**.

#### About Kailash Mansarovar

- It is a **holy pilgrimage** consisting of the **Kailash mountain** (highest peak in Kailash Ranges) and the sacred lake, **Mansarovar**, located in **Tibet**.
  - Mansarovar lake** is considered the **world's highest fresh-water lake**.
- Pilgrims from India can reach Mount Kailash through the **Lipulekh pass in Kumaon**.
- Cultural significance:** It is considered holy in Hinduism, Buddhism, Jainism and for Tibetans as well.

### 7.14.3. VEER BAAL DIWAS

Recently, the Veer Baal Diwas was celebrated on the 26<sup>th</sup> December.

#### About Veer Baal Diwas

- It is annually observed on **December 26 since 2022**.
- It honors the bravery and sacrifice** of the 10<sup>th</sup> Sikh guru Guru Gobind Singh's youngest sons - **Zorawar Singh and Fateh Singh**.
  - Both were captured by the Mughal forces at Anandpur fort and martyred around December 26, 1705.
- The Government of India also confers the **Pradhan Mantri Rashtriya Bal Puraskar** (PMRBP) to children for exceptional achievements in seven categories.

### 7.14.4. VICE-PRESIDENT ADDRESSED 27TH INTERNATIONAL CONGRESS OF VEDANTA IN DELHI

The theme of the conference was "**Re-imagining Vedāntic World Order**" reflecting contemporary relevance of Vedant.

#### About Vedant Philosophy

- Meaning:** Vedanta means "**the end of the Vedas**," originally referring to the **Upanishads**, the concluding parts of the Vedic texts.

#### Major Schools of Vedanta Philosophy



**Advaita Vedanta**  
Asserts the unity of Brahman and Atman. The prominent philosopher was **Adi Shankaracharya** (8<sup>th</sup> century CE).



**Dvaita Vedanta**  
Brahman and Atman are always totally different from each other. The prominent philosopher was **Madhavacharya** (1238–1317 CE).



**Vishishtadvaita Vedanta**  
Atman is different from the Brahman though connected to it as root. The prominent philosopher was **Ramanuja** (1017–1137 CE).

- However, it also includes various **interpretations of the Upanishads**.
- **Philosophy:** Vedanta, the **Uttara-Mimāṃsā** philosophical thought, addresses profound questions like :
  - ‘Who am I?’
  - ‘What is this Universe?’
  - ‘How am I related to the Universe?’
- **Key components:** There are three main concepts in Vedanta:
  - **Brahman:** The ultimate reality.
  - **Atman:** The individual souls.
  - **Prakriti:** The physical world.
- **Swami Vivekananda** introduced Vedanta to the West at the **1893 Chicago Parliament of Religions**.

#### 7.14.5. WORLD MEDITATION DAY

UN General Assembly has declared **December 21** as World Meditation Day to raise awareness about meditation's benefits, emphasizing the right to physical and mental health.

##### About World Meditation Day

- Supported by countries like **Liechtenstein, Sri Lanka, Nepal, Mexico, and Andorra**, the resolution was adopted unanimously by the 193-member UN General Assembly on December 06, 2024.
- **2024 Theme:** “Meditation for Global Peace and Harmony”
- **Significance:** Establishment of this day serves as a reminder of the importance of nurturing human consciousness and addressing global challenges such as conflicts, climate crises, and technological advancements through inner peace and compassion.

#### 7.14.6. AUSTRALOPITHECUS

New research provides evidence that Australopithecus, an important **early human ancestor**, consumed very little or no meat, **relying on a plant-based diet**.

- **Nitrogen isotope analysis** of tooth enamel reveals no evidence of meat consumption in Australopithecus.
- The findings **challenge previous assumptions** about **early hominins** and **suggest that significant meat-eating may have emerged with later species**.

##### About Australopithecus

- **Australopithecus afarensis** is one of the longest-lived and best-known early human species
- It inhabited **eastern and southern Africa** from **roughly 4.2 to 1.9 million years ago**.

#### 7.14.7. BAALBEK, TYRE & ANJAR

Lebanon's UNESCO Cultural Heritage sites- **Baalbek, Tyre, and Anjar** are being endangered by recurrent assaults.

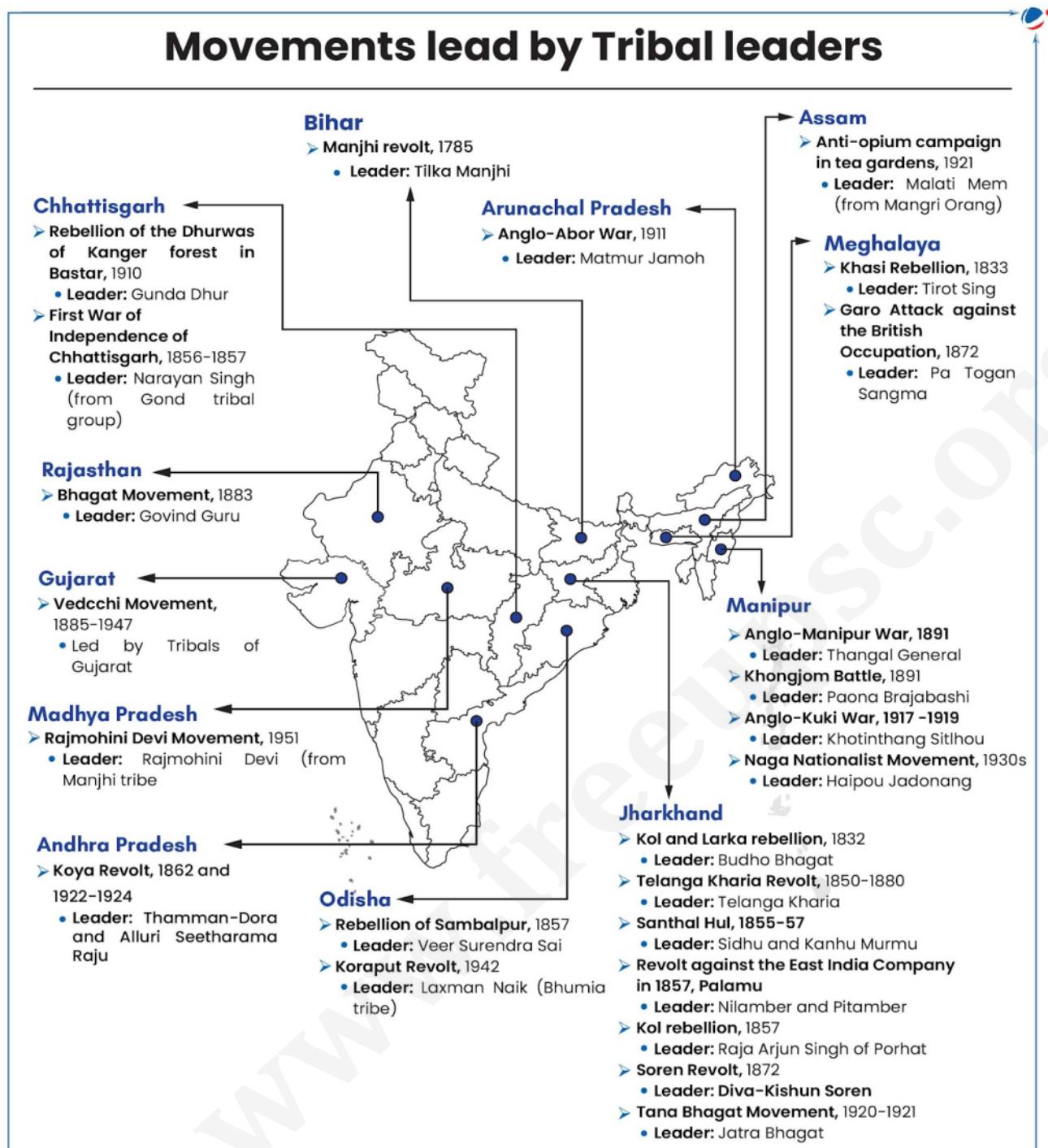
##### About Baalbek, Tyre, and Anjar

- **Baalbek:** Baalbek, with its colossal structures, is one of the finest examples of **Imperial Roman architecture** at its apogee.
- **Tyre:** This great **Phoenician city** ruled the seas and founded prosperous colonies such as Cadiz and Carthage, but its historical role declined at the end of the Crusades.
  - According to legend, **purple dye was invented in Tyre**.
- **Anjar:** The city of Anjar was founded by Caliph Walid I at the beginning of the **8th century**.
  - The ruins reveal a very regular layout, reminiscent of the palace-cities of ancient times, and are a unique testimony to city planning under the **Umayyads**.

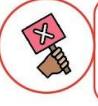
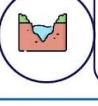
## 7.15. ERRATA

- In PT-365 (April to October, 2024) in Article 2.4.5 (Thanjavur Veena), it was incorrectly mentioned that 'Thanjavur Veena is the **first musical instrument in India** to receive the Geographical Indication (GI) tag'.
- The correct statement is Thanjavur veena is the **second musical instrument in India** to receive the Geographical Indication (GI) tag. **The first musical instrument to receive GI tag is Bobbili Veena from Andhra Pradesh.** The error is regretted.

## 8. APPENDIX 1: MOVEMENT LEAD BY TRIBAL LEADERS



## 9. APPENDIX 2: MAJOR REVOLTS SUPPORTED BY CPI

Major revolts supported by CPI	
Revolt	Details
 <b>Telangana People's Revolt (1946-1951)</b>	Armed struggle in the Telangana region <b>launched by the Communist Party and the Kisan Sabha for abolishing landlordism.</b>
 <b>Tebhaga Struggle (1946-1949)</b>	<b>Communist Party</b> led <b>All India Kisan Sabha (AIKS)</b> spearheaded the movement in West Bengal demanding a threefold division of produce (tebhaga)- <ul style="list-style-type: none"> <li>➤ 2/3<sup>rd</sup> to tenant farmers (bargadars)</li> <li>➤ 1/3<sup>rd</sup> to the sublandlords (jotedars)</li> </ul>
 <b>Punnapra-Vayalar Struggle (1946)</b>	Led by the Communist Party, coir workers, farm workers, and other sections of the working class in <b>Allapuzha (now Kerala)</b> against the <b>dewan</b> running the state in <b>brutal and autocratic manner</b> and <b>refusing to merge with India</b>
 <b>Tripura Tribals Struggle (1948-1950)</b>	<b>Tripura Upjati Ganamukti Parishad</b> , in association with <b>AIKS</b> , led a massive movement of tribal peasants in the name of <b>Gana Shiksha Andolan</b> and against <b>land alienation</b> , the “titun” system and other demands.
 <b>Revolt of the Warlis, Maharashtra (1945-47)</b>	Initiated and organized by Communist Party led by the <b>communist woman leader Godavari Parulkar</b> in Thane district of Maharashtra, against the <b>inhuman exploitation of Warli Adivasis by landlords</b> .
 <b>Other revolts with influence of CPI</b>	Surma Valley Struggle (1936-1948), RIN Mutiny (1946)

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