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## 2026, 2027 & 2028

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## NOTE:

Dear Students,

Memorisation and recollection of information in Current Affairs is as important as understanding the articles. In order to enhance the learning outcomes from the Monthly Current Affairs Magazine, we are introducing following additions:



A thematic based colors has been used in the document in the boxes, tables etc to enable easy identification and recollection of various concepts and topics.



Questions are an important tool to assess and retain information. To enable this we are adding a Smart Quiz at the end of each section in the document for practicing the questions.



A wide variety of infographics have been added to ensure smoother learning experience and enhanced retention of the information. This will also help in effective presentation of information in the answer writing as well.



Places and persons in news are being presented in an objective manner through Maps, Tables & Pictures. This will help in easier recollection of factual information.

# फाउंडेशन कोर्स सामान्य अध्ययन प्रारंभिक एवं मुख्य परीक्षा 2026

## इनोवेटिव क्लासरूम प्रोग्राम

- प्रारंभिक परीक्षा, मुख्य परीक्षा और निबंध के लिए महत्वपूर्ण सभी टॉपिक का विस्तृत कवरेज
- मौलिक अवधारणाओं की समझ के विकास एवं विश्लेषणात्मक क्षमता निर्माण पर विशेष ध्यान
- एनीमेशन, पॉवर प्वाइंट, वीडियो जैसी तकनीकी सुविधाओं का प्रयोग
- अंतर - विषयक समझ विकसित करने का प्रयास
- योजनाबद्ध तैयारी हेतु करेंट ओरिएंटेड अप्रोच
- नियमित क्लास टेस्ट एवं व्यक्तिगत मूल्यांकन
- प्री फाउंडेशन कक्षाएं
- सीसेट कक्षाएं
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- निबंध लेखन - शैली की कक्षाएं
- करेंट अफेयर्स मैगजीन

नोट: ऑनलाइन छात्र हमारे पाठ्यक्रम की लाइव वीडियो कक्षाएं अपने घर पर ऑनलाइन प्लेटफॉर्म पर देख सकते हैं। छात्र लाइव चैट विकल्प के माध्यम से कक्षा के दौरान अपने संदेह और विषय संबंधी प्रश्न पूछ सकते हैं। वे अपने संदेह और प्रश्न नोट भी कर सकते हैं और दिल्ली केंद्र में हमारे कक्षा सलाहकार को बता सकते हैं और हम फोन/मेल के माध्यम से प्रश्नों का उत्तर देंगे।

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# 1. POLITY AND GOVERNANCE

## 1.1. JUDICIAL ACCOUNTABILITY

### Why in the News?

The discovery of wads of cash at the residence of Delhi High Court judge has raised concerns regarding accountability in India's higher judiciary.

### More on the News

Recent events have intensified the debate on **judicial accountability**:

- Previously, a former Chief Justice of India (CJI) joined a panel investigating **sexual harassment charges against himself**.
- Supreme Court took suo motu cognizance and **stayed the Lokpal's ruling which stated that High Court Judges are amenable to Lokpal's jurisdiction**.

### Existing Key Mechanism for Ensuring accountability

- **Impeachment**: Governed by Articles 124, 217, 218 of the constitution and the Judges Inquiry Act, 1968.
- **In-House Mechanism of 1999**: Based on two important charters governing judicial ethics— **the Restatement of Values of Judicial Life 1997 and the Bangalore Principles of Judicial Conduct 2002**.
  - The CJI **can receive complaints** against the conduct of the Judges of the Supreme Court and the Chief Justice of the High Courts. High Court Chief Justices can handle complaints within their courts.
  - A **three-member committee** examines the complaint and may recommend removal or criminal action. For instance, Justice Soumitra Sen and Nirmal Yadav were found guilty through such committees.
    - > **In case of complaint against a HC judge**, committee consists of **two Chief Justices of HCs other than the HC to which judge belongs and one HC judge**.
    - > In case of complaint against a **HC Chief Justice**, committee consists of **a SC judge and two Chief Justices of other HCs**.
    - > In case of complaint against a **SC judge**, committee consists of **three SC judges**.

### Bangalore Principles of Judicial Conduct

#### Independence

A judge shall uphold and exemplify judicial independence in both its individual and institutional aspects



#### Integrity

Behaviour and conduct of a judge must reaffirm the people's faith in the integrity of the judiciary.



#### Equality

A judge shall not, in the performance of judicial duties, manifest bias or prejudice towards any person or group on irrelevant grounds.



#### Impartiality

A judge shall perform his or her judicial duties without favour, bias or prejudice.



#### Propriety

A judge shall avoid impropriety and the appearance of impropriety in all of the judge's activities.



#### Competence and Diligence

Judicial duties of a judge take precedence over all other activities

## Concerns Surrounding Judicial Accountability in India

<b>Conflict with Judicial Independence</b>	<p>Any effort at ensuring judicial accountability is often seen as interfering with judicial independence.</p> <ul style="list-style-type: none"> <li>The <b>1993 Collegium System</b> is criticized for <b>opaque appointment</b> and National Judicial Appointments Commission (NJAC) was proposed to overcome its shortcomings.</li> <li>However, <b>NJAC was struck down</b> by the Supreme Court in a 4:1 verdict in the <b>2015 Advocates-on-Record case</b>. <ul style="list-style-type: none"> <li><b>NJAC was to consist of six members:</b> the CJI, the two senior-most judges of the Supreme Court, the Union Minister of Law and Justice, and two eminent persons</li> </ul> </li> </ul>
<b>Complex Impeachment Process</b>	<p>Constitutional mechanism of <b>impeachment is too complex to implement</b> and fails to hold judges accountable, thus, no judge has ever been removed through impeachment.</p> <ul style="list-style-type: none"> <li>For instance, <b>Justice Ramaswamy</b>, found guilty of misusing court's fund, yet escaped impeachment due to lack of votes in Parliament.</li> </ul>
<b>No Mandatory Asset Disclosure Norm</b>	<p>In 1997, the Supreme Court adopted a resolution the '<b>judges should declare all assets including those of spouses and dependents to the CJI</b>'.</p> <ul style="list-style-type: none"> <li>In 2009, the Supreme Court resolved to <b>declare the assets of judges on the court's website on a voluntary basis</b>.</li> <li><b>Recently</b>, All the sitting judges of the Supreme Court have unanimously agreed to <b>disclose their assets publicly by publishing the details on the apex court's official website</b>, marking a significant move towards greater transparency.</li> </ul>
<b>Limited checks and balances</b>	<p>Judiciary self-governs most of its aspects like <b>appointment of judges, procedures governing behaviour of judges, inquiry mechanisms</b> etc.</p>
<b>Other Provisions Hindering Accountability</b>	<ul style="list-style-type: none"> <li><b>Immunity from Criminal Action:</b> As per the <b>K. Veeraswami judgment (1991)</b> of the Supreme Court, prior permission from the CJI is mandatory for registration of criminal cases against High Court or Supreme Court judges.</li> <li><b>Restriction on RTI:</b> Supreme Court and High Courts have rejected <b>Right to Information (RTI)</b> related to key aspects like collegium decisions and disclosure of personal assets of judges.</li> </ul>

## Way Forward to Ensure Judicial Accountability

- Judicial Standards and Accountability Bill:** It was introduced in 15<sup>th</sup> Lok Sabha but **lapsed due to dissolution of Lok Sabha**.
  - Parliament may introduce a **new bill for setting judicial standards** and establishing a proper mechanism for inquiries into judicial misconduct without giving excessive control to the legislature or the executive.
- National Judicial Commission (NJC):** Proposed by Law Commission of India reports (80th & 121st) to handle appointments and misconduct investigations.
  - In addition to judicial member NJC is advised to keep non-Judicial member.**
- Permanent Disciplinary Committee:** A committee with members from judiciary should be set up at the central level to deal with complaints against judges.
  - The committee can give a **warning, reprimand or advisory** in case of minor instance of misbehaviour while **request setting up judicial inquiry committee** under the Judges Inquiry Act in case of major misconduct.
- Judicial Oversight:** A **continuous performance evaluation mechanism** may be devised for judges where lapses in standards, or questionable conduct by individual judges immediately come to light.

## 1.2. REGULATING BIG TECH

### Why in the News?

The Ministry of Corporate Affairs (MCA) has invited public feedback on the **Digital Competition Law Committee's Report**, which proposes a new **ex-ante Digital Competition Act** to regulate Big Tech.

## Background

- The Committee reviewed the **Competition Act, 2002** to address new challenges in the digital economy.
- Rising **global concerns** over Big Tech's anti-competitive practices have called for stronger regulatory measures for Big Techs like Google, Meta, Amazon, Microsoft, and X.

### Key Examples of Anti-Competitive Practices by Big Tech

- **Meta & WhatsApp vs CCI (India, 2024–25):** CCI fined Meta ₹213 crore for abusing dominance by sharing WhatsApp's user data, the matter is pending before NCLAT.
- **WhatsApp Encryption Dispute (India):** WhatsApp warned it may exit India if forced to break message encryption under IT Rules, 2021 that require tracing message originators.
- **Google Play Store Case (India):** Google was accused of forcing developers to use its billing system or pay a fee for using alternatives undermining fair competition.
- **Apple Lawsuit (USA, 2024):** US Justice Department and 16 states sued Apple for monopolizing the smartphone market accusing it of blocking or limiting rival apps and wallets.

## Why Big Tech Needs Regulation?

- **Threat to Sovereignty:** There is a threat of misusing user data by illegally collecting and transmitting it to servers outside country, raising serious concerns over data security and national sovereignty.
  - Example, WhatsApp selling data to its parent company Meta.
- **Network effect: Big tech grows fast by using network effects i.e., the more users they have, the stronger they get, making it hard for new players to compete.** This creates a risk of permanent dominance by a few firms.
  - Example, AI tools **ChatGPT gained 100 million users in just 2 months**, and Six of the world's top seven \$1 trillion companies are tech giants.
- **Revenue loss to exchequer:** India **loses around \$10 billion annually** due to tax abuse by multinational companies. To address this, **India introduced a 6% Equalisation Levy in 2016**, though it has now been removed.
  - Digital tech giants use **Base Erosion and Profit Shifting (BEPS)** to move profits to low or no-tax countries with little real business there, reducing taxes in countries like India.
- **Data Privacy and Cyber Security Risks:** Massive data collection opens doors to misuse, surveillance, and data breaches.
- **Ethical Concerns:**
  - **Transparency and Accountability:** They often lack transparency in their algorithms, data usage, and decision-making processes.
  - **Public Interest vs. Corporate Profit:** They prioritize profit maximization, sometimes at the cost of public well-being.
  - **Digital Divide and Equity:** Rural vs. urban disparity in access to AI-driven education and healthcare.
  - **Ethical Policy Making and Regulation:** They influence policy decisions through lobbying, donations, and strategic partnerships.
  - **Environmental Responsibility:** The carbon footprint of data centers and electronic waste disposal remains a concern.

## Challenges in Regulating Big Tech

- **Regulatory Vacuum:** The Competition Act, 2002 works on an EX-POST model (acting AFTER anti-competitive behavior). But this outdated approach struggles to handle today's fast-paced digital world.
  - Additionally, the **pace of technological advancements often outstrips regulatory responses**.
- **Enforcement Lag:** The delay in the enforcement of law often creates challenge in regulating Big Tech. E.g., Digital Personal Data Protection Act (DPDPA), 2025 is yet to be enforced.
- **Non-Uniform Regulatory Mechanism:** Big Tech firms operate globally, but regulatory responses vary across jurisdictions affecting the uniform regulation.
- **Techno-nationalism and Protectionism:** These leads to jurisdictions favoring domestic firms.
- **Ambiguity of Law:** In a recent case, X challenged a government order to remove content by invoking **Section 79(3)(b)** instead of **Section 69A** of the IT Act.

- X also opposed the Centre's new **Sahyog portal**, which lets all government agencies issue blocking orders using a standard template.
- X argued such order violates the **Supreme Court's Shreya Singhal judgment**, which says content can only be blocked through a proper legal process.

#### Shreya Singhal Case (2015)

- **Upheld Sections 69 A of the IT Act:** The Supreme Court upheld **Section 69A** of the IT Act, saying the government can block online content if it violates **Article 19(2)** (reasonable restrictions on free speech).
- **Provided Safeguard for Section 79 (3)(b):** Section 79 provided **immunity to the online platforms** for user content
  - **Under Section 79 (3)(b) such immunity is lost if such** platforms do not remove illegal content when they know about it or are told by the government.
    - > However, the court ordered that Section 79(3)(b) will be effective **once a court order has been passed to that effect, or the government issues a notification** stating that the **content in question is related to grounds provided in Article 19(2).**

### Key Legislations for Regulating Big Tech

#### India

- **Digital Personal Data Protection Act, 2023 (DPDPA):** Provide for the processing of digital personal data in a manner that recognises right of individuals to protect their personal data.
- **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) or IT Rules, 2021:** Social media platforms with large user bases in India are classified as **Significant Social Media Intermediaries (SSMIs)** and must follow extra rules, like tracing the first originator of messages under specific conditions.
- **Competition Act, 2002:** To prevent unfair practices, protect consumers, and ensure free trade.
  - 2023 amendment allows penalties based on **global turnover** and CCI can penalize up to **10% of average income or turnover** (past 3 years) for anti-competitive acts or abuse of dominance.
- **Consumer Protection Act, 2019:** Penalize companies for misleading advertisements and unfair trade practices.
- **Section 69A of the Information Technology Act, 2000:** Allows the Government to block "public access of any information through any computer resource in the interest of sovereignty and integrity of India, defence of India, security of the State, etc.

#### Global

- **European Union:** Key **ex-ante** measures include the **General Data Protection Regulation (GDPR) 2016**, and the **Digital Market Act (DMA)** introduced through the Digital Services Act Package.
- **The UN Set:** In 1980, the UN Conference on Restrictive Business Practices approved the Set of **Multilaterally Agreed Equitable Principles and Rules for the Control of Restrictive Business Practices**.

### Way Ahead to Effectively regulate Big Tech

Key recommendation of the Committee on Digital Competition Law are as follows:

- **Need for ex-ante regulation of digital competition:** Enacting the **ex-ante Digital Competition Act** to enable the CCI regulate only those enterprises that have a significant presence and the ability to influence Indian digital market.
- **Systemically Significant Digital Enterprises (SSDEs):** Designate entities offering core services which are susceptible to market concentration like search engines, social media, operating systems, and browsers as SSDEs for ex-ante regulation.
- **Thresholds for classification of SSDEs:** Criteria include resources of the enterprise and volume of data aggregated by them.

- **Associate Digital Enterprises (ADEs):** Enterprises should identify all other enterprises within its group involved in the provision of a core digital service. These enterprises should be designated as ADEs under the proposed framework and must comply.
- **Obligations of SSDEs:** SSDEs must not;
  - Favour their own or related-party products or Block third-party apps
  - Force users to adopt their other services
  - Use non-public business user data to compete
- **Enforcement of provision:** CCI should **improve its technical capacity** including within the Director General's office for early detection and disposal of cases. **Additionally, form a separate NCLAT bench** for faster appeals.
- **Penalties:** For contravention impose fine up to **10% of global turnover** of SSDEs.

## Conclusion

Big Tech firms like Google, Meta, Amazon, Microsoft, and X are being accused of concentrating power—shaping what we consume, think, and speak. Without regulation, their dominance threatens fair competition and public discourse. These monopolies can crush competition and limit consumer choice. Timely intervention is essential to protect innovation and ensure fairness.

## 1.3. NEWS IN SHORTS

### 1.3.1. IMMIGRATION AND FOREIGNERS BILL, 2025 INTRODUCED IN LOK SABHA

The Bill seeks to **streamline various services** related to **immigration** and **foreigners**, including their entry, exit and stay in the country.

- This bill repeals four existing laws **Foreigners Act, 1946, Passport (Entry into India) Act (1920), Registration of Foreigners Act (1939), and Immigration (Carriers' Liability) Act (2000)** which governs the services related to immigration and foreigners (refer to box).
- Three of these laws are from the **pre-Constitution period** brought during extraordinary times of **World Wars I and II**.

#### Key provisions of the Bill

- **Grounds for Denying Entry or Stay:** Foreigners can be denied entry if deemed a threat to national security, sovereignty, public health, or foreign relations.
  - **Immigration Officers** decisions will be final and binding.
- **Tracking of Foreigners:** Institutions such as educational establishments, hospitals, and nursing homes will be required to report foreign nationals to immigration authorities.
- **Other: Stricter Penal Provisions** (E.g. 5 years imprisonment or ₹5 lakh fine for entering India without valid documents)

### Existing Governance Related to Immigration and Foreigners



**Registration of Foreigners:** Foreigners (including Indian origin) visiting India on the following long-term visas (more than 180 days) must register with the Foreigners Regional Registration Officer.



**Visa regulations: Bureau of Immigration (BoI)** was set up in 1971 under the Ministry of Home affairs. It grants electronic visas.









**Immigration (Carriers' Liability) Act, 2000:** Makes carriers responsible for passengers violating the Passport Act.



**Citizenship Act, 1955:** Regulates acquisition and registration of foreigners as Overseas Citizens of India (OCI).

### 1.3.2. STANDING COMMITTEE ON RURAL DEVELOPMENT AND PANCHAYATI RAJ REPORT

The committee in its report points out that there is a nominal increase in the Budget Estimates (BE) allocation for 2025-26 compared to 2024-25.

Key Observation and recommendations		
Parameters	Observation	Recommendation
 <b>Budget Allocation</b>	<b>Continuous trend of BE lower than Revised Estimates</b> have been observed (mainly due to <b>demand driven nature</b> of schemes)	<b>Ensure that States are able to submit their demand funds</b> on time and fully utilize the allocated budget.
 <b>Implementation of Schemes</b>	<b>Panchayats Extension to the Scheduled Areas (PESA) Act, 1996: lacks effective implementation</b> (due to lack of public awareness and sensitization)	<b>Focus on</b> action oriented capacity building develop robust monitoring framework.
	<b>Revamped Rashtriya Gram Swaraj Abhiyan</b> : E.g. 14 out of 34 States/UTs have not received any funds for FY 2024-25	<b>Measures for timely submission of requisite documents by the States</b> for timely release of funds.
 <b>Trained Manpower</b>	<b>Survey of Villages and Mapping with Improved Technology in Village Areas (SVAMITVA) scheme</b> : Ministry could not achieve its physical targets (no work has been done in Bihar)	<b>Develop concrete action plan</b> for implementation and set realistic targets
	<b>Severe shortage of support staff.</b> E.g. only one official managing 5 to 6 Gram Panchayats in Bihar	<b>Introduce Digital governance initiatives to reduce</b> workload and improve service delivery
 <b>Type of Grants</b>	<b>Tied grants (60% of allocation) are restricted whereas</b> untied grants (40%) can be used for local needs.	<b>Merge the concept of tied and untied grants</b> for increased flexibility.
 <b>Panchayat Elections</b>	<b>Delay in panchayat Elections</b> in various states.E.g. Karnataka (2021)	<b>Timely conduct of elections as per 73rd Constitutional Amendment .</b>
 <b>Revenue Generation</b>	<b>Heavily reliant on grants from government</b>	<b>Empower panchayats to generate their own revenues through property taxes, user fees, and other local levies</b>

### 1.3.3. DEDICATED CELL FOR MERCY PETITIONS

Maharashtra has established a dedicated cell under the Additional Secretary (Home) to expedite processing of mercy petitions for death row convicts.

- This decision follows **Supreme Court directive (2024)** mandating all **States & UTs** to create dedicated units within their **Home/Prison Departments** for efficient handling of mercy petitions.

#### Mercy Petition

- Mercy petition to the President or Governor is last constitutional resort a convict can take when he is sentenced by court of law.
- Mercy pleas and pardons are **discretionary** acts of grace, not legal rights.
- Mercy is exercised through **clemency power**, which is also known as the pardoning power.

## Pardoning Power

- **President's Pardoning Power (Article 72)**
  - **Pardon:** Complete absolution from punishment.
  - **Respite:** Lesser punishment due to special circumstances like disability or pregnancy.
  - **Reprieve:** Temporary stay of execution, allowing time for appeal.
  - **Remit:** Reduces duration of sentence while keeping its nature the same.
  - **Commute:** Replace the punishment with a lesser form, e.g., death to life imprisonment.
- **President's power extends to** court-martial cases, offenses under Union law, death sentence cases etc.
- **Governor's Pardoning Power (Article 161):** Governor too has pardoning powers, but these do not extend to death sentences and court Martials.
- **President & Governor do not act independently** but on government advice (**Maru Ram case, 1980**).

### 1.3.4. SANSAD BHASHINI INITIATIVE

**Lok Sabha** and **Ministry of Electronics and Information Technology (MeitY)** agreed to develop the **Sansad Bhashini** initiative for **AI-powered multilingual Parliamentary operations**.

#### About Sansad Bhashini initiative

- **Aim:** To **leverage artificial intelligence (AI)** to enhance **multilingual support (through Bhashini)** and streamline **parliamentary operations**.
  - **Bhashini** is an AI-powered language translation platform by MeitY.
- The key AI initiatives under Sansad Bhashini include AI-based translation, **AI-Powered Chatbot** for the Parliament website etc.

### 1.3.5. FUTURE OF FREE SPEECH INDEX 2025

A new global survey by **The Future of Free Speech** ranks **India 24th out of 33 countries** for free speech support.

#### About Future of free speech index 2025.

#### Other Key-findings

- **Scandinavian countries** (Norway, Denmark, and Sweden) and two democratic backsliders (Hungary and Venezuela) show the **highest levels of support for free speech**.
- **Declining Support in Some Countries:** Countries like Japan, Israel, and the U.S. have experienced significant drops in support for free speech since 2021.
- Traditional media, social media, and AI content generators play pivotal roles in **shaping public discourse and raising concerns about free speech**.

## 1.4. ERRATA

In the **Monthly Current Affairs Magazine (February 2025)**, under **Article 1.2. titled 'Status of Devolution to Panchayats in States'**, a design error in the infographic titled 'Parameters of Panchayat Devolution Index' led to the omission of the sixth parameter (Accountability). The corrected infographic, displaying all six parameters, is provided below.



## Parameters of Panchayat Devolution Index



### Framework

Whether the Constitutional provisions are adhered to by states



### Function

Measures how panchayats fulfilled civic responsibilities like; sanitation, waste management etc.



### Finances

Measures efficiency in devolution of funds to panchayats and sources of their funding.



### Functionaries

Assess strength and performance of panchayat officials and infrastructure available to them



### Capacity Building

How the knowledge and skills of panchayat officials were being expanded to fulfil and take on more responsibilities.



### Accountability


The framework in place to audit and monitor the functioning of panchayats



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## 2. INTERNATIONAL RELATIONS

### 2.1. BILATERAL INVESTMENT TREATY (BIT)

#### Why in the News?

An announcement was made in the **Union Budget 2025** regarding the revision of **the model Bilateral Investment Treaty (BIT)** text to make it more **investor-friendly**.

#### About Bilateral Investment Treaties (BITs)

- Also referred to as International Investment Agreements (IIAs), they are a **tool for providing assurance to foreign investors** against measures that may adversely impact their investments while assuring **state's sovereign right to regulate**.
- Concept:** They provide **rights to investors** (through the **investor-state dispute settlement**) or to **home states** like investing state like US (through **state-state dispute settlement**), to bring a claim against a host state (**receiving foreign investment, e.g., India**).
- India approved **new Model BIT Text in 2015, which replaced Indian Model BIT, 1993**.
  - Since then, Model text 2015 is used for **(re)negotiations of BITs and investment chapters** of Comprehensive Economic Cooperation Agreements (CECAs)/ Comprehensive Economic Partnership Agreements (CEPAs) / Free Trade Agreements (FTAs).
- Recent countries with which BITs were signed:** Uzbekistan (2024), UAE (2024)

#### Key Features of Model BIT 2015

- “Enterprise” based definition of investment:** It means an enterprise that has been constituted, organised, and operated in good faith by an investor in accordance with the domestic laws of the country
- Non-discriminatory treatment through due process:** Each Party shall accord full protection and security to the investments and investors.
- National Treatment:** Treating foreign investors at par with domestic companies.
- Protection from expropriation:** Limits country's ability to dominate foreign investments in its territory.
- Exclusion of matters to preserve the regulatory authority:** Such as government procurement, taxation, subsidies, compulsory licenses and national security.
- Investor State Dispute Settlement (ISDS) mechanism:** A foreign investor should first **exhaust local remedies at least for a period of 5 years** before going for ISDS mechanism.

#### Issues with India's present BIT Architecture

- Ambiguity:** It lacks clarity in terms such as "investment," "customary international law (CIL)" etc. leading to **disputes** and challenges in **treaty interpretation** by ISDS tribunal.
  - E.g., India has received **37 notices of dispute**, with **8 still active** at various arbitration stages. (Committee on External Affairs (2021-22))
- Mandatory waiting period to exhaust local remedies:** Given India's overburdened judiciary, this requirement could delay dispute resolution and **increase legal uncertainties** for investors.
- Restrictions on the jurisdiction of ISDS tribunals:** They are barred from reviewing the "merits" of a decision made by the domestic court without defining what "merits" means.
- Limited rights to foreign investors:** Due to following issues in model BIT -
  - Exclusion of Most Favoured Nation (MFN) provision** and the **Fair and Equitable Treatment (FET) standard**.
  - Exclusion of tax-related regulatory measures** reduces investor confidence.
  - Tribunals cannot mandate policy changes**, restricting awards to monetary compensation.

#### Know the term

- **Most Favoured Nation (MFN):** It is a principle that requires countries **to treat all other countries equally** in international trade.
  - E.g., WTO MFN principle mandates equal trade treatment by extending any trade advantage granted to one WTO member to all others.
- **Fair and Equitable Treatment (FET):** It requires host states to **provide minimum standards** of treatment to **foreign investors**, protecting them from arbitrary or **discriminatory actions**.

- **Exclusion from ICSID Convention:** India is not a member of **International Centre for Settlement of Investment Disputes (ICSID)**, which limits options for investors seeking enforcement within India.
  - **ICSID**, established in **1966 by the ICSID Convention**, is a **World Bank institution** that provides facilities for conciliation and arbitration of investment disputes between contracting states and nationals of other contracting states.

### Way forward

- **Providing greater clarity** of terminologies for states and investors and curbs arbitral discretion.
  - E.g., India-UAE BIT specifically lists when state action will amount to a treaty violation instead of linking it to terms like customary international law (CIL).
- **Eliminating/Reducing mandatory waiting period** and allowing investors to choose between domestic courts or international arbitration upfront.
- **Including MFN provision with appropriate qualifications** to prevent “treaty shopping” while ensuring non-discrimination.
  - Treaty shopping typically involves the attempt to indirectly access the benefits of a tax treaty between two jurisdictions by a person who is not a resident of one of those jurisdictions, often through complex structures and arrangements.
- **Adopting a narrowly defined FET provision**, similar to that in the European Union’s new-generation investment treaties, to better balance investor and state rights by outlawing arbitrary state behaviour.
- **Becoming a signatory to the ICSID Convention** to enhance investor confidence by providing a globally recognized enforcement mechanism.
- **Removing the blanket exclusion of tax measures**, while allowing ISDS tribunals to review abusive or discriminatory tax actions while deferring to national authorities on policy matters.
- **Developing Domestic architecture in Investment Arbitration** to reduce reliance on foreign legal firms and control arbitration costs.
  - **Promote and develop the New Delhi International Arbitration Centre (NDIAC)** to make India a global hub for investment arbitration.
  - **Create a pool of domestic lawyers and law firms** specialized in international investment arbitration.

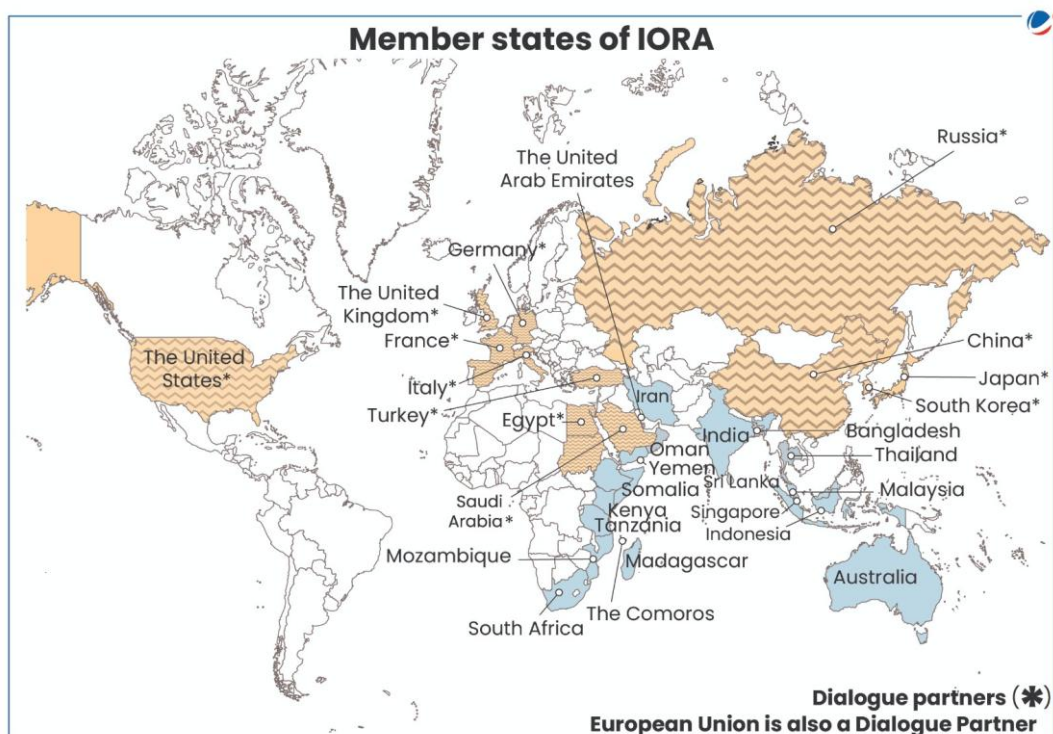
## 2.2. INDIAN OCEAN RIM ASSOCIATION (IORA)

### Why in the News?

India will assume the chair of IORA in 2025 for the next two years.

### About IORA

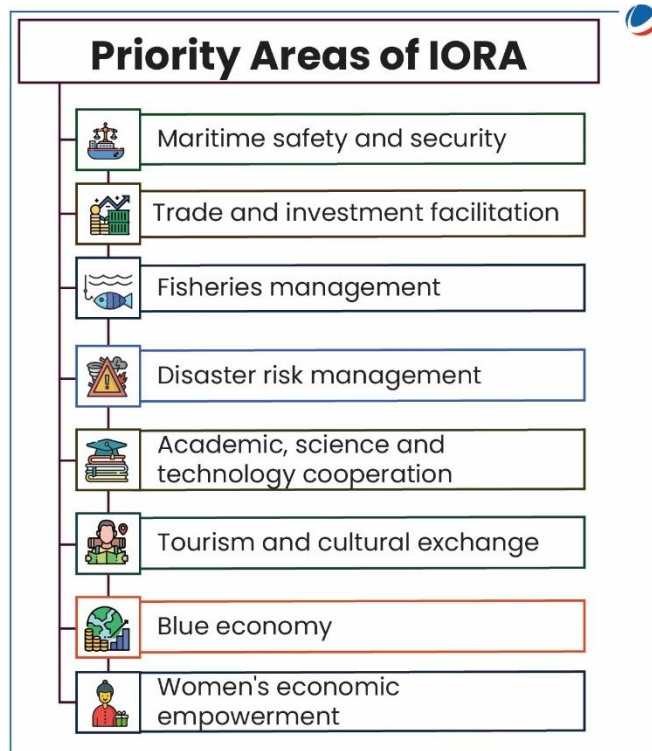
- **Genesis:** An **inter-governmental organization** established in 1997 with its vision originating during a visit by Nelson Mandela to India in 1995.
- **Objective:** Encourage **regional cooperation and sustainable development within the Indian ocean region**.
- **Secretariat:** Mauritius



- **Members: 23 Members and 12 dialogue partners** (see infographic)
- **IORA Governance:**
  - **IORA Council of Ministers:** Highest decision making body comprised of the **Minister of Foreign Affairs (or equivalent) of all Member States** which meets annually.
  - **Troika:** An **institutional mechanism** consisting of the **current Chair, Vice-Chair, which is the future chair, and past Chair** (referred to as previous chair in the Charter) of the IORA.
- **Flagship Projects:**
  - **Indian Ocean Dialogue (IOD):** A **Track 1.5 forum** launched in **2013**, encouraging open dialogue among member states, on key strategic issues in the Indian Ocean Region.
  - **IORA Sustainable Development Program (ISDP):** Introduced in 2014 for the least developed countries (LDCs) that require assistance and support to conduct projects.

#### Significance of IORA bloc for India

- **Geostrategic and economic significance of Indian Ocean region:** Indian Ocean transports 75% of global trade and 50% of daily oil consumption and the **intra IORA trade** is around **\$800bn (2022)**.
- **Challenges in other regional organisations:** E.g., SAARC (South Asian Association for Regional Cooperation) and BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation), face their own challenges like political instability, stagnant negotiations etc.
- **Safe space:** IORA is a less contentious space for India and other countries of the region that wish to keep out of big-power rivalries.
  - E.g., the QUAD (Quadrilateral Security Dialogue) is U.S.-led, along with military allies Australia and Japan.
- **Maritime Security:** IORA upholds the United Nations Convention on the Law of the Sea principles and organizes **regular workshops** on cooperation on maritime security.



#### Issues related to functioning of IORA

- **Funding Constraints:** IORA's funds are insufficient to support its growing areas of engagement.
  - Competition with other regional bodies like BIMSTEC, Indian Ocean Naval Symposium (IONS) etc. further dilutes focus and resource.
- **Institutional Weaknesses:** The Secretariat in Mauritius has limited staff and insufficient technological integration for effective governance.
- **Geopolitical Tensions:** Rivalries like India-Pakistan tensions, Russian-Ukraine war and China's involvement through the Belt and Road Initiative complicate cooperative dialogue among members and partners.
- **Other issues:** Lack of Private Sector Engagement in policy-making and funding contributions; non-transparent investments and unsustainable debt; Economic disparities among members; Maritime security Concerns in the Indian ocean region like Piracy off the horn of Africa, Houthi attacks etc.

#### Conclusion

While aligning IORA's goals with **India's SAGAR (Security and Growth for All in the Region) vision**, India can utilize its chairmanship to promote regional stability and development. To ensure IORA's long-term viability, **sustainable funding** can be secured through seed funding, PPPs, and industry engagement. Further, institutional capacity can be enhanced through visibility, high-level summits, and member-state alignment, along with strengthening maritime security through reinforced security frameworks and naval cooperation.

## 2.3. INDIA-MAURITIUS BILATERAL RELATIONS

### Why in News?

India and Mauritius elevated their ties to an 'enhanced strategic partnership' during Indian Prime Minister's visit to the country.

### More about news

- Prime Minister of both the countries inked various pacts to boost **cooperation in several sectors, including maritime security, and promote trade in local currencies.**
- India also announced India's **new vision for the Global South**, naming it **"MAHASAGAR** (Mutual and Holistic Advancement for Security and Growth Across Regions)".
- A navigational chart of St. Brandon Island also handed over.

### Significance of Mauritius for India

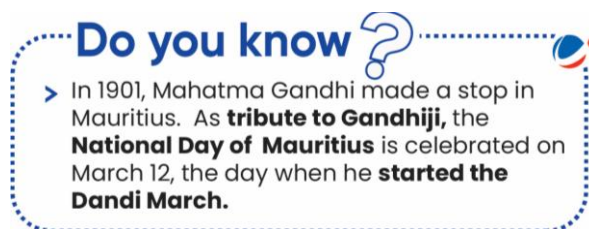
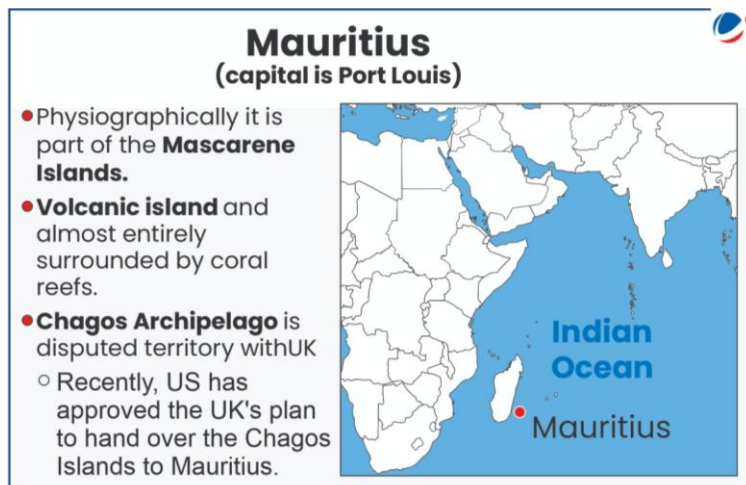
India established diplomatic relations with Mauritius in 1948, before it achieved independence.

Significance of Mauritius could be outlined under the following dimensions

Dimensions	Description
<b>Strategic Location</b>	<ul style="list-style-type: none"> <li>• Mauritius's location in the western Indian Ocean makes it vital for India's maritime and regional security, especially amid China's rising influence.</li> <li>• It helps India <b>tackle piracy, terrorism, trafficking, and illegal fishing.</b></li> </ul>
<b>Geopolitical Importance</b>	<ul style="list-style-type: none"> <li>• Known as the <b>"Star and Key of the Indian Ocean,"</b> Mauritius is at the heart of growing global interest from <b>China, Europe, Gulf nations, and others.</b></li> <li>• <b>China has established its base in Djibouti,</b> which has made Mauritius a strategic hotspot.</li> </ul>
<b>Maritime Security Partner</b>	<ul style="list-style-type: none"> <li>• Mauritius is key to India's efforts to secure the Indian Ocean. It is part of the <b>Colombo Security Conclave</b> alongside India, Sri Lanka, Maldives, and Bangladesh.</li> <li>• India has developed <b>infrastructure on Mauritius' Agaléga island,</b> set up coastal radar stations, and provided access to its naval <b>Information Fusion Centre.</b></li> </ul>
<b>Airspace Cooperation</b>	<ul style="list-style-type: none"> <li>• India inaugurated a <b>new airstrip and jetty on the Agalega island</b> of Mauritius.</li> <li>• With this upgrade of the existing 800-metre airstrip into a full-length airfield, <b>India can station and deploy these large carriers directly on the island,</b> providing security in the region.</li> </ul>
<b>Business and Economic Gateway to Africa</b>	<ul style="list-style-type: none"> <li>• As part of the <b>African Continental Free Trade Area (AfCFTA),</b> Mauritius serves as a key <b>gateway</b> for India's trade and investment in Africa.</li> <li>• Owing to <b>India-Mauritius Double Taxation Avoidance Agreement (DTAA),</b> it is a major route for investment into India and a platform for Indian businesses entering Africa.</li> </ul>
<b>Cultural Ties</b>	<ul style="list-style-type: none"> <li>• Around <b>70% of Mauritius's population is of Indian origin,</b> strengthening cultural and people-to-people ties.</li> <li>• The <b>legacy of the Girmitiyas</b> (Indentured Indian labourers) forms a deep historical bond between the two nations.</li> </ul>

### What are the challenges in India-Mauritius Relations?

- **Trade and Taxation Agreements:** Mauritius has sought amendments to its trade and taxation agreements with India to restore its position as a preferred investment conduit.
  - Since the 2016 treaty revision, FDI inflows from Mauritius to India have sharply declined. Thus, Mauritius is seeking parity with Singapore and positions itself as a gateway for Indian investors targeting African markets.



- **China's Growing Influence:** China has funded major infrastructure projects, including an airport terminal, the Bagatelle Dam, a sports complex, and a cruise ship terminal.
- **Balancing Ethnic Engagement:** With a diverse population, including Indian-origin, African, and European communities, India has to engage all groups to maintain balanced relations with Mauritius.
- **Drug Trafficking:** Mauritius has become a drug trafficking hub, posing a risk to India's maritime interests.
- **Environmental Risks:** Mauritius faces climate challenges like rising sea levels, cyclones, and coastal degradation.

## Conclusion

India's role as a **leading development partner and first responder in times of crisis** has reinforced its image as a **reliable and supportive friend**. While Mauritius continues to balance ties with global powers, it **values India's consistent support in boosting its sovereignty and strategic autonomy**. The Prime Minister's visit to Mauritius signals India's deep commitment to further strengthening this unique, multi-dimensional partnership in both regional and global arenas.

### What is MAHASAGAR?

- MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions) is an expanded version of India's 2015 maritime policy, **SAGAR** (Security and Growth for All in the Region).
  - While SAGAR focused on India's immediate neighborhood, **MAHASAGAR has a wider reach**, especially in the **Global South**.
    - > SAGAR facilitated deepening maritime ties through **information exchange, coastal surveillance, infrastructure development, and enhancing security capabilities**.
- **Key Focus Areas**
  - Trade for Development
  - Mutual Security
  - Technology Sharing
  - Financial Assistance
- **New Initiatives under MAHASAGAR:**
  - **IOS (Indian Ocean Ship) Sagar:** Promotes maritime cooperation with Indian Ocean Region (IOR) countries.
  - **AIKEYME (Africa-India Key Maritime Engagement):** A large-scale **naval exercise with African nations** to boost maritime security, interoperability, and unity (AIKEYME means "unity" in Sanskrit)

### NOTE:

- **MAHASAGAR** (Maritime Heads for Active Security And Growth for All in Region) **Launched by Indian Navy in 2023** aligns with India's **SAGAR vision**
- It is a **bi-annual initiative** that **brings together** naval leaders and maritime officials from **Bangladesh, Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka, and Tanzania**.

## 2.4. INDIA NEW ZEALAND RELATIONS

### Why in the News?

Prime Minister of New Zealand visited India on an official five day visit.

### Key Outcomes of the Visit

- New Zealand (NZ) joined the **Indo-Pacific Oceans' Initiative (IPOI)** and becomes **member of Coalition for Disaster Resilient Infrastructure (CDRI)**.
- **Launch of negotiations on Free Trade Agreement (FTA)** and for an arrangement facilitating the **mobility of professionals and skilled workers**.

*To know more about Indo-Pacific Oceans' Initiative (IPOI) and Coalition for Disaster Resilient Infrastructure (CDRI) refer to **Article 2.5. Indo-Pacific Oceans Initiative (IPOI)** and **Article 5.4.10. Coalition for Disaster Resilient Infrastructure (CDRI) marks its Fifth Anniversary of September 2024** Monthly Current Affairs magazine.*

### Contemporary relevance of Bilateral relations

- **Bilateral Trade:** In 2023-24, India-New Zealand trade totaled **\$1.75 billion**, with India having a **trade surplus of 0.07 billion USD**.

- **New Zealand exports to India:** Wool, iron & steel, fruit & nuts, aluminum.
- **India exports to New Zealand:** Pharmaceuticals, mechanical machinery, textiles, pearls & precious stones.
- **Defence and Security Cooperation:** E.g., Both countries' navies are working together in the **Combined Task Force-150** for maritime security in the Indian Ocean.
- **Mutual support on multilateral forums:** E.g., both advocate the **need for UN reforms**, including of the **Security Council through expansion in its membership**, to make it more representative, credible and effective.
  - **NZ supports India's candidature** for permanent membership in a reformed UN Security Council.
- **Areas of strategic alignment:** Both countries share common stance with respect to **Nuclear Disarmament and Non-Proliferation; Anti-terrorism**, advocating for concrete actions against UN-proscribed terrorist organizations; **Open, inclusive, stable and prosperous Indo-Pacific** upholding rules-based international order and **China's growing influence** in the Indo-Pacific.
  - NZ identified India as a priority country in its 2011 "Opening Doors to India" policy.
- **Safety and Contribution of Indian Diaspora:** India is the **largest source of skilled migrants** and **2nd largest source of international students** in NZ.
- **Green energy partnership:** E.g., NZ became a member of the India led International Solar Alliance (ISA) in 2024.
- **Close sporting links:** Particularly in cricket, hockey and other Olympic sports.
  - **'Sporting Unity' events have been planned in 2026**, to recognise and celebrate 100 years of sporting contact between India and New Zealand.



### Challenges in bilateral relations

- **Long Delayed FTA:** Despite 10 negotiation rounds (2010–2015), the India-NZ FTA remained stalled due to structural economic differences, particularly over **dairy exports and agricultural tariffs**.
  - India's dairy industry expresses **concern over potential disruption** from New Zealand's milk producers, as FTA discussions could open the sector to foreign competition, **impacting domestic prices**.
- **Security concerns:** India has raised its concern over **anti-India activities in New Zealand** including **protests** and a **Khalistan referendum** held by the 'Sikhs for Justice' group.
- **Other concerns:** Low bilateral trade reflects untapped potential; New Zealand's **strong trade ties with China etc.**

### Conclusion

Both countries should aim for an FTA that addresses sensitivities of Indian industries while providing reciprocal benefits. Establishing a bilateral task force can help in addressing sensitive issues like separatist movements while ensuring respect for democratic freedoms and lawful protests. Further, regular high-level discussions on geopolitical issues like China's influence can align their approaches to regional stability.

## 2.5. NEWS IN SHORTS

### 2.5.1. AUSTRALIA'S NEW ROADMAP FOR ECONOMIC ENGAGEMENT WITH INDIA

Australia's ambitious roadmap focuses on deepening and diversifying its trade and investment ties with India identifying four "superhighways of growth" - **clean energy, education and skills, agribusiness, and tourism**.

#### Key highlights of the Roadmap

- **Identifies nearly 50 specific opportunities** to focus and accelerate Australia's engagement with India in several areas such as defence industries, sports, culture, space, and technology.

- **Australia-India Trade and Investment Accelerator Fund:** It will help Australian businesses unlock new commercial opportunities in India.
- **Australia-India Business Exchange (AIBX)** to accelerate B2B engagement.
- **Reinvigorated Australia-India CEO Forum:** To provide a key business-to-business mechanism to accelerate commercial engagement.
- **Maitri ('friendship') Grants programme:** To enhance P2P, B2B and cultural links between the two nations.

#### Evolving relationship between India and Australia

- **Trade: Economic Cooperation and Trade Agreement (ECTA) 2021** gave a boost to free trade with Australia aiming to place India among its top three export markets by 2035.
- **Nuclear cooperation:** Civil Nuclear Cooperation Agreement signed in 2014.
- **Strategic partnership:** Australian Government in its National Defense Strategy (NDS) 2024 identified India as **'top-tier security partner'** in the Indo-Pacific Region.
- **Defense cooperation:** Mutual Logistics Support Arrangement and Defense Science and Technology Implementing Arrangement have been signed.
  - **AUSTRAHIND, AUSINDEX, Pitch Black** are a joint military exercise between two countries.

### 2.5.2. FIVE EYES INTELLIGENCE (FVEY) ALLIANCE

Recently, intelligence officials from several countries—including representatives from the Five Eyes (FVEY) alliance—convened in Delhi.

#### About Five Eyes Intelligence (FVEY) Alliance

- Its foundation was laid with the **British-U.S. Communication Intelligence Agreement (BRUSA)**, signed in **1946** focussing on **signals intelligence (SIGINT)**,
  - SIGNIT covers areas like traffic analysis, decryption, and acquisition of communication documents.
- **Core Members:** U.S.A., U.K. **Canada** (joined in **1948**), **Australia** and **New Zealand** (both joined in 1956)
- **Five Eyes Intelligence Oversight and Review Council (FIORC):** It was created in 2016 as the **"non-political intelligence oversight, review, and security entities"** of the member countries.
- **Scope and Purpose:**
  - **Geopolitical Intelligence:** Monitoring emerging threats, such as terrorism, Chinese influence, and cyber threats.
  - **Comprehensive Intelligence:** Medical intelligence, counterterrorism, geospatial intelligence, etc.
  - **Continuous Cooperation:** Intelligence products continuously shared through secret databases.

### 2.5.3. SQUAD ALLIANCE

Philippines urged India to Join 'Squad' Alliance.

#### About Squad alliance

- An informal minilateral alliance involving the US, Japan, Australia, and the Philippines.
- **Aim:** Address aggression and maintaining stability in the Indo-Pacific Ocean Region, etc.
- It is different from **Quad** which consists of India, USA, Japan and Australia

### 2.5.4. OTTAWA CONVENTION

**North Atlantic Treaty Organization (NATO)** members **Poland, Lithuania, Latvia** and **Estonia** plan to withdraw from the **Ottawa convention** owing to military threat from **Russia**.

#### About Ottawa Convention

- **Official Name:** Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of **Anti-Personnel Mines** and on their Destruction
- **Objective:** Puts obligations on State parties to **not use, develop, stockpile anti-personnel mines** under any circumstances.
  - Further obligates them to **destroy such mines**.
- Adopted at **Oslo (1997)**, **signed at Ottawa**, opened for signature from **1997-1999**, enforced in **1999**.

- **Signatories:** 133, **India not a signatory.**
- **Depositary:** Secretary-General of the United Nations.

### 2.5.5. RAISINA DIALOGUE 2025

The 10th edition of the **Raisina Dialogue** was recently held in **New Delhi**.



#### Raisina Dialogue 2025

- **Hosted by:** **Observer Research Foundation** with the **Ministry of External Affairs**, Government of India.
- **About:** **India's annual** flagship conference on **geopolitics** and **geo-economics**, committed to addressing the most challenging issues facing the international community.
- **Participation:** Representatives from about 125 countries including Ministers, Heads of State and Governments, Academicians, Think Tanks, Youth, etc.
- **Theme (2025): "Kālachakra - People, Peace and Planet"**.
  - Discussions focussed on **six thematic pillars** like Green Trilemma, Digital Planet, etc.

### 2.6. ERRATA

In the **Monthly Current Affairs Magazine (February 2025)**, under article 2.6.3. International Criminal Court, the information regarding recent members was incorrectly mentioned: Malaysia (2019) Ukraine (2025).

The correct information is Malaysia is not member of ICC (Malaysia withdraws from ICC one month after signing treaty). Also Ukraine joined ICC in 2024.

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<b>2025</b>	<b>ENGLISH MEDIUM</b> <b>13 APRIL</b>	<b>हिन्दी माध्यम</b> <b>13 अप्रैल</b>
<b>2026</b>	<b>ENGLISH MEDIUM</b> <b>13 APRIL</b>	<b>हिन्दी माध्यम</b> <b>13 अप्रैल</b>



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## 3. ECONOMY

### 3.1. LIQUIDITY DEFICIT

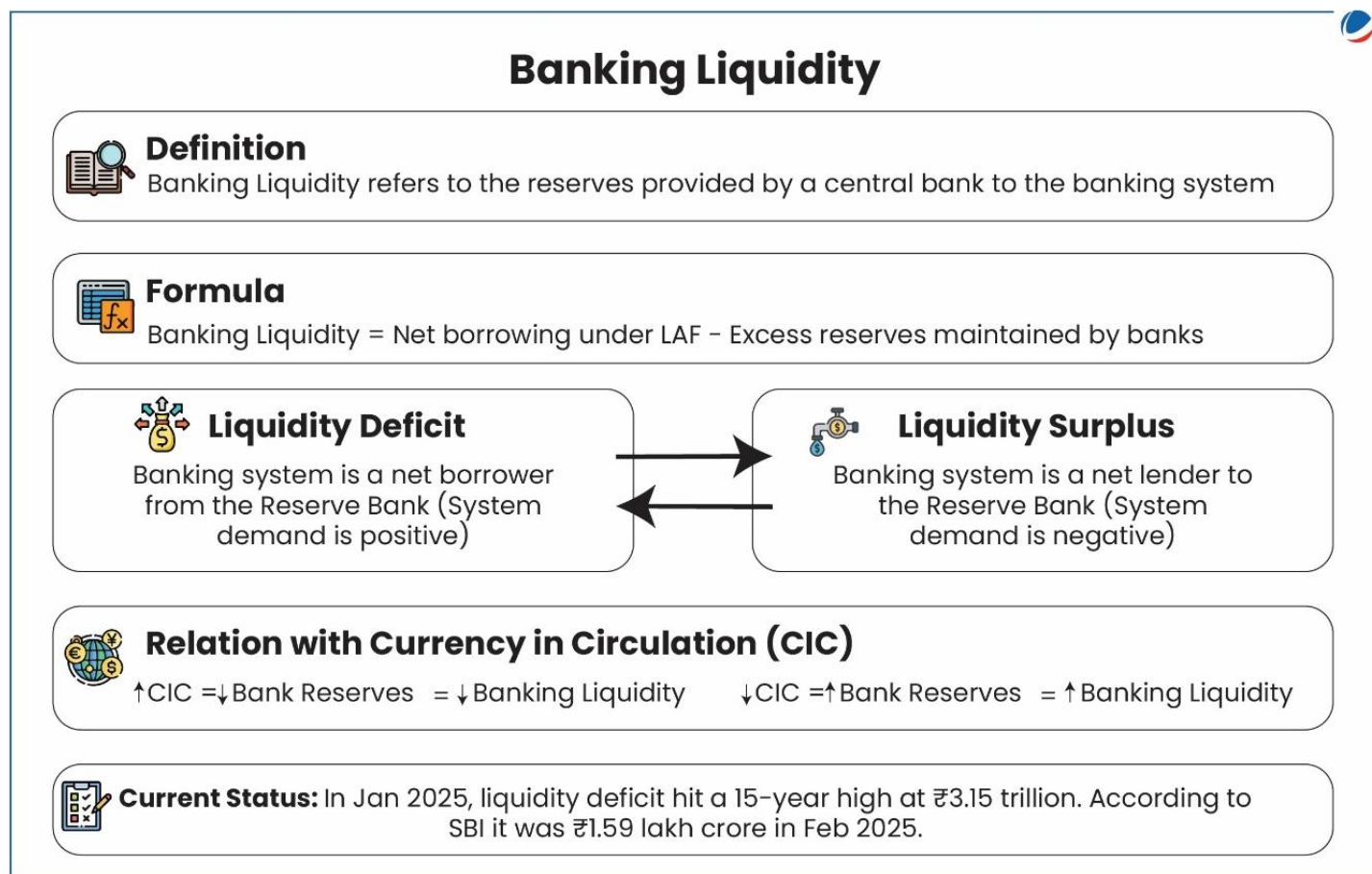
#### Why in the News?

Reserve Bank of India (RBI) has conducted liquidity infusion operations to curb the high liquidity deficit, which has hit its lowest level in nearly 15 years.

#### More on the News

RBI injected liquidity into the banking system through:

- **OMO (Open Market Operation) purchase auctions of Government Securities** for an aggregate amount of ₹1,00,000 crore in two tranches of ₹50,000 crore each.
- **USD/INR Buy/Sell Swap auction** of USD 10 billion for a tenor of thirty-six months.
  - The swap is in the nature of a **simple buy/sell foreign exchange swap** from the Reserve Bank side.
  - A bank shall **sell US Dollars to the Reserve Bank** and simultaneously agree to **buy the same amount of US Dollars** at the end of the swap period.



#### Factors leading to Liquidity Deficit

- **Tax outflows:** In December 2024, corporations paid over ₹3 trillion in advance taxes, significantly reducing available liquidity.
  - Since these funds are transferred to the government's account with the RBI, they temporarily exit the banking system, tightening liquidity conditions.
- **Just-in Time (JIT) SNA-SPARSH Transition:** With the implementation of JIT, systemic liquidity has been impacted through movements in government cash balances.

- Transfer through SNA-SPARSH results in **shorter intermediate halt of funds in the banking system**, affecting liquidity.
- **Foreign exchange (Forex) Market**
  - **Volatility in capital flows: Sell-offs** by Foreign Institutional Investors (FIIs) **pushed the total capital outflows**.
  - **RBI intervention in Forex market:** When the **RBI sells dollars**, it **helps prevent excessive rupee depreciation** but absorbs rupees from the system, **reducing liquidity**.
- **Festive Season Withdrawals:** Withdrawal of significant amount of cash occurs during major festivals like Diwali, Christmas, which continued to Mahakumbh 2025.

#### Impact of Liquidity Deficit

- **Higher Borrowing Cost:** Lower liquidity in the banking system can lead to higher borrowing costs for banks, which may pass on those costs to borrowers including NBFCs thus affecting finances of key sectors like housing and MSMEs.
- **Delay in Monetary Policy Transmission:** Liquidity Deficit negatively impacts monetary policy rate transmission i.e. rate cuts cannot be effective until there is surplus liquidity.
  - For example, the latest data released by the RBI shows that **the impact on lending and deposit rates was minimal despite a 25 bps cut in policy repo rate**, mainly **due to tight liquidity conditions**.
- **Credit Availability:** Banks tighten lending during liquidity crunch, making it harder to access credit, slowing down investment and spending.
- **Profit Squeeze for banks:** With banks paying more to secure liquidity, their margins are under pressure, resulting in **lower profitability**.
- **Market Volatility:** Liquidity stress shakes market confidence, fuelling uncertainty, impacting stock prices and other asset classes.

#### RBI's Tools for Managing Liquidity Deficit

- **Liquidity Adjustment Facility (LAF):** LAF is the principal instrument of liquidity management with repo rate as the policy rate.
- **Open Market Operations (OMOs):** OMOs refer to the buying and selling of government securities by the RBI to inject or absorb liquidity in the banking system.
- **Market Stabilisation Scheme (MSS):** Typically used as a short-term measure to address temporary surges in liquidity.
- **Cash Reserve Ratio (CRR):** CRR is a mandatory reserve that banks must maintain with the RBI and it serves as a liquidity buffer without earning any interest.
- **Statutory Liquidity Ratio (SLR):** SLR is a regulatory mandate that requires commercial banks to maintain a minimum percentage of deposits in the form of liquid assets, such as gold, cash, and approved securities.
- **Forex Swaps:** To inject liquidity, RBI uses US Dollar/Indian Rupee buy/sell swaps, where RBI buys dollars from banks in exchange for rupees, with the commitment to sell those dollars back at a later date.

## 3.2. INCENTIVE SCHEME FOR PROMOTION OF LOW-VALUE BHIM-UPI TRANSACTIONS

#### Why in the News?

Union Cabinet approves Incentive scheme for promotion of low-value BHIM-UPI transactions (P2M).

#### Key Highlights of the Scheme

- **Coverage:** It will cover **UPI Person-to-Merchant (P2M) transactions** and will be implemented at an outlay of 1,500 crore for **FY 2024-25**.
- **Incentive:** of **0.15% per transaction** will be provided for only UPI transactions up to Rs.2,000 pertaining to the category of small merchants.
  - Incentive is paid to the **Acquiring bank (Merchant's bank)** and shared with **Issuer Bank (Customer's Bank), Payment Service Provider Bank and App Providers**.

- **Aim:** It will enhance access to **credit through digital footprints**, enable small merchants to avail of **UPI services at no additional cost** and promote a **less-cash economy**.
- **Objective:**
  - Promotion of indigenous **BHIM-UPI platform**.
  - Achieving the target of **20,000 crore total transaction** volume in FY 2024-25.
  - **Penetration of UPI in tier 3 to 6 cities**, especially in rural & remote areas by promoting innovative products like feature phone-based (**UPI 123PAY**) & offline (**UPI Lite/UPI LiteX**) payment solutions.

#### About Bharat Interface for Money (BHIM)

- **BHIM:** It is a **Unified Payments Interface (UPI)-based** mobile application developed by **National Payments Corporation of India (NPCI)**.
  - UPI is a system that powers multiple bank accounts into a single mobile application (of any participating bank).
- **Aim:** Launched in **2016** to promote **cashless payments and financial inclusion** in India.

#### Key Features of BHIM

- **Simple and Fast Transactions:** Enables **instant money transfers** using a **mobile number, Virtual Payment Address (VPA), or QR code**.
- **UPI-Based Payments:** Works across multiple banks, eliminating the need for IFSC codes or account details.
- **Secure with Multi-Factor Authentication:** Uses a **UPI PIN and device binding** through SMS for enhanced security.
- **Supports Multiple Payment Modes:** Users can make payments via **UPI ID, Aadhaar, account number + IFSC, and mobile numbers**.

#### About National Payments Corporation of India (NPCI)

- NPCI is an umbrella organization for operating **retail payments and settlement systems** in India.
- It is an initiative of **RBI and Indian Banks' Association (IBA)** under provisions of **Payment and Settlement Systems Act, 2007**.
- It has been incorporated as a **"Not for Profit" Company** under provisions Section 8 of Companies Act 2013.
- It aims to provide infrastructure to the entire **Banking system in India for physical as well as electronic payment and settlement systems**
- It has launched payment products such as **RuPay card, Immediate Payment Service (IMPS)**, etc.

### 3.3. PRIORITY SECTOR LENDING

#### Why in the news?

The **Reserve Bank of India (RBI)** has issued new **Priority Sector Lending (PSL) guidelines**, which came into effect on April 1, 2025.

#### More on the news

- These guidelines are issued under the **Banking Regulation Act, 1949 (Sections 21 & 35A read with Section 56)**.
- **Applicability:** To every **Commercial Bank** [including Regional Rural Bank (RRB), Small Finance Bank (SFB), Local Area Bank (LAB)] and **Primary (Urban) Co-operative Bank (UCB)** other than **Salary Earners' Bank**.

#### About Priority Sector Lending

- **Priority Sector** means those sectors **which Government and RBI consider important for the country's development** and are to be given priority over other sectors.
- **Historical Background:**
  - **1969 – Gadgil Committee:** Recommended the AREA APPROACH, leading to the adoption of the LEAD BANK SCHEME.
  - **1972 – Formalization of PSL:** Aimed to ensure credit flow to sectors that were creditworthy but lacked access to institutional finance.
  - **1982 – Ghosh Committee:** Recommended revision and reclassification of priority sector categories.

## Categories under Priority Sector



### Details of Revised Guidelines

- **Enhancement of several loan limits:-**
  - **Education:** Up to ₹25 lakh for individuals (including vocational courses)
  - **Social Infrastructure:** Up to ₹8 crore per borrower for setting up schools, drinking water facilities etc
  - **Other:** Housing Loan Limits, Agriculture Loans etc
- **Expanded Renewable Energy Loans:**
  - **Upto ₹35 crore** for renewable energy-based power generators and renewable energy-based public utilities such as **street lighting systems, remote village electrification.**
    - > The limit is ₹10 lakh for individual households.
- **Revision of PSL target for Primary (Urban) Co-operative Bank (UCBs)**
  - **Total Priority Sector:** 60% (Earlier 40%)
  - **Micro Enterprises:** 7.5%
  - **Advances to Weaker Sections:** 12%
- **Expansion of the category of 'Weaker Sections', including**
  - It now includes **Transgenders** along with earlier categories of:-
    - > Small and Marginal Farmers, **Distressed farmers indebted to non-institutional lenders**, Artisans, **Individual members** of SHGs or Joint Liability Groups,
    - > Scheduled Castes & Scheduled Tribes, Persons with disabilities, **Minority communities** notified by Government of India
  - Individual women beneficiaries up to ₹2 lakh (This limit does not apply to UCBs)

### Targets/Sub-targets for Priority sector

Categories	Targets/ Sub-targets			
	Domestic Commercial Banks & Foreign Banks with 20 branches and above	Foreign Banks with Less than 20 branches	Regional Rural Banks	Small Finance Banks
<b>Total Priority Sector</b>	40%	40% (upto 32% in form of Export Credit and not less than 8% can be to any other priority sector.)	75%	75%
<b>Agriculture</b>	18%	NA	18%	18%
<b>Micro Enterprises</b>	7.5%	NA	7.5%	7.5%
<b>Weaker Sections</b>	12%	NA	15%	12%

**Note:** Percentages mentioned above are as a percentage of Adjusted Net Bank Credit (ANBC) or Credit Equivalent of Off-Balance Sheet Exposures (CEOBSE), whichever is higher.

### Additional Provisions

- **NBFC & Housing Finance Companies (HFCs) on-lending** are now included under PSL.
- **Co-lending model** (banks + NBFCs) recognized for PSL eligibility.
- **Securitisation norms updated**, excluding **gold-backed loans** from NBFCs.
- **Trading of Priority Sector Lending Certificates (PSLCs)** allowed to meet targets.
  - **PSLCs** are tradable instruments that allow banks to meet their PSL targets by purchasing credit achievements from other banks.
- **IBPCs & Direct Assignment norms updated** to ensure proper classification.
  - **Inter-Bank Participation Certificates (IBPCs)** and **Direct Assignments** are key instruments used by banks for managing liquidity and transferring credit risk.

### Other recent reforms

- **Priority Sector Lending Certificates (PSLCs):** Introduced in **April 2016** to enhance efficiency.
  - Allows banks falling short of PSL targets to **purchase PSLCs** from overachievers.
  - **Four types:** PSLC-Agriculture, PSLC-MSME, PSLC-General, and PSLC-Weaker Sections.
- **Co-Lending Model (CLM):** Introduced in **2020** for NBFCs and banks to jointly lend in priority sectors, improving last-mile credit delivery.
  - Recently, RBI proposed a draft framework for co-lending arrangements between **all regulated entities for all loans, priority sector or otherwise.**

### Conclusion

Priority Sector Lending in India stands at a critical juncture of transformation. While the framework has successfully channelled institutional credit to underserved sectors over decades, its evolution now demands both structural reforms and technological innovation. By implementing data-driven credit scoring, integrating advanced technologies like AI and satellite imaging, reforming the PSLC market for greater transparency, and transitioning from input-based targets to outcome-based approaches, India can revitalize its PSL framework.

## 3.4. 50 YEARS OF MICROFINANCE

### Why in the News?

Self Employed Women's Association (SEWA) Bank, started in Gujarat in 1974 as a cooperative bank marks the completion of 50 years of microfinance institution (MFI) in India.

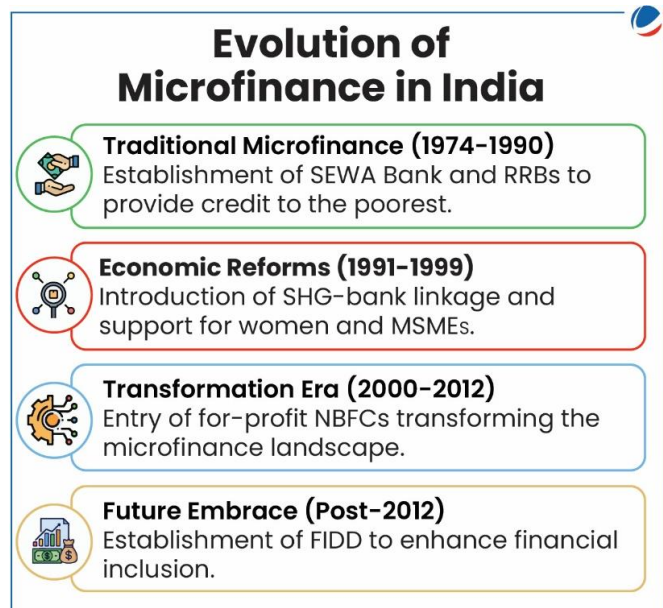
### What is microfinance?

- **Definition:** Microfinance, also called microcredit, is a banking service targeting poor households and small enterprises in rural areas.
  - Like conventional bankers, microfinance service providers also need to earn interest on loans and construct clear repayment schemes involving periodic installments.
- **Services:** Providing credit to poorer households and small enterprises, but many also take deposits, some MFIs offer other financial services, such as insurance, or advice and training to their clients for financial management.
- **Nobel Laureate Muhammad Yunus laid the foundation of modern MFIs** with establishment of Grameen Bank in Bangladesh in 1976.

### Significance of microfinance in India

- **Poverty Alleviation:** NABARD through **Self Help Group Bank Linkage Programme** which is the largest microfinance programme in the world, today **empowers 17.8 crore households** through more than **144 lakh SHGs**.
- **Economic growth and Entrepreneurship Promotion:** 46% of microfinance loans are provided to families having monthly income less than Rs. 20,000, for **working capital for their income generating activities** and **assets** including livestock.

- **Empowerment of Women:** Women-led SHGs have been instrumental in improving socio-economic conditions, with 88% of SHGs linked to banks being women-led.
  - **Kudumbashree in Kerala**, plays a vital role in enhancing the financial status of the less privileged women in the State through its **thrift and credit program**.
- **Financial Inclusion:** Microfinance fills the gap left by traditional banks and brings marginalized populations into the formal financial system.
  - Client of MFIs had grown substantially within the last ten years touching 140 million families in FY 2024 with 7 crore active borrowers from NBFC-MFI alone.
- **Social Impact:** By providing access to financial services, microfinance contributes towards the improvement of education, healthcare, and reduction in family violence, nutritional status of the children, and health outcomes due to financial empowerment.
  - **Ujjivan Small Finance Bank Chote Kadam** initiative, have made significant contributions to the healthcare sector by renovating multiple Primary Health Centres (PHCs) and hospitals.



### Challenges in Microfinance in India

- **Over-Indebtedness:** In some cases, individuals take loans from multiple microfinance institutions (MFIs) to repay existing loans, leading to a debt trap.
  - 8-10% of the sector's total assets under management (AUM) is linked to borrowers with more than four lenders.
- **Interest Rates:** While microfinance is intended to be an affordable source of credit for the poor, high-interest rates can make it difficult for borrowers to repay loans, leading to a cycle of poverty.
  - They usually offer micro credits at interest rates starting from 12% and can go up to 30%.
- **Regulation and Governance:** Multiple regulatory authorities as they are registered as societies, cooperatives and companies affect effective control and lead to lack of transparency.
  - MF Banks in India are regulated by the **RBI, State governments through State Cooperative Societies Acts** (for cooperative banks) regulate microfinance cooperative banks and cooperative societies.
- **Lack of collateral and risk of default:** Microfinance loans to low-income groups saw a significant surge in portfolio at risk (PAR) loans with an overdue of 31-180 days doubled to Rs 28000 crore from previous year.
- **Sustainability of Microfinance Institutions:** Striking a balance between social impact and financial sustainability is an ongoing challenge as very few MFI are actually profitable.
- **External Shocks:** Economic and environmental factors, such as natural disasters and economic downturns, can have a significant impact on the ability of microfinance borrowers to repay loans.
  - The gross non-performing assets (NPAs) may rise to 4.5 per cent in FY25 from 2.8 per cent in FY24 due to economic uncertainty.

### Initiatives taken by government for strengthening microfinance

- **SHG-Bank Linkage Program:** To increase the loan volume of the SHGs, and modify their money lending pattern from non-income generating activities to production-based activities.
- **Pradhan Mantri MUDRA Yojana:** To allow small businesses to borrow micro credit up to Rs.20 lakhs (**enhanced from 10 lakhs by the 2024 Union Budget**) without collateral. These loans were given with the help of MFIs and other member institutions, which were refinanced by MUDRA Ltd.
- **RBI, in 2014**, allowed non-deposit accepting NBFC-MFIs to also function as Business Correspondents (BCs) for commercial banks, **abolishing a previous restriction on NBFCs**.
- **Regulatory Framework for Microfinance Loans by RBI, 2022:** Clarified various aspects such as Definition of Microfinance Loan, repayment limit etc.
- **Refinance Support to MFIs NABARD:** It has been providing financial assistance to MFIs under its Long-Term Refinance facility.

## Way forward

- **Limiting the number of lenders per borrower to three from four:** By implementing self-regulatory organisation, Microfinance Institutions Network suggestion to cap outstanding loans per borrower at Rs 2 lakh from Rs 3 lakh.
- **The integration of Artificial Intelligence (AI) and Machine Learning (ML):** Machine learning models analyze repayment behavior and flag potential defaulters early, allowing preemptive action.
- **MFIs can be classified under various sectors:** such as affordable housing, climate action, water and sanitation, and health, to usher in holistic development at the bottom of the financial pyramid.
- **Financial Literacy:** Financial literacy can help improve financial inclusion, social security through insurance and growth of microfinance industry.
- **Learning from best practices:** Southern states including Tamil Nadu, Karnataka, and Kerala have well-developed microfinance distribution networks, making microfinance operations easier.

## 3.5. REMITTANCES TO INDIA

### Why in the News?

According to recent RBI Survey findings, **Advanced Economies such as the US and the UK have emerged as the top sources of inward remittances** for Indians in the past four years, leaving behind the Gulf nations.

### Key Trends in Remittances Inflows to India

- **Remittances inflow: Doubled to USD 118.7 billion in 2023-24** (compared to 2011).
- **Top 5 source countries for India (2023-24):** US (27.7%) followed by the UAE, the UK, Saudi Arabia, and Singapore.
  - Historically, **Gulf Cooperation Council (GCC) countries** like the UAE and Saudi Arabia dominated India's remittance inflows. However, their **combined share at 38%** has fallen behind **Advanced Economies' share of more than 50%**.
- **Top 3 recipient states in India (2023-24):** Maharashtra (20.5%), followed by Kerala and Tamil Nadu.

### Factors behind the shift in the remittance inflows

Changes in **migration patterns** have been cited as the major reason due to:

- **Cost of Transfer:** The cost of sending remittances to India is **lower than the global average cost, driven by digitalisation** but remains higher than the SDG target of 3 per cent for US\$ 200.
  - However, cash-based transactions remain prevalent, especially for smaller amounts.
- **Strong labor markets in the US and Europe**, especially with **more white collar jobs**, along with wage hikes and post-pandemic fiscal stimulus, have **boosted migrants' earning capacity**.
  - On the other hand, **GCC countries have seen declining opportunities** for low-skilled labor due to **automation, economic diversification, and nationalization policies** (e.g., Saudi Arabia's policies of Nitaqat & Kafala system).
- Emergence of **Canada, the U.K. and Australia as preferred higher education destinations** along with policies like **'Migration and Mobility Partnership' (May 2021) between India and the UK**.
  - For example, **Indian migration to the UK tripled** from 76,000 in 2020 to 250,000 in 2023.

### Why are remittances important for economy?

- **Balance of Payments (BoP):** While **financing around half of India's merchandise trade deficit**, net remittance receipts have been an **important absorber of external shocks**.
- **Household Level:** Remittances fund essential expenses such as **food, healthcare, and education**, thus, improving **standard of living of people**.
  - **E.g., in 2021, remittances constitute over 36% of Kerala's state domestic product**, boosting per capita income.
- **Macro-Economic Role:** Remittances account for **3-3.5% of India's GDP since 2000**, dwarfing foreign direct investment (FDI) and Official Development Assistance (ODA).
  - Their stability makes them a **key driver of economic resilience**, especially during global crises, such as pandemic and wars.

- **Debt sustainability:** Remittances can lead to **reduced country risk**, thereby reducing the marginal cost of raising revenue and improve the sustainability of government.

### 3.6. UNIFIED PENSION SCHEME (UPS)

#### Why in the News?

Pension Fund Regulatory and Development Authority (Operationalisation of Unified Pension Scheme under National Pension System) Regulations, 2025 was notified to operationalize **the Unified Pension Scheme (UPS)**.

#### About Unified Pension Scheme (UPS)

- **UPS** has been introduced as an option under the **National Pension System (NPS)** by the Central Government for the **Central Government employees** covered under NPS so that they may receive an **assured payout** after their retirement.
- **Implementing Agency:** Pension Fund Regulatory and Development Authority (PFRDA).
- **Background.** Somanathan committee constituted in **2023** to restructure the **New Pension System (NPS)**, based on its recommendations, the **Universal Pension Scheme** has been announced.

*To know more about the comparison of **UPS with NPS and OPS**, refer to **Article 1.4. Unified Pension Scheme in September 2024 Monthly Current Affairs Magazine***

#### Key highlights of the UPS under PFRDA (Operationalisation of Unified Pension Scheme under National Pension System) Regulations, 2025

- **Applicability of Unified Pension Scheme:** Benefits under **UPS** shall be available to the following category of persons:
  - **An existing Central Government** employee in service as on 1st April 2025, who is covered under NPS, as per **PFRDA Act, 2013**.
  - **A new recruit in the Central Government services**, who joins service on or after the **1st day** of April 2025.
  - **A Central Government employee** (covered under NPS) and who has **superannuated or voluntarily retired** or has retired (under Fundamental Rules 56(j) (which is not treated as penalty under Central Civil Services (Classification, Control and Appeal) Rules, 1965)) on or before **31st March 2025**.
  - **Legally wedded spouse** in case of a subscriber who has **superannuated or retired and has demised prior** to exercising the option for UPS.
- **Eligibility to receive Benefits:**
  - **In case of an employee superannuating** after qualifying service of **10 years** (from the date of superannuation).
  - **In case of Central Government retiring** an employee under (Classification, Control and Appeal) Rules, 1965, from the date of such retirement.
  - **In case of voluntary retirement** after a minimum qualifying service period of **25 years**, from the date such employee would have **superannuated**, if the service period **had continued** to superannuation.
- **Contributions:**
  - **Individual Corpus:** The monthly contribution of **UPS Subscriber** shall be **10%** of the basic pay (including non-practising allowance) and dearness allowance.
  - **Pool Corpus:** Additional Central Government contribution at an **estimated 8.5%** of Basic Pay (including nonpractising allowance) plus Dearness Allowance.
- **Fund Based System:** The UPS relies on the regular and timely accumulation and investment of applicable contributions (from both the employee and the employer) for **assured payout** to the employees post superannuation or retirement.
- **Permanent Retirement Account Number (PRAN):** PRAN is a Permanent Retirement Account Number allocated to subscriber opening/opting for UPS, and under which all the transactions are recorded by the CRA system.
- **Payout under UPS:**
  - **Assured payout:** It shall be payable at **50% of the average** of the last **12 months** Basic Pay (as certified by Head of Office) immediately **prior to the date of superannuation** or voluntary retirement or retirement.
    - > It is subject to completion of minimum **25 years** of qualifying services by a UPS subscriber.

- **Minimum Guaranteed Payout:** It shall be Rs. **10,000/- per month** subject to completion of **minimum 10 years** of qualifying services by a **UPS subscriber**.
- **Proportionate Payout:** In case of Qualifying service period of **10 years to 25 years**, proportionate payout shall be payable.
- **Admissible Payout:** Assured payout shall be proportionately **reduced** in any or both of the following cases:
  - > **Individual corpus** is less than the benchmark corpus as on the date of superannuation or voluntary retirement or retirement.
  - > **Final withdrawal** not exceeding **60%** of the individual corpus, as opted by a subscriber.
- **Family Payout:** Upon the death of a UPS subscriber receiving an admissible payout, the **legally wedded** spouse shall receive **60%** of the payout for life.
- **Dearness Relief (DR)** as declared by the Central Government from time to time, shall be payable on the admissible payout and family payout, as the case may be.
- **Intermediaries and Entities implementing UPS:** UPS shall be implemented through NPS architecture by the intermediaries registered with the Authority (National Pension System Trust, Pension Fund, Central Recordkeeping Agency, Trustee Bank, Custodian of Securities etc.)

#### Eligibility Criteria for Assured Payout under UPS

- Employees must complete a **minimum of 10 years** of qualifying service.
  - The payout starts **from the date of superannuation**.
- **Retirement:** If retirement occurs under **FR 56 (j)** (not as a penalty under **Central Civil Services (Classification, Control and Appeal) Rules, 1965**), the payout begins **from the date of such retirement**.
  - **Fundamental Rules (FR) 56(j)** relates to the **premature retirement** of government servants.
- **Voluntary Retirement:** Employees retiring **voluntarily after a minimum qualifying service of 25 years** will receive their pension from their original superannuation age (i.e., the age at which they would have retired if they had continued working)

#### Challenges of the Unified Pension Scheme (UPS)

- **Fiscal Burden:** UPS will raise the government's contribution from 14% to 18.5%, adding an **estimated annual cost of ₹6,250 crore**.
- **Delayed Payment for Voluntary Retirees:** According to the notification, if an employee chooses to retire early (after 25 years of service), he **won't immediately start** receiving the assured pension payout.
- **Limited family pensions:** Family payout is applicable only to the spouse and does not extend to other family members like unmarried, divorced, or widowed daughters.
- **Political Opposition:** Resistance from stakeholders, especially supporters of the **Old Pension Scheme (OPS)**, may create hurdles in implementation.

#### Conclusion

The **Unified Pension Scheme (UPS)** ensures **retirement security** with assured benefits and inflation protection while balancing fiscal sustainability. By staying informed, voicing concerns, and pushing for **transparency** and **legal clarity**, **employees** can collectively work towards a **more secure** and **equitable retirement system**.

#### About Pension Fund Regulatory and Development Authority (PFRDA)

- **Genesis:** Established through a **resolution** by the Government of India in **2003**.
- **Statutory body** established under **PFRDA Act, 2013**.
- **Objective:** To promote old-age income security by establishing, developing and regulating pension funds to protect the interests of the subscribers of pension fund and related matters.
- **Works** under the **Ministry of Finance**.
- **HQ:** **New Delhi**
- **Composition:** **Chairperson and not more than six members**, appointed by the **Central Government** with expertise in **economics, finance, or law** (at least one from each).
- **Functions:**
  - Registering and regulating intermediaries- NPS Trust, Points of Presence, Central Record keeping Agency, Trustee Bank, Pension Funds, Custodian for time bound service to subscribers.
  - Adjudication of disputes between intermediaries and between intermediaries and subscribers.

- Implementing Agency for Initiatives: Atal Pension Yojana (APY), National Pension System (NPS), NPS-Vatsalya.

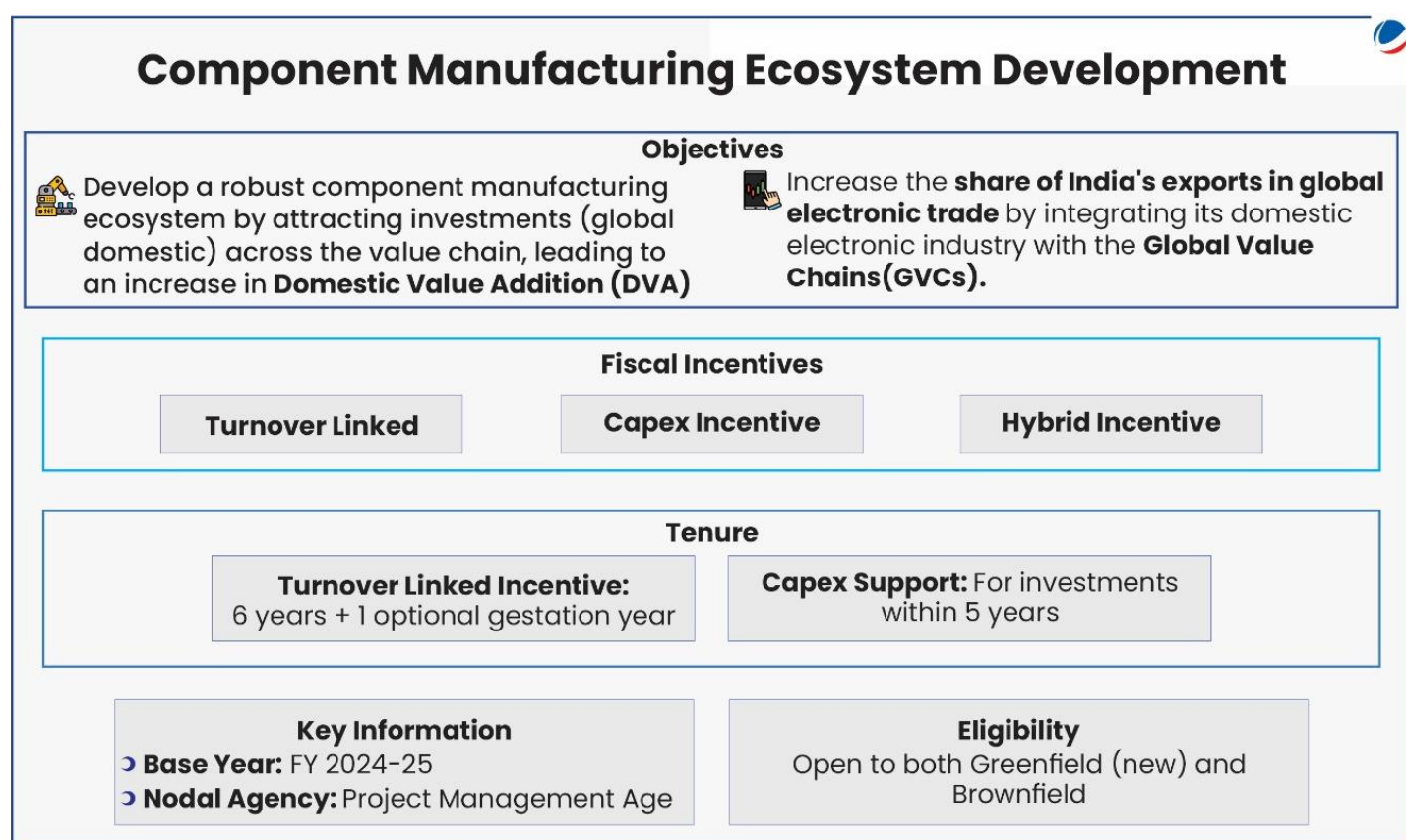
### 3.7. SELF-RELIANCE IN ELECTRONICS COMPONENT MANUFACTURING

#### Why in the news?

Ministry of Electronics and Information Technology (MeitY) notified **Electronics Components Manufacturing Scheme**.

#### About the scheme

- Based on Production, **Electronics Value Chain** can be divided into **4 categories: Design, Components, Assembly, Original Equipment Manufacturing**.
- The scheme focuses on **Components section** (Passive components or non-semiconductor components) like **resistors, capacitors, sensors, films, lenses, etc.**
- The scheme provides **differentiated fiscal incentives on target segment products, depending on the specific challenges** being faced by the industry.



#### India's Electronics Sector: An Overview

- Current Status:** India holds only **4% of the global electronics market**. The sector is **mainly focused on assembling**, with limited design and component production.
- Growth in Domestic Production:** Electronics production grew almost **5 times to ₹9.52 lakh crore (FY24)**.
  - 99% of smartphones** sold in India are now **made domestically**.
- Key Growth Drivers:** **Large domestic market; Skilled workforce and low-cost labour;** Government initiatives like **Make in India** and **Digital India; Improved infrastructure**, ease of doing business, and financial incentives.
- Dominance:** Heavy reliance on **assembly**, with **limited innovation** in design and components.

#### Key Initiative to Boost Electronics Manufacturing In The Country

- India Semiconductor Mission (ISM):** To build a strong semiconductor and display ecosystem.
- Phased Manufacturing Programme:** To promote indigenous manufacturing of Electric Vehicles.

- **National Policy on Electronics 2019:** To position India as a global hub for **Electronics Systems Design and Manufacturing (ESDM)**
- **PLI Scheme 2.0 for IT Hardware:** For localisation of components and sub-assemblies of Laptops, Tablets, All-in-One PCs, Servers and Ultra Small Form Factor (USFF).
- **PLI scheme for Large Scale Electronics Manufacturing (LSEM):** to boost mobile phone manufacturing and incentivize large investments in the mobile phone value chain.

#### Why Does India Need to Achieve Self-Reliance in Manufacturing of Electronic Components?

- **National Security:** Dependence on **foreign-made electronic components**, especially in defense and critical infrastructure, poses risks such as **data breaches and supply chain disruptions**.
  - **China, Hong Kong account for 56% of India 's total imports** of electronics, telecom, electrical products (GTRI)
- **Rising Imports, Despite Domestic Production of End Products:** With then rise of electronics production, imports of components have also increased.
  - They major reason for this is **local capacity for component manufacturing remained underdeveloped**.
- **Strategic Opportunity (China+1 Shift):** With global firms looking beyond China, India has a strong opportunity to attract investments in **component and sub-assembly manufacturing**.
- **Leveraging India's Competitive Advantage:** India is among the **most cost-effective** electronic component manufacturing destinations globally.
  - According to the PWC, India's **minimum monthly wage** is just **46%** of Thailand's and its **labour force** is **12 times** larger than Thailand's.

Electronics is one of the fastest-growing global industries, driven by digitization. However, Despite the need for self-reliance and India's strengths in electronics, domestic manufacturing remains underdeveloped.

#### Challenges for Electronic Component Manufacturers in India

- **High Logistics Costs:** India has longer lead times and higher transport costs than countries like China and Vietnam.
  - **For example**, Shipping a premium smartphone cost **\$0.80** from China vs **\$8** from India (PWC).
- **Global Oligopoly in Components:** Component markets are dominated by a few countries with natural or policy-driven advantages.
  - **For example, Japan** benefits from strong R&D infrastructure. **Taiwan** advanced through US support and knowledge transfer.
- **Underdeveloped Supporting Industries:** Industries like chemicals are not yet equipped to supply high-quality raw materials for electronics.
  - **For example**, India can potentially supply chemicals for semiconductors, but needs to upgrade to meet industrial standards.
- **Limited Access to Critical Minerals:** Critical minerals are essential but often scarce or controlled by other countries. **For example**, China dominates exports of gallium and germanium (used as silicon alternatives).
  - In **2023**, India identified **30 critical minerals** it heavily depends on from abroad, increasing supply chain risks.
- **Shortage of Skilled Workforce:** Lack of trained workers **for specialized systems like SMT lines** limits local manufacturing capabilities.

#### Conclusion

To position India as a global hub for electronic component manufacturing, NITI Aayog recommends a multi-pronged strategy. This includes **incentivizing R&D and design, rationalizing tariffs, enhancing skill development, enabling technology transfers, and upgrading infrastructure**. Together, these efforts can help build a strong and self-reliant electronics manufacturing ecosystem in India.

### 3.8. EQUALISATION LEVY

#### Why in the News?

As per the new amendments proposed in Finance Act 2016, Equalization levy or digital tax on online advertisements **will not apply on or after April 1, 2025**.

## Equalization Levy

- It is a **direct tax** introduced by **Finance Act, 2016**, taxing **digital transactions** i.e. income accruing to foreign e-commerce companies from India.
  - This **covers income from advertising** also which is aimed at taxing **business to business transactions**.
- Finance Act 2020** has extended scope of this levy to **e-commerce supply and services**.

### Reasons for its Imposition

- Fair Competition:** It aimed to **level the playing field for domestic and international companies**.
- Bridging Tax Gaps:** **Prevents companies from avoiding taxation** due to a lack of physical presence in India.
- Taxing Foreign Digital Companies:** Ensures that foreign e-commerce giants contribute to India's tax system.
- Revenue Collection Opportunity:** Recognizes the boom in digital transactions, further accelerated by COVID-19.

### Associated Concerns

- Trade friction with the US:** **Foreign trade barrier report** mentions Equalization levy as **barrier to overseas trade**.
- Risk of Retaliatory Tariffs:** **Other nations may impose countermeasures**, affecting Indian companies operating overseas.
- Double Taxation & Compliance Burden:** Foreign companies may face dual taxation, increasing their costs.

## Transactions subjected to Equalisation Levy



**Online Advertisement Services:** 6% tax on payments to non-residents for digital ads and related services.



**E-commerce supply of goods or services (Abolished on August 1, 2024):** Rate 2% on revenue received by **non-resident e-commerce operators**.



**Condition:** As levy was not introduced as part of Income Tax Act, global firms that pay Equalisation levy in India cannot claim a tax credit in their home country under **double taxation avoidance agreements**.

## 3.9. FARMER PRODUCER ORGANISATIONS (FPOS)

### Why in the News?

Government has achieved the target of establishing **10,000 Farmer Producer Organisations (FPOs)** under **Formation and Promotion of 10,000 Farmer Producer Organizations (FPOs) Scheme**.

### About Formation and Promotion of 10,000 Farmer Producer Organizations (FPOs) Scheme

- Launched in 2020** with a budget outlay of **₹6,865 crore** till 2027-28.
- Type:** Central Sector Scheme.
- Objective:** To provide holistic and broad-based supportive ecosystem to form 10000 new FPOs to facilitate development of vibrant and sustainable income-oriented farming and for overall socio-economic development and wellbeing of agrarian communities.
- Implementing Agencies (IAs):** There are total 9 IAs including Small Farmers Agri-Business Consortium (SFAC), National Cooperative Development Corporation (NCDC), NABARD, NAFED, etc.
  - IAs** will engage Cluster Based Business Organizations (CBBOs) to aggregate, register, and provide professional handholding support to each FPO for a period of **5 years**.
    - CBBOs** are the platform for an end-to-end knowledge for all issues related to FPO promotion.
- Special focus:** Small, marginal and women farmers/ women SHGs as members, SC/ST farmers and other economically weaker categories as members, **“One District One Product”** approach for development of product specialization and better processing, marketing, branding & export.
- Key Provisions:**
  - Formation of FPO** based on **Produce Cluster Area approach** and specialized commodity-based approach.
  - Financial assistance:** Rs.18 lakhs to each FPO towards management cost for **3 years**.
  - Equity grant:** Up to **Rs. 2,000** per farmer member of FPO with a limit of **Rs. 15.00 lakh** per FPO.
  - Credits Guarantee facility:** Up to **Rs. 2 crore** of project loan per FPO from eligible lending.
- Achievement:** Since the launch of scheme, **₹254.4 Crore** in equity grants has been released to **4,761 FPOs** and credit guarantee cover worth ₹453 Cr. has been issued to 1,900 FPOs.
  - Approx. **30 lakh farmers** in country are connected to FPOs, with around **40%** of them being women.

## About FPOs

- FPO is formed by a **group of farm producers** such as farmers, milk producers, etc. with **producers as shareholders** in the organization.
- Aim:** At improving their living standards and to ensure a good status of their available support, income, and profitability.
- FPO is registered** either under the **Companies Act, 2013** or under the **Co-operative Societies Act, 1912** of the concerned States.
  - It must be registered with “**FPO Registry Portal**” maintained by the Central Government and a unique identity number, i.e. RIC (Registration Identity Code) is allotted to the FPO.
- Small Farmers’ Agribusiness Consortium (SFAC)** was mandated by Department of Agriculture and Cooperation (Ministry of Agriculture) to support the State Governments in the formation of FPOs.

## Benefits of the FPOs



**Economies of scale** through aggregation of produce and bulk transport.



**Enhanced value addition by increasing primary and secondary** processing of agricultural produce.



**Greater bargaining power** to farmers and greater quality orientation in production and processing activities.



**Market intelligence** through ease in communication for dissemination of information about prices and volumes.



**Post-harvest losses can be minimised** through joint storage and value addition facilities.

## Challenges faced by FPOs

- Lack of Professional Management:** Experienced, trained and professionally qualified CEO presently lacking in the rural areas to manage FPO business professionally.
- Post-harvest Losses:** FPOs often face limitations in terms of access to modern farming technologies, storage facilities, transportation infrastructure, which can result in post-harvest losses.
- Investment and credit constraint:** Limited capability to autonomously invest in primary or secondary processing, storage and custom hiring facilities, and inability of FPOs to access institutional credit without collateral.
- Quality Standards and Certification:** Meeting quality standards and obtaining certification for their produce can be a complex and costly process, especially for small and resource-constrained FPOs.
- Climate Change and Environmental Sustainability:** FPOs often lack resources and expertise to adopt climate-resilient and sustainable agricultural practices, making them vulnerable to the effects of climate change.
- Market Volatility:** FPOs often focus on a **single crop or a few crops**. This can lead to issues when dealing with crop failures or market fluctuations, which can affect their members' income and profitability.

## Way Forward

- Promote the adoption of technology:** Such as precision farming, IoT, and farm management software, to enhance productivity and reduce post-harvest losses.
- Capacity building and handholding:** Provide training and capacity building programs to FPO members on modern agricultural practices, sustainable farming methods, and effective resource management.
- A standard set of scoring model** is required for FPOs in different phase for helping financial institutions, private agencies, CSR agencies and other stakeholders to understand the correct picture of institution before giving resources.

## 3.10. INDIA'S BIO-ECONOMY

### Why in the News?

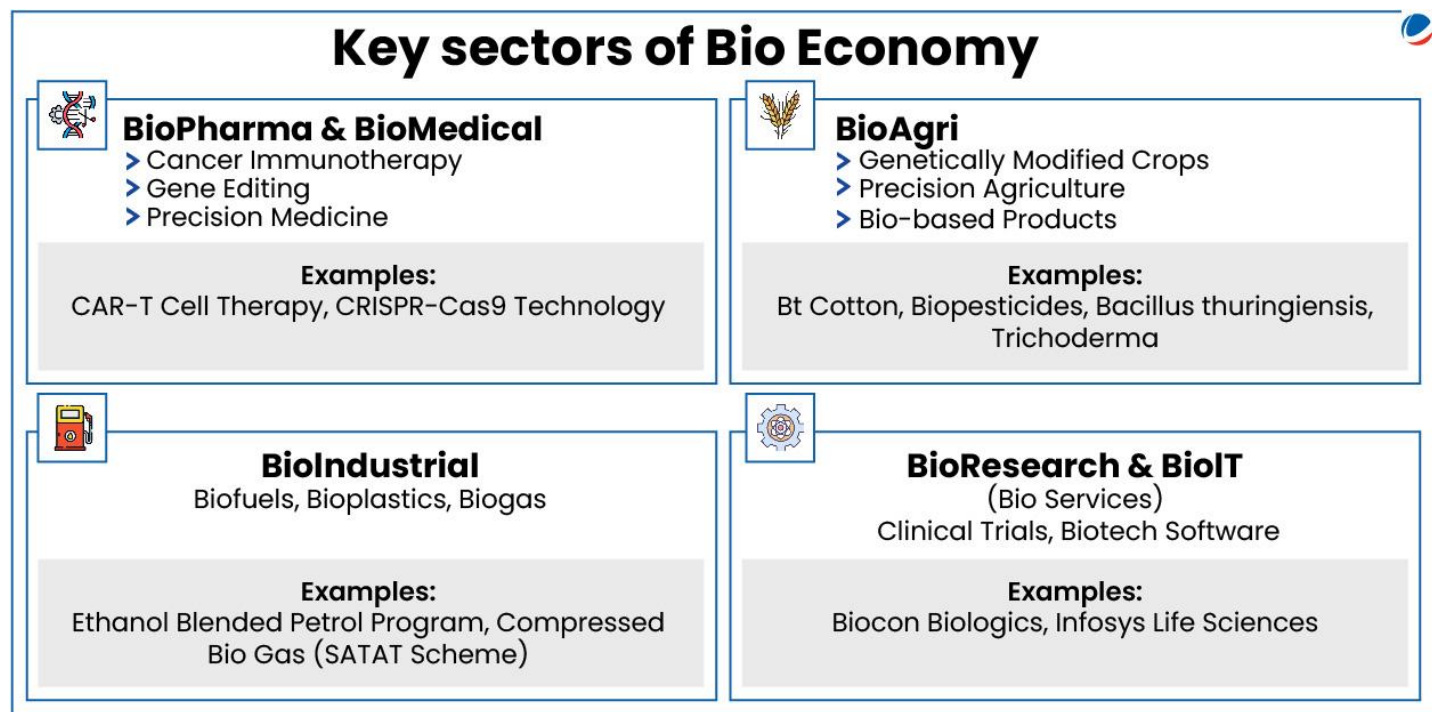
Biotechnology Industry Research Assistance Council (BIRAC) released **India Bio-Economy Report 2025 (IBER 2025)** on its 13<sup>th</sup> anniversary.

### More on the News

- **BioSaarthi Mentorship Initiative**, a **global mentorship initiative** aimed at **nurturing biotech startups**, was also unveiled.
- **Biotechnology Industry Research Assistance Council (BIRAC)**, set up by Department of Biotechnology in 2012, is a **Not-for-profit Public Sector Enterprise**.
  - It is an **industry-academia interface** and implements initiatives such as **targeted funding, technology transfer, IP management etc.**
  - **Major Initiatives:** Bio-NEST Scheme, Biotechnology Ignition Grant (BIG), SEED Fund, LEAP Fund, जनCARE – Amrit Grand Challenge etc.

### What is Bio Economy?

- It is the **production, utilization and conservation of biological resources**, including related **knowledge, science, technology, and innovation**, to provide **information, products, processes and services** across all economic sectors aiming toward a sustainable economy.
- India has an ambitious target of **\$300 billion bioeconomy by 2030**.



### Significance of Bio-economy for India

- **Economic growth:** Bioeconomy surged from **\$10 billion (2014)** to **\$165.7 billion (2024)**, contributing **4.25% to GDP** (IBER 2025).
- **Entrepreneurship:** Biotech Startups have grown from **50 to 10,000+** in a decade, boosting innovation (IBER 2025).
- **Global hub for affordable, quality medicines:** India ranks **3rd in pharma production (by volume)** and **14th by value**.
  - Further, India produces **65% of the world's vaccines**.

- **Food security:** BioAgri sector improves **agri and livestock productivity** through **GM crops, precision farming, bio-products, Animal biotech etc.**
  - E.g., **Indian Immunologicals Limited (ILL)** launched "**Shashthi**," an indigenous In-Vitro Fertilization (IVF) to make IVF technology more affordable for farmers.
- **Employment:** BioEconomy is projected to create 35 million jobs.
- **Energy security:** Ethanol blending in India increased from **1.53% in 2014 to 15% in 2024**, with a target of 20% by 2025 (IBER 2025).
  - This shift has reduced **crude oil imports by 173 lakh metric tons** and cut **519 lakh metric tons of CO<sub>2</sub> emissions**.
- **Environmental benefits:**
  - **Promoting Circular Economy:** E.g., Second-generation ethanol refineries converting agricultural residues like Parali and bamboo into fuel, **Cassava-based bioplastics** (Nagaland), etc.
  - **Pollution Control: Biofertilizers** (e.g., Mycorrhizal Bio-fertilisers), **biopesticides** (E.g., Trichoderma), and **bioremediation** (E.g., Oilzapper and Oilivorous-S by TERI) reduce chemicals and improve ecosystem health.
  - **Climate-Smart Crops:** E.g., **drought-tolerant, high-yielding chickpea variety SAATVIK (NC 9)** has been approved for cultivation.

#### Policies and Schemes promoting Bio economy

- **BioE3 (Biotechnology for Economy, Environment and Employment) Policy 2024:** It introduces key initiatives such as **advanced bio manufacturing facilities, bio-foundry clusters, and bio-AI hubs** to support bio-based product development and commercialization.
- **National Biopharma Mission:** Led by the **Department of Biotechnology** and implemented by **BIRAC**, it aims to boost India's capabilities in **vaccines, biosimilars, medical devices, etc.** by fostering **collaboration between industry and academia**.
- **Biotechnology Research Innovation and Entrepreneurship Development (Bio- RIDE) Scheme (2024):** Approved under Department of Biotechnology, it aims to **promote Bio-Entrepreneurship, advance Innovation, and facilitate Industry-Academia Collaboration etc.**
- **Genome India Project:** Initiated in **2020 by Department of Biotechnology**, it aims to build a **comprehensive catalogue of genetic variations** that reflect unique diversity of Indian population.
- **Biotech-KISAN (Biotech-Krishi Innovation Science Application Network):** It is a **scientist-farmer partnership programme** launched to empower farmers, especially women and those in rural and tribal areas, through agricultural innovation and scientific interventions.
- **National Policy on Biofuels 2018:** It aims to **boost biofuel usage in the energy and transportation sectors**.

#### Hurdles in growth of India's Bioeconomy

- **Regulatory and policy issues:**
  - **Overlap, inefficiency, and lack of clarity:** India's biotechnology regulations are spread across **multiple ministries** (Ministry of Environment, Forest and Climate Change, Ministry of Science and Technology etc.) and **committees** (Genetic Engineering Appraisal Committee (GEAC), Review Committee on Genetic Manipulation, etc.).
  - **Lack of harmonization in laws:** E.g., Contradiction between **Protection of Plant Varieties and Farmers' Rights Act** with the **Patent Act** with respect to **balancing the rights of farmers and breeders**.
- **Bio-piracy concerns** (theft of biological resources): Traditional Knowledge based on biological resources is often exploited by big multinational companies and pharmaceutical companies.
  - E.g., Indian Government objected when US Patent and Trademark Office granted a patent after turmeric.
- **Research and Development (Economic Survey 2024-25):**
  - **Low R&D Investment:** Gross expenditure on research & development is meager **0.64% of the GDP**, which is very low compared to China (~2%) and US (~3%).
  - **Sectoral Imbalance:** **Pharma leads with 40%+** of industrial R&D but **biotechnology (<10%) and fuel sectors (<10%) lags behind**.

- **Others issues:**
  - **Safety Concerns** related to bio-tech such as containment of biologically active substances, unforeseen ecological consequences of genetically modified crops etc.
  - **Funding issues like inadequate tax incentives, disparities in sector specific funds etc.**
  - **Lack of adequate Infrastructure** for genomic data collection, storage, and analysis etc.
  - **Supply chain issues**, e.g., import dependence for active pharmaceutical ingredients.
  - **Shortage of professionals** trained in bioengineering, molecular biology, genomics etc.

### Way Forward

- **Reform Policy and Regulatory Framework** (IBER 2025) by-
  - Creating a **National Bio Economy Mission** with representation from all stakeholders.
  - Establishing a **single-window regulatory mechanism** for biotech innovations.
  - Harmonizing the **Protection of Plant Varieties and Farmers' Rights Act** with the **Patent Act** to encourage innovation.
- **Leverage international treaties** like **WIPO's Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge** to tackle intellectual properties issues.
- **Promote Investment and Funding** (IBER 2025) through-
  - **Targeted tax incentives for R&D investments** in biotech especially for **private sector research**.
  - **Outcome-based funding mechanisms** for high-risk innovations.
  - **Corporate innovation funds** with matching government contributions.
- **Encourage Human Capital Development** (IBER 2025) by-
  - Establishing **Centers of Excellence** for frontier biotech education.
  - **Developing specialized curricula** for convergent technologies (Bio+AI, Bio+Engineering)
- **Establish a National Biological Data Repository** and develop **Global Alliance Networks** for international market access.
- **Address Safety risks** by utilizing the principle of **inherently safer design** and a thorough **economic, environmental and safety analysis**.
  - **301<sup>st</sup> Report of Department Related Parliamentary Standing Committee Report** suggested that the process of field trials of **GM crops** should be done in a **closed environment** and in **consultation with agricultural universities**.

### Conclusion

The integration of bio-manufacturing, bio-agriculture, and bioenergy enhances national resilience and showcases India's aim to lead in the global bioeconomy. This vision supports a sustainable, self-reliant, and bio-driven economy aligned with India@2047's goals.

Scan the QR code to know more about **India's Bioeconomy**

**Weekly Focus #127** – India's Bioeconomy: Pioneering Growth Through Innovation and Sustainability



## 3.11. NATIONAL TECHNICAL TEXTILES MISSION (NTTM)

### Why in the News?

It has been 5 years since the launch of the **National Technical Textiles Mission**.

**Technical textiles** are fabrics made for specific **functions and performance, rather than for looks.**

- They are used in products that **help protect people, improve machinery, and solve practical problems, such as in car parts, building materials,** medical equipment, and safety gear.
- The market is divided into **12 segments based on their application,** for e.g. **Sportech** which manufactures **Sports nets, parachutes, artificial grass and turfs.**

#### About National Technical Textiles Mission

- **Aim:** To make India a global leader in Technical Textiles with a budget of Rs. **1,480 crores till 2025-26.**
- **Ministry:** Ministry of Textiles.
- **Four Components:**
  - **Research, Innovation and Development.**
  - **Promotion and Market Development.**
  - **Export Promotion.**
  - **Education, Training, and Skill Development.**
- **Objectives of NTTM:** It aims to strengthen **India's position as global leader in national textiles by developing an ecosystem around it.**

### 12 segments of technical textiles

#### Indutech

Industrial brushes, computer printer ribbon, composites, ropes and cordages, coated abrasives, drive belts, conveyor belts, etc.



#### Mobiltech

Seat cover, upholstery, tyre cord fabrics, tufted carpet, insulation felts, seat belts, cabin filters, helmets, etc.



#### Sportech

Sports nets, parachutes, artificial grass and turfs, sport composites, hot-air balloons sleeping bags, etc.



#### Buildtech

Floor and wall coverings, scaffolding nets, awnings & canopies, etc.



#### Homotech

Pillows, mattresses, blinds, mosquito nets, carpet backing cloth, filters, vacuum cleaner consumables, etc.



#### Meditech

Contact lenses, baby diapers, sanitary napkins, surgical sutures, surgical disposables, etc.



#### Clothtech

Interlinings, labels, elastic narrow fabrics, shoe laces, etc



#### Agrotech

Bird protection nets, crop covers, fishing nets, shade nets, mulch mats, etc.



#### Protech

Bullet-proof protective clothing, high visibility clothing, fire retardant products, etc.



#### Packtech

Wrapping fabric, soft luggage, tea bag filter paper, woven jute sacks, etc.



#### Oekotech

Waste management, environmental protection, recycling.



#### Geotech

Geo-composites, geo-bags, geogrids, geonets.



## Why Technical Textiles are significant for India?

- **Diversified Applications:** Indian Technical Textile market is equipped with diversified technical textile innovations.
  - For instance, hometech has been used for Antiviral Mattress Protector.
  - Agrotech has been used for UV Stabilised and Flexible Crop Support Net.
- **Increasing Demand:** More consumers have now started to prefer technical textiles over traditional textiles as it fulfils their demand for **flexible, durable, high-quality and high strength textiles** in **activewear** or medical apparel.
  - **Similarly** increasing population, **rising birth rates and aging population continues to boost the demand for hygienic and personal care medical equipment** (meditech), as well as buildtech segments.
- **Industrial Production:** **Indutech** are technical textiles used in the industrial (manufacturing) applications like **filtration, conveying, cleaning including solutions and products for mechanical engineering** and for varieties of industries, e.g. conductive textiles and 3-D textile products.
- **Environmental Protection:** Technical Textiles, especially **Geotech and Oekotech** are useful for environment protection – **floor sealing, air cleaning, prevention of water pollution, wastewater recycling treatment, erosion protection and domestic water sewerage plants.**
- **Supports Disaster Management:** For instance, in **Austria**, Geotech barriers used to deflect avalanches from entering the reservoir.
- **Defense Modernization:** Manufacturing of Protech based **bullet proof jackets, protective wear, high strength composite materials under make in India** can help in defense modernization.
- **Support for Key Sectors:** Technical textiles **enhance productivity and efficiency in critical sectors like agriculture, healthcare, transportation, and infrastructure**, which are foundational to India's economy.
  - Geotextiles in **railway track construction (e.g., by Indian Railways under NIP)** and **geomembranes for water conservation (Jal Jeevan Mission)** improve infrastructure durability, reducing maintenance costs and supporting **long-term economic stability.**

### Other Steps taken to Promote Technical Textiles

- **PLI Scheme for Textiles:** In order to promote domestic production of Technical Textiles, Production Linked Incentive (PLI) scheme was launched, in addition to Man-Made Fabrics and Apparel.
- **PM MITRA Scheme:** To boost the overall textile industry and value chain, especially MMF and Technical Textiles, Ministry of Textiles launched PM Mega Integrated Textile Regions and Apparel Parks (MITRA) Scheme over a period of 7 years upto 2027-28.
- **SAMARTH Scheme: Samarth (Scheme For Capacity Building In Textile Sector)** is a flagship skill development scheme by the Ministry of Textiles to provide demand-driven, placement oriented skilling programme to incentivize the efforts of the industry in creating jobs in the organized textile and related sectors.
- **New HSN Codes:** In addition to 207 identified technical textiles items in 2019, development of 30+ new HSN Codes dedicated to technical textiles' products.
- **Mandatory Usage:** Currently, 119 technical textiles products have been identified for mandatory usage across ten Central ministries/departments.

## Challenges in Leveraging Technical Textiles

- **Lack of Awareness:** Technical textile benefits remain **unknown to the masses due to insufficient marketing and education.**
- **Import Dependence:** India imports **significant technical textiles from China (low-cost products) and US/Europe (high-tech products).**
  - The absence of domestic **specialty fiber manufacturing (carbon fibers, Nylon 66, UHMPE) and inverted duty structures** favor importing finished goods over raw materials.
- **Skilled Workforce Shortage:** The industry requires **specialized skills** currently absent in the domestic workforce.
  - Current training **schemes focus on traditional textiles** rather than developing specific **technical textile curricula.**
- **Insufficient R&D:** The industry is **dominated by commodity products** with limited product diversification.
  - Despite government-**established Centers of Excellence, industry mindset needs** to shift toward **innovation and research investment.**

- **Standardization Issues:** Harmonization of **Technical Textiles HSN codes** and alignment with international standards remains a challenge, complicating trade and quality control.

#### Way forward

- **Strengthen Research and Development (R&D):** Prioritize R&D in high-growth segments like Geotech, Meditech, and Agrotech by collaborating with the premiere institutes so as to support cutting edge innovation.
- **Increase Export Competitiveness:** By harmonizing Indian standards with global norms to enhance product acceptance in international markets.
- **Focus on Sustainability and Circular Economy:** Promote the use of natural fibers and eco-friendly products like Agrotech nets and Geotech erosion control solutions to align with India's vision of Mission LiFE.
- **Leverage Global Best Practices:** Adopt advanced manufacturing techniques from leaders like the USA (Sportech innovations) and Germany (Geotech applications) or Israel (Protech innovation) to improve technology readiness levels.

Scan the QR code to know more about **India's Textile Sector**

**Weekly Focus #122**- Threads of Transformation: India's Textile Industry Weaving a Modern Future



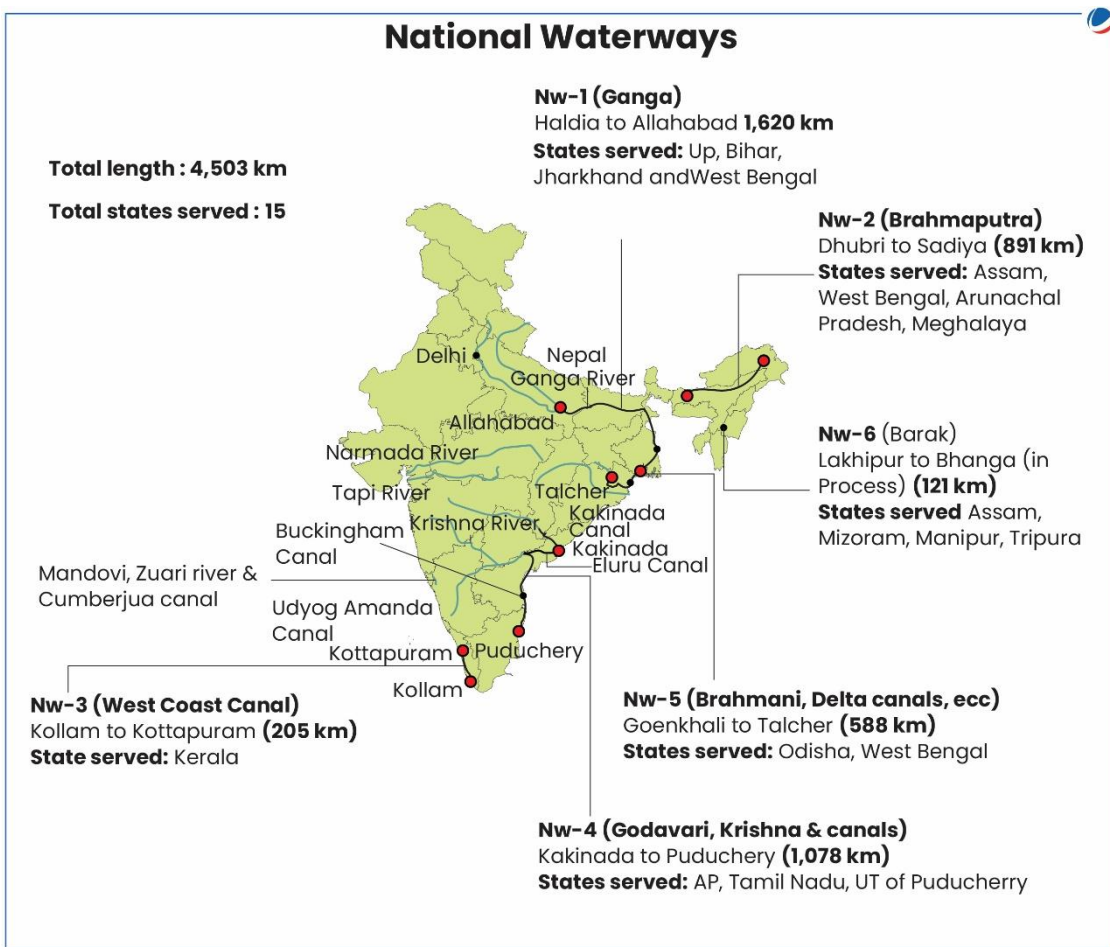
### 3.12. NATIONAL WATERWAYS (CONSTRUCTION OF JETTIES/TERMINALS) REGULATIONS, 2025

#### Why in the news?

The **Inland Waterways Authority of India (IWAI)** issued the **National Waterways (Construction of Jetties/Terminals) Regulations, 2025**.

#### About Regulations

- **Formulated By:** Inland Waterways Authority of India (IWAI) under the Ministry of Ports, Shipping and Waterways (MoPSW).
- **Aim:** To attract private sector investment in setting up terminals, streamline processes and promote efficient use of India's vast waterways network.



## Key Provisions of the Regulations

- **Scope: Any entity including private**, wishing to develop or operate an inland waterway terminal on a national waterway.
  - Both existing and new terminals, whether permanent or temporary, are covered under these regulations.
- **No-objection Certificate (NoC):** Any entity including private, wishing to develop or operate an inland waterway terminal on a national waterway, needs to obtain a **NoC from IWAI**.
- **Digital Portal for Terminal Applications:** To be developed by IWAI to enhance efficiency, transparency, and accessibility, for **Ease of Doing Business**.
- **Terminal developer and operator responsibilities:** They will be responsible for the technical design and construction of the terminal.

## Inland Water Transport

- **Definition:** Inland water transport (IWT) refers to the movement of people and goods on navigable waterways like rivers, canals, lakes, and other inland bodies of water.
- **Benefits:**
  - **Fuel Efficient:** 1 Litre of fuel moves 24 tonne-km on road, 95 tonne-km on rail and 215 tonne-km on IWT.
  - **Cost Effective:** Among different transport modes, the freight cost per ton-kilometer is ₹1.36 for railways, ₹2.50 for highways, and ₹1.06 for Inland Water Transport (IWT).
  - **Lower infrastructure costs:** Compared to building and maintaining roads and railways, inland waterways are generally **cheaper to develop** and upkeep needing a terminal/quay side investment mostly.
  - **Reduced congestion:** By taking bulk goods off roads, IWT helps **alleviate traffic congestion** on roads and railways, improving overall supply chain efficiency.
  - **Lower greenhouse gas emissions:** Compared to trucks, barges and other vessels used in IWT produce less air and noise pollution.

## Status of Inland waterways in India

- **Navigable Waterways:** India has about **14,500 km** of navigable waterways which comprise of rivers, canals, backwaters creeks, etc.
  - About **133.03 Million Metric Tonnes (MMT) of cargo** is being moved annually by Inland Water Transport (IWT).
- **Comparison with Other Countries:** In India, only 3.5% of trade happens through waterways, compared to 47% in China, 40% in Europe, and 35% in Bangladesh.

## Initiatives Undertaken

- **Inland Waterways Authority of India (IWAI):** Established in 1986 is the nodal agency under the Union Ministry of Ports, Shipping and Waterways, is mandated **to develop and regulate National Waterways (NWs)**.
- **Jal Marg Vikas Project (2014):** Being implemented by the IWAI with support from the World Bank to improve the navigability of the 1390 km stretch of **NW1** from **Varanasi to Haldia**.
- **Sagarmala Programme (2015):** Aimed at revolutionizing India's maritime sector.
  - It **promotes the use of coastal and inland waterways** for cargo transportation, reducing dependence on road and rail networks.
- **National Waterways Act, 2016:** Under it, 111 WATERWAYS (INCLUDING 5 EXISTING AND 106 NEW) have been declared as National Waterways (NWs).
- **Inland Vessels Act, 2021:** Replacing **Inland Vessels Act, 1917**, it addresses aspects related to inland vessels including their registration, classification, pollution prevention measures, etc.
- **Jalvahak Scheme (2024):** Aims to encourage business enterprises with safe and timely delivery of cargo through inland waterways, in a cost-effective manner.

## Major Challenges for Inland Waterways Sector in India

- **Inadequate Depth:** The Rivers require a **minimum depth of at least 3m**, but most Indian rivers are about 2 making carriage of heavy loads difficult.
- **Environmental Concerns:** **River pollution**, water flow disruption, and **habitat destruction** due to increased navigation.
- **Shortage of IWT Vessels:** Vessel buildings are highly capital-intensive and face difficulties in obtaining project finance from banks and financial institutions.

- **Modal Integration:** Lack of potential multimodal corridors and detailed mapping of waterways and industrial clusters, multimodal transport hubs in inland water transport corridor.

## Conclusion

To unlock the full potential of inland waterways, a **comprehensive** and **coordinated approach** is essential. This includes **upgrading infrastructure**, promoting private investment, adopting modern technology, and ensuring **multi-modal connectivity**. Streamlined policies and enhanced regional collaboration will further boost cargo movement and position waterways as a key pillar of sustainable transport and trade.

## 3.13. COAL SECTOR FOR INDIA'S DEVELOPMENT

### Why in the News?

India achieved a historic milestone by surpassing **one billion tonnes (BT)** of coal production in **March 2025**, in **FY 2024-25**.

### Government Initiatives driving success in Coal Sector

- **Enactment of Coal Mines (Special Provisions) CMSP Act- 2015:** The Act permitted auction of coal mines for commercial mining by private entities.
  - In 2020, first commercial coal mining auctions were launched.
- **Enactment of Mines and Minerals (Development and Regulation) Amendment Act, 2021 [MMDR Act]:** It enabled captive mines owners (other than atomic minerals) to sell up to 50% of their annual mineral (including coal) production in the open market
- **Coal Logistics Plan & Policy, 2024:** Formulated by the Ministry of Coal with the objective of developing resilient and cost-effective coal evacuation logistic system.
- **Transparent auction mechanism:** Commercial coal block auctions are conducted in a two-stage online competitive bidding process through **National Coal Mine Safety Report Portal and the Mine Closure Portal**.
- **Coal Gasification Scheme for Cleaner Energy (2024):** The initiative targets **100 million tonnes** of coal gasification by **2030**.
  - **Coal gasification** converts coal into syngas, which can be used for producing methanol, ammonium nitrate, Synthetic Natural Gas (SNG), and fertilisers.
- **'Mission Coking Coal':** Aims to enhance coking coal supply to the Steel Sector and increase domestic **coking coal production to 140 MT by FY 2029-30**.
- **Other measures:**
  - **National Coal Index (NCI)**, a price index combining the prices of coal from all the sales channels.
  - **Single Window Clearance portal** for the coal sector to speed up the operationalization of coal mining.
  - **100% Foreign Direct Investment (FDI)** under the automatic route for coal mining and related activities.

### Do you know?

➤ Despite renewable energy growth, coal-based thermal power will remain essential for India, with its **share projected at 55% by 2030 and 27% by 2047**.

While discussion at UNFCCC (United Nations Framework Convention on Climate Change) are pushing for the **phase-out of coal** and **developed countries are reducing coal dependence** (Germany aims to phase out coal by 2038, UK closed its last coal plant in 2024), India has reiterated its stance regarding the importance of coal for energy and economic growth.

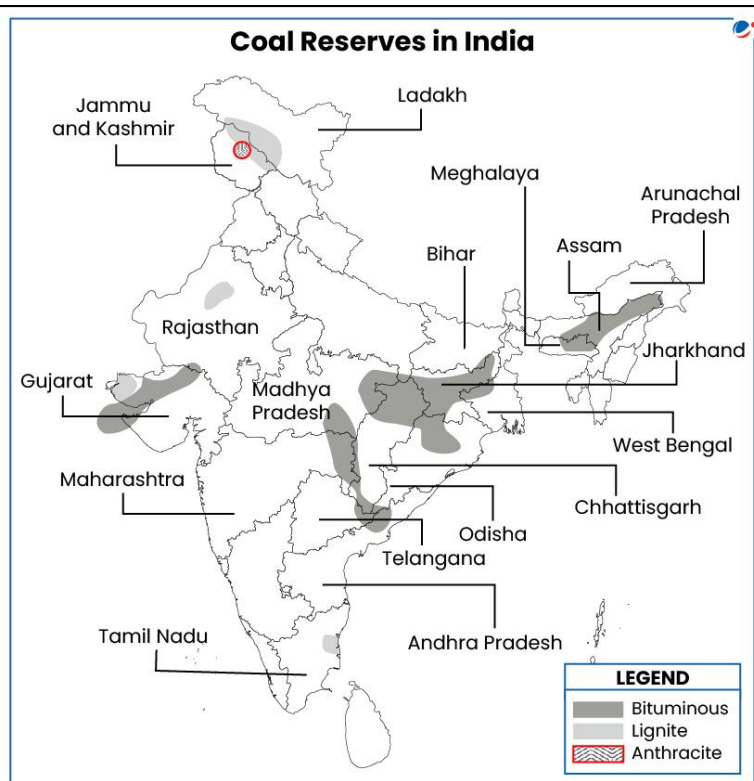
### Significance of Coal in India's Development

- **Primary Energy Source for Power Generation:** Coal is responsible for 46.88% (as of November 2024) of India's total installed capacity for power generation (Power Ministry).
  - Key industries, including **steel (8%)** and **cement (5%)**, also rely heavily on coal for energy.
- **Reduction in import dependency:** Coal Imports decreased by 8.4% in April-December 2024 in comparison to the same period of FY 2023-24, leading to substantial foreign exchange savings and a reduction in import dependency.
- **Meet growing energy demand:** India's electricity consumption is **expected to triple by 2050** [International Energy Agency (IEA)] driven by economic growth, rising incomes, and increasing electrification.
- **Development of coal producing region:** The coal sector contributes over **₹70,000 crore annually** through royalties, GST, District Mineral Foundation (DMF) contributions etc.

- These funds play a crucial role in fostering socio-economic development and infrastructure enhancement in coal-producing regions.
- **Job creation:** Coal sector has a workforce of around **5 lakh mine workers** across more than **350 coal mines**.
- **Other Economic Contributions:**
  - **Railway Freight:** Coal is **the largest contributor** to Indian railway freight, representing 49% of total freight revenue (FY 2022-23).
  - **Capital Expenditure and Infrastructure Development:** The coal sector invests an average of ₹18,255 crore annually in capital expenditure over **the past five years**.
  - **Corporate Social Responsibility (CSR):** Coal sector PSUs prioritize CSR initiatives, with an average annual expenditure of Rs. 608 Crore over the past five years.

#### Key information about India's Coal Sector

- India holds **5<sup>th</sup> largest** coal reserves globally and is **2<sup>nd</sup> largest** consumer of coal.
- **Total estimated reserves of coal:** 361.41 billion tonnes (as on 2022).
- **Top three states with highest coal reserves in India:** Odisha, Jharkhand, Chhattisgarh (accounting for **~69%** of India's total coal reserves)
- **Coal Mines (Nationalization) Act of 1973** serves as the central legislation governing the eligibility for coal mining in India.
  - **The auction-based regime introduced in 2014** permitted private sector participation, but it was restricted to captive use in their own end-use plants.
  - **In 2020**, the sector was further liberalized with the opening up of commercial coal mining to private players.
- **Types of coal found in India**
  - **Anthracite:** Highest grade of coal containing a high percentage of fixed carbon.
  - **Bituminous:** Medium grade of coal having high heating capacity, most commonly used for electricity generation in India.
  - **Subbituminous:** Black in colour, dull (not shiny) and has a higher heating value than lignite.
  - **Lignite:** Lowest grade coal with the least carbon content.



## Major challenges for India's coal sector in India



#### Issues in Mining and coal production industry

- ⊕ **Technological obsolescence in mining techniques**
- ⊕ **Un-seasonal and extended Rainfall** in the coal bearing areas.
- ⊕ **Non-Payment of commensurate Coal value** and huge outstanding dues by Power Sector consumers.
- ⊕ **Frequent Labour/ Industrial Relation (IR) issues** in the Coal fields.
- ⊕ **Land acquisition issues.**
- ⊕ **High Ash content of Indian coal**



#### Environmental concerns (from coal powered thermal power plants)

- ⊕ **Harmful gases** such as sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon dioxide (CO<sub>2</sub>), and particulate matter (PM)
- ⊕ **Pollutants** such as fly-ash lead (Pb), arsenic (As), cadmium (Cd), and mercury (Hg).

## Conclusion

Coal industry remains central to India's goal of becoming self-reliant and developed by 2047. Though advancements in safety, environmental protection techniques like flue Gas Desulphurization systems, and workforce welfare, the coal sector can building a strong foundation for future progress. Transitioning to supercritical technologies and co-firing biomass with coal can further reduce emissions while supporting sustainable energy production.

## 3.14. NATIONAL PROGRAMME FOR DAIRY DEVELOPMENT (NPDD)

### Why in the News?

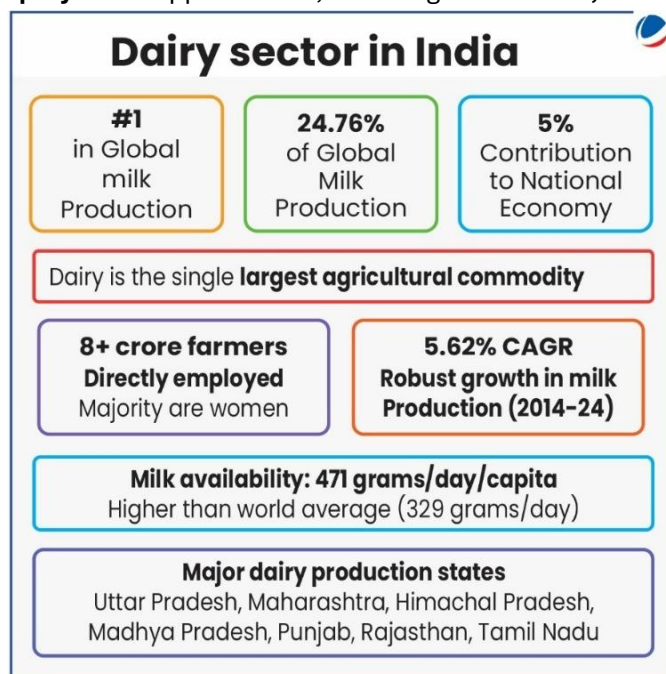
Union Cabinet approved the Revised National Program for Dairy Development (NPDD) with an enhanced outlay for the period of 15<sup>th</sup> Finance Commission cycle (**2021-22 to 2025-26**).

### Objectives of Revised NPDD

- Establish **10,000 new Dairy Cooperative Societies**.
- Strengthen milk procurement and processing in the **North Eastern Region (NER)**.
- Formation of **2 Milk Producer Companies** with dedicated grant support in addition to the ongoing projects of NPDD.
- Generate an additional **3.2 lakh direct and indirect employment** opportunities, focusing on **women**, which constitute **70% of dairy workforce**.

### National Program for Dairy Development (NPDD)

- It is a **Central Sector Scheme** launched in **2014** (Restructured in **2021**).
- **Implementing Agency:** Department of Animal Husbandry & Dairying (DAHD), Ministry of Fisheries, Animal Husbandry & Dairying.
- **Objectives:**
  - To create and strengthen **infrastructure** for milk and milk products including **cold chain infrastructure**;
  - To create **training infrastructure** for training of dairy farmers;
  - To **increase milk production** by providing technical input services like cattle-feed, and mineral mixture;
  - To assist in **rehabilitation** of potentially viable **milk federations/unions**.
- **The scheme consists of 2 key components:**
  - **Component A:** Improving **essential dairy infrastructure** especially in remote and **backward areas** by supporting formation of **Dairy Cooperative Societies (DCS)/Milk Producers Companies (MPC)**. E.g. milk chilling plants, milk testing laboratories, and certification systems.
  - **Component B: Dairying through Cooperatives (DTC):** Japan International Cooperation Agency (JICA)-assisted programme for sustainable development of dairy cooperatives by improving production, processing, and marketing infrastructure in the 9 States.



### Role of Cooperatives in Dairy Sector

- **Collective empowerment (Sahkar Se Shakti):** Cooperatives are ideal for the **fragmented dairy sector** as it provides **institutional support, bargaining power** and awareness for growth of small farmers.
- **Economic Empowerment of Farmers (Sahkar Se Samridhi):** Cooperatives provide **equitable wealth distribution** and **democratic decision-making processes**. E.g. **Amul, Nandini** contributed to economic growth of dairy farmers.
- **Cooperation among Cooperatives (Sahkar Se Sahyog):** It aids in achieving **synergies** among cooperatives. E.g. facilitating transactions of Primary Dairy Cooperative Societies (PDCS) through Cooperative Banks.

## Challenges in Dairy Sector:

- **Low Productivity: Lower milk production** per animal alongside **highly fragmented** nature of the dairy sector in India.
  - **Reasons-** Ineffective breeding programmes, limited extension services, low technological adoption, and limited availability and affordability of quality feed and fodder etc.
- **Informal and unorganized:** Cultural preference for informal supply of milk leads to lower demand for packaged milk from organized sector.
- **Quality issues: Adulteration** is a major issue in supply chain of milk and milk products. E.g. dilution of milk, use of urea etc.
- **Animal health and breeding services:** Limited veterinary infrastructure development and lack of awareness about vaccinations leads to health issues in animals. E.g. **Foot and Mouth Disease**
- **Administration: Poor governance of cooperatives** with interventions of State governments hinders the democratic practices of cooperatives.
- **Limited processing and storage:** Lack of value-addition, processing, storage and marketing infrastructure impacts the **profitability** of the milk farmers.

## Other Initiatives to promote Dairy Sector



**Rashtriya Gokul Mission:** Enhance **milk output and productivity** through **genetic** improvements in cattle population and **promoting and conserving indigenous cattle breeds**.



**White Revolution 2.0:** Launched by Ministry of Cooperation in 2024 for promoting **sustainability and circularity** in dairy, **women empowerment** and formation of a **state-level union** in every state and UT and **milk unions in 80%** of the districts of the country.



**Dairy Entrepreneurship Development Scheme (DEDS):** Programme by **NABARD** to create **self-employment** opportunities in the dairy industry by offering **capital subsidies for bankable projects**.



**Livestock Health & Disease Control Programme (LHDCP):** To improve the animal health sector by way of implementation of prophylactic vaccination programmes.



**Animal Husbandry Infrastructure Development Fund (AHIDF):** Incentivizes investments by entrepreneurs, private companies etc. to establish dairy processing and value addition infrastructure. **The Dairy Infrastructure Development Fund (DIDF)** has been subsumed in the AHIDF

## Way Forward

- **Infrastructure development:** Infrastructure related to milk **production, processing, storage and research** needs to be made accessible at **village and district levels**.
  - E.g. Cold chain infrastructure, quality testing labs, veterinary services, value-addition mechanization etc.
- **Technological adoption:** Development of a **scientific approach to animal husbandry** with making technological interventions **accessible and affordable**.
  - E.g. study of animal genetics and methods like **artificial insemination, embryo transfer etc.**
- **Promoting Cooperatives:** Capitalizing on the **power of collectivism** in remote areas and increasing **awareness** about the benefits of cooperatives in dairy farmers.
- **Processing and Marketing:** Promote processing of milk to make in-demand milk products like **A2 Ghee, paneer etc.** Marketing of quality products with a goal of **creating a brand** and **promoting exports** of dairy products.

#### Related News: Revised Rashtriya Gokul Mission (RGM)

- **Enhanced Outlay:** An additional outlay of ₹1,000 crore, bringing the total budget to ₹3,400 crore for the 15th Finance Commission period (2021-22 to 2025-26).
- **Key Additions:**
  - **Heifer (Young Cows) Rearing Centres:** One-time assistance of 35% of capital cost for setting up 30 housing facilities for 15,000 heifers.
  - **Support for High Genetic Merit (HGM) Heifers:** 3% interest subvention on loans taken by farmers to purchase HGM IVF heifers from milk unions/financial institutions.
- **Ongoing Activities under RGM:**
  - **Nationwide Artificial Insemination Programme (NAIP):** Strengthening of semen stations and Artificial Insemination (AI) network.
  - **Bull production and breed improvement** using sex-sorted semen.
  - Skill development and farmer awareness programs.
  - Establishment of **Centres of Excellence** and strengthening of **Central Cattle Breeding Farms**.

### 3.15. NEWS IN SHORTS

#### 3.15.1. PAC CALLS FOR REVIEW OF GST






Parliamentary Committee on Public Accounts sought comprehensive review of GST Framework.

#### Key Issues Highlighting the Need for Review of GST Framework

- **Issues of MSMEs:** Struggle with compliance due to **complexity of Inverted Duty Structure** and administrative burden.
- **Issues of Exporters:** Face **delays in input tax credit (ITC) refunds**, causing cash flow issues and reducing global competitiveness.
- **Issues of steel rolling mills:** Pay **dual taxes as scrap dealers evade GST** (thus, hindering ITC claims by mills); some businesses relocate to states with GST relaxations.
- **Tax evasion by Online Gaming Sector:** Despite recent amendments to the GST law targeting this sector, tax evasion persists due to varied business models.
  - From October 1, 2023, **online gaming is taxed at 28% GST**.
  - **Suppliers of online money gaming** must register under the Simplified Registration Scheme of the IGST Act.
  - The **Directorate General of GST Intelligence (DGGI)** can direct intermediaries to **block** unregistered offshore gaming platforms violating the IGST Act.

#### Way ahead

- **Simplified GST compliance framework** specifically designed for MSMEs,
- **Dedicated fast-track refund processing system** for exporters, ensuring that ITC claims related to exports,
- **A detailed independent study to understand the revenue streaming models** adopted by various **gaming platforms** and accordingly develop a comprehensive guidelines specifically tailored to the online gaming sector.

 <b>Goods and Services Tax (GST)</b>	
	<b>Launched in July 2017</b> After the 101th Constitutional Amendment, Act, 2016
	<b>Comprehensive Destination-Based Indirect Tax</b> <ul style="list-style-type: none"> <li>◦ Imposed at every level of supply chain</li> <li>◦ Eliminates Cascading Tax Effect (Tax on Tax)</li> </ul>
	<b>Central Taxes Subsumed</b> <ul style="list-style-type: none"> <li>◦ Service Tax</li> <li>◦ Central Excise Duty</li> <li>◦ Additional Duties of Excise (Goods of Special Importance)</li> <li>◦ Excise Duty under Medicinal &amp; Toilet Preparation (Excise Duties) Act, 1995</li> <li>◦ Additional Duties of Customs (known as CVD)</li> <li>◦ Special Additional Duty of Customs (SAD)</li> <li>◦ Surcharges &amp; Cesses</li> </ul>
	<b>State Taxes Subsumed</b> <ul style="list-style-type: none"> <li>◦ Central Sales Tax</li> <li>◦ Purchase Tax</li> <li>◦ Entertainment and Amusement Tax (other than those levied by local bodies)</li> <li>◦ Luxury Tax</li> <li>◦ Octroi and Entry Tax (All forms)</li> <li>◦ Taxes on lotteries, betting &amp; gambling</li> <li>◦ Taxes on advertisements</li> <li>◦ State Cesses and Surcharges</li> </ul>

### 3.15.2. MAKING CSR, IBC & ESG EFFECTIVE

10th report on 'Demands for Grants (2025-26)' of Ministry of Corporate Affairs (MCA) highlights various issues and gives recommendations thereof for making **Corporate Social Responsibility (CSR), Insolvency and Bankruptcy Code (IBC) & Environmental, Social and Governance (ESG)** Regulations effective:



Areas	Issues	Recommendations
<b>Corporate Social Responsibility (CSR)</b>	<ul style="list-style-type: none"><li>• <b>Gaps</b> exist in enforcement and monitoring of CSR framework</li><li>• Lack of <b>detailed analysis</b> on <b>effectiveness of CSR spending</b>.</li><li>• <b>Unspent CSR Account Mechanism</b> remains insufficiently transparent.</li></ul>	<ul style="list-style-type: none"><li>• Establish a <b>more comprehensive reporting</b> and monitoring framework. E.g. <b>regular publication</b> of detailed reports on <b>impact and outcomes</b> of CSR projects</li><li>• Timely enforcement of <b>penalties</b> for non-compliance.</li></ul>
<b>Insolvency and Bankruptcy Code (IBC)</b>	<ul style="list-style-type: none"><li>• <b>Conflicts of interest, Inconsistent interpretation of provisions</b> leads to delay in resolution process</li><li>• Lack of a robust framework for <b>addressing complaints against Resolution Professionals (RPs)</b>.</li></ul>	<ul style="list-style-type: none"><li>• Implement a <b>direct submission system</b> for resolution plans through a <b>central online portal</b>.</li><li>• Establish rigorous certification standards and independent performance reviews for RPs.</li><li>• Review structure of Committee of Creditors (CoC) for adequate representation of <b>operational creditors</b>.</li></ul>
<b>Environmental, Social and Governance (ESG) Regulations</b>	<ul style="list-style-type: none"><li>• Persistent <b>risk of greenwashing</b></li><li>• Small businesses face difficulties in adopting ESG practices</li></ul>	<ul style="list-style-type: none"><li>• <b>Create</b> a dedicated <b>ESG oversight body</b> within ministry to ensure compliance and introduce penalties for Greenwashing</li><li>• Amend <b>Companies Act, 2013</b> to include ESG objectives as <b>fiduciary duties</b> of Directors.</li><li>• Establish <b>independent ESG committees</b> similar to audit committees</li></ul>

### 3.15.3. PARLIAMENTARY STANDING COMMITTEE ON AGRICULTURE SUBMITS REPORT ON FISHERIES SECTOR

The report **evaluates the government's response to recommendations** aimed at improving the fisheries sector, enhancing employment opportunities, and increasing revenue generation.

- India is **3<sup>rd</sup> largest fish-producing country**, accounting for approximately **8% of global fish production**.
- Over the years, the sector's contribution to **agricultural GVA** has risen **from around 4% to over 6.72%**.

## Key Highlights

 <b>Issues Highlighted</b>	 <b>Recommendation</b>
<b>Lack of a Dedicated Research Body:</b> Fisheries research falls under ICAR, which lacks sector-specific focus.	Establish the Indian <b>Council for Fishery and Aquaculture Research (ICFAR)</b> .
<b>Regulation of Juvenile Fish Harvesting:</b> Harmful practices like <b>bull trawling and LED fishing</b> deplete fish stocks.	Enforce <b>Minimum Legal Mesh Size (MLS) regulations</b> uniformly and ban destructive fishing methods.
<b>Interest-Free Loans for Fishers:</b> Only some states offer 4% <b>additional interest subvention</b> under KCC.	<b>Expand interest-free KCC loans nationwide.</b>
<b>Post-Harvest Losses &amp; Infrastructure:</b> 20–25% <b>losses</b> due to poor storage and processing facilities.	<b>Strengthen cold storage, processing, and transport</b> under PMMSY
<b>Self-Sufficiency in Shrimp Broodstock:</b> Heavy reliance on <b>imported L. Vannamei shrimp broodstock</b> .	<b>Fast-track domestic broodstock development</b> via ICAR.
<b>Fish stock washed away due to dam gate openings</b> and heavy rainfall.	Introduce <b>insurance for dam fishers</b> , similar to PMFBY.
<b>Sanitary and Phytosanitary (SPS) barriers</b> and lack of proper <b>certification and traceability</b> hinder exports.	<b>Enhancing Export Competitiveness:</b> Improve <b>SPS compliance, certification, and traceability</b> to boost exports.

### 3.15.4. SCHEME FOR COOPERATIVE SUGAR MILLS

Recently, Union Government has notified a scheme for Cooperative Sugar Mills under **modified Ethanol Interest Subvention Scheme**.

#### About Scheme for Cooperative Sugar Mills

- **Ministry:** Ministry of Consumer Affairs, **Department of Food & Public Distribution**
- **Aim:** Conversion of existing sugarcane-based feedstock ethanol plants into **multi-feedstock based plants to use grains like Maize and Damaged Food Grains (DFG)**.
- Under **modified Ethanol Interest Subvention Scheme**, Government is providing **Interest subvention @ 6% per annum or 50% of rate of interest** charged by banks/financial institutions, whichever is lower.

### 3.15.5. TOBACCO

India's tobacco exports have doubled over the last 4 years.

#### Tobacco

- **India's Status:** **Second largest producer** (after China) as well as **second largest exporter** (after Brazil).
- **Major Producing States:** Gujarat (45% of total cultivated area, 30% production), Andhra Pradesh, Karnataka, UP and Bihar.
- **Favourable Conditions:**
  - **Temperature:** Between 20° to 27°C is required.
  - **Rainfall:** When grown as a rainfed crop then requires at least about 500 mm of well-distributed rainfall during the crop growing season. (Usually not grown in the area if rainfall exceeds 1200 mm).
  - **Soil:** sandy or sandy loam soil. Cigarette-tobacco growing areas of Andhra Pradesh are an exception in that the crop is grown on heavy black soil.

### 3.15.6. 'BECOMING A HIGH-INCOME ECONOMY IN A GENERATION' REPORT RELEASED BY WORLD BANK

The report recognizes that India needs to **grow by 7.8% on average** over the next 22 years to become **High-Income Country (HIC)** by 2047.

- **India became a Low Middle-Income Country (LMIC)** in 2007-08 and is currently on track to become an **Upper Middle-Income Country (UMIC)** by 2032.

#### Key Challenges In Becoming HIC By 2047

- **Slow Structural Transformation:** Agriculture still employs **45%** of the workforce (2023-24) while **traditional market services and construction** (low productivity) together constitute nearly 30%.
  - In contrast, the share of **manufacturing** in total employment was around **11%** and **modern market services** accounted for only **7%**.
- **Declining Private Investment:** Private investment surged post-1990s reforms but it has **fallen as a share of GDP**, particularly since the global financial crisis in 2008.
- **Underutilisation of Demographic Dividend:** Over 2000-19, the **working-age population** increased by **37.4%**, but **employment increased by only 15.7%**.
  - During this period, the **labor force participation rate** fell from **58% to 49%** remaining **low** by middle-income countries standards.

#### Key Strategies for Growth

- **Boost Investment:** Increase investment from **33.5% to 40% of GDP by 2035** through better financial regulations, easier MSME credit, and simplified FDI policies.
- **Create Jobs:** Encourage private investment in **job-rich sectors** like agro-processing, manufacturing, transport, and care economy.
- **Balanced Regional Growth:** Less developed states focus on **basics** (health, education, infrastructure), while developed states advance **next-gen reforms**.



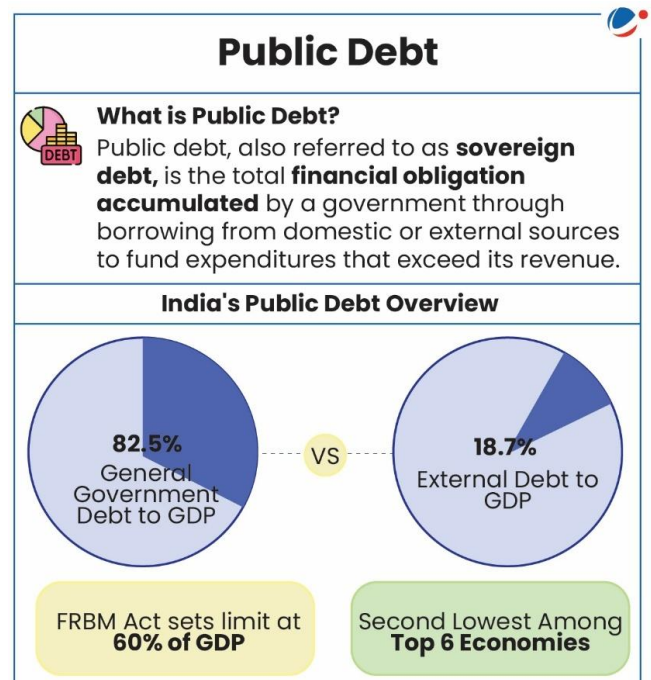
### 3.15.7. UNCTAD RELEASED 'A WORLD OF DEBT REPORT 2024'

**Public debt** can drive development by funding critical expenditures, but excessive debt growth poses challenges, especially for developing nations.

- **United Nations Conference on Trade and Development (UNCTAD) 's 2024 report** warns of rising debt risks, urging immediate global action to ensure stability.

#### Key Findings of the Report

- **Global Debt Surge:** Public debt reached **\$97 trillion** in 2023, with **developing countries' debt** rising twice as fast as developed nations.
  - **India's public debt** was recorded at **2.9 trillion US dollars**.
- **Debt Servicing Strains:** 54 developing nations **spend more on interest payments** than on social sector.
- **Unequal Financial System:** Developing nations **pay 2 to 12 times more in interest** than developed countries.



## Challenges Posed by the Rising Global Public Debt

- **Debt Overhang:** High debt levels can stifle economic growth by discouraging investment and consumption.
- **Liquidity Challenge:** The withdrawal of nearly \$50 billion by private creditors from developing countries has worsened liquidity constraints.
- **The creditor base with West-dominated institutions** (private, multilateral, and bilateral creditors) makes debt restructuring expensive.

## Recommendations

- **Debt restructuring mechanisms** to address coordination challenges.
- **Expand contingency financing** to prevent debt crises.
- **Enhance participation of developing countries** in global financial governance.

### 3.15.8. BILATERAL SWAP AGREEMENT (BSA)

India and Japan have renewed the \$75 billion bilateral currencies swap agreement.

#### About BSA:

- It is an agreement between two central banks to exchange a cash flow in one currency against a cash flow in another currency **according to predetermined terms and conditions**.
- **Purpose of India - Japan BSA:** It is a two-way currency swap mechanism, allowing both countries to exchange local currencies for US dollars when needed.
- **Significance:** Help **manage exchange rate volatility** and provide liquidity during financial crises

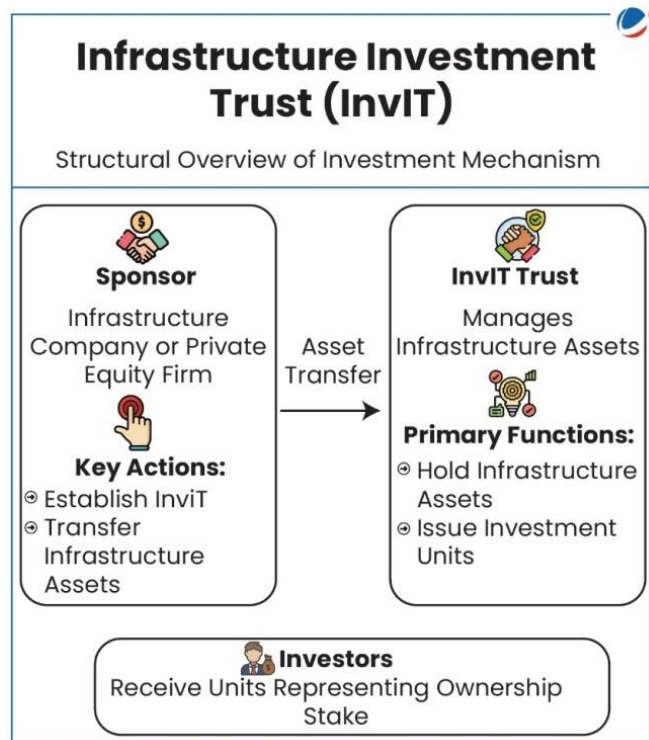
### 3.15.9. LARGEST INVIT MONETIZATION IN ROADS SECTOR

National Highways Infra Trust (NHIT) completed largest INVIT monetization in roads sector.

- **NHIT** is the **Infrastructure Investment Trust (InvIT)** set up by **National Highways Authority of India (NHAI)** in **2020** to support **India's Monetization programme**.

#### Infrastructure Investment Trust (InvIT)

- **Definition:** It is an **investment vehicle**, like a **mutual fund** or **Real Estate Investment Trusts (REITs)**.
- **InvITs** enable **direct investment** of money from individual and institutional investors in infrastructure projects.
  - Investments can be made **directly** or through **SPV (Special Purpose Vehicle)/Holding Company** by the InvIT.
- **InvITs** **earn income** through tolls, rents, interest or dividends from their investments.
  - The **interest, dividend, and rental income** are **taxable** in the hand of the **unitholder**.
- **Regulation:** InvIT are **regulated by the SEBI (Infrastructure Investment Trusts) Regulations, 2014**.
  - SEBI requires InvITs to **distribute at least 90% of their income to investors**.
  - InvITs are recognized as **borrowers** under the **'Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002'**.
- **Types of InvITs:** Public InvITs, Private listed InvITs and Private unlisted InvITs.
- **Advantages of InvITs:** Access to retail investors to invest in large infrastructure projects, low ticket size, liquidity (as units are listed on stock exchanges), etc.



### Asset Monetization (AM)

- **AM** is the process of creating new sources of revenue for the government and its entities by unlocking the economic value of unutilised or underutilised public assets.
- **India's Monetization Programme**
  - **National Monetisation Pipeline (NMP):** Developed by **NITI Aayog** to tap the aggregate monetisation potential of **Rs. 6 lakh crores** over a period of **2022-2025**.
  - **2nd Asset Monetization Plan (2025-2030):** Launched in the **Budget 2025**, aimed at generating **Rs. 10 lakh crore** through monetization.
  - **Others:** National Land Monetization Corporation, etc.

To know more about **Asset Monetization**, refer to **Article 3.7. Asset Monetization** in **April 2024 Monthly Current Affairs Magazine**.

### 3.15.10. DIGITAL FOOTPRINT-BASED LENDING FOR MSMES

Ministry of Finance launched a new credit assessment model using MSMEs' digital footprints to streamline credit appraisal and disbursement.

#### About New Credit Assessment Model

- It will leverage the **digitally fetched and verifiable data** available in the ecosystem and devise automated journeys for MSME loan appraisal.
- It aims to improve **financial inclusion**, reduce reliance on traditional credit scores, and support MSMEs with **easier access to formal credit**.
- It was announced in **Union Budget 2024-25** that public sector banks (PSBs) will build their in-house capability to assess MSMEs for credit, instead of relying on external assessment.

### 3.15.11. VENTURE CAPITAL

India's Venture Capital (VC) funding surges **43% to \$13.7 billion in 2024**.

#### About VC

- It is a form of **private equity** and a **type of financing for startup companies** and small businesses with **long-term growth potential**.
- Venture capital usually **takes the form of equity shares** or a future claim on equity, such as convertible debt, which in return allows the venture capital firm to receive a **share of ownership in the business**.
- Venture capitalists provide backing through **financing, technological expertise, or managerial experience**

### 3.15.12. REINSURANCE

**Valueattics Re** has become the **first private firm** to receive IRDAI's nod to **commence reinsurance business in India**.

- Currently, public sector **General Insurance Corporation (GIC Re)** is the **only** reinsurance company operating in India.

#### About Reinsurance

- Reinsurance is a **risk management practice** where **insurance companies transfer a portion of their risk to another insurance company (reinsurer)** to protect themselves from large financial losses.
- **Regulator:** Insurance Regulatory and Development Authority of India (**IRDAI**).
- **Laws:** Governed under the **Insurance Act, 1938** and **IRDAI (Re-Insurance) Regulations, 2018**.

### 3.15.13. SAMARTH

Centre for Development of Telematics launches 'Samarth' a cutting edge **Incubation Program** for **telecommunications and IT sectors**.

## About Samarth

- **Aim:** Encourage the development of **sustainable and scalable business models**, offer access to **cutting-edge resources**, and help **Startups Bridge the** gap from ideation to commercialization.
- **Implementation Partner:** Software Technology Parks of India (STPI), premier S&T organization under Ministry of Electronics and Information Technology (MeitY).

### 3.15.14. UPLINK INITIATIVE

UpLink initiative under World Economic Forum's (WEF) cut carbon emissions by 142,400 tonnes in 2023-2024.

#### About UpLink Initiative

- It is an initiative focused on **impactful early-stage innovation**.
- It was founded in **2020** by **WEF** in collaboration with **Deloitte** and **Salesforce**.
- It builds **ecosystems** that enable **purpose-driven, early-stage entrepreneurs** to scale their businesses for the markets that are essential to a **net-zero, nature-positive and equitable future**.
- **Objectives:** Accelerate impact of early-stage innovators, Enable Innovation Ecosystems and Influence perception.



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## 4. SECURITY

### 4.1. ROLE OF QUANTUM COMPUTING IN NATIONAL SECURITY

#### Why in the news?

Recently, NITI Aayog's Frontier Tech Hub (NITI-FTH) released a strategic paper on "Quantum Computing: National Security Implications & Strategic Preparedness".

*To know more on Quantum Computing, refer to Article 8.1 "Quantum Science and Technology" in June 2024 Monthly Current Affairs.*

#### How Quantum computing is reshaping the National Security Paradigm

- **Cryptography and Cybersecurity:** A powerful quantum computer could break widely used public-key encryption algorithms, forcing nations to adopt **Post-Quantum Cryptography (PQC)** (algorithms designed to resist quantum attacks) to safeguard their data.
  - **E.g. The National Quantum Initiative Act of 2018 of the USA** emphasizes national security through **PQC** to counter future cyber threats.
- **Enhanced Intelligence Gathering:** Quantum computing could **revolutionize intelligence analysis** by processing vast, complex datasets beyond classical capabilities, enhancing intelligence to intercept, analyze, and decode communications at an unprecedented scale.
  - **E.g. NATO's 2024 strategy** calls for **quantum-ready defense applications**, including sensing, imaging, and securing communications through quantum-resistant cryptography.
- **Secure Communications:** Such as **Quantum Key Distribution (QKD)** to distribute encryption keys between two parties **with provable security**.
  - **E.g. China** built the **world's longest land-based (2,000 km) QKD network** between Beijing and Shanghai that transmits sensitive data securely.
- **Military Hardware:** Quantum technologies will drive breakthroughs in **materials science**, leading to **next-generation military hardware**.
  - **E.g. Quantum-enabled AI** will power **autonomous military drones and robotic systems**, enhancing both offensive and defensive capabilities.
- **Economic Warfare:** The ability to break encryption may destabilize financial markets, compromise banking and digital payment systems, **creating new threats in economic security**.
  - **E.g.** Initiatives like the **National Quantum Initiative Act of USA** highlights the need of quantum innovation for both economic and strategic security.
- **Geopolitical Power:** Nations that achieve early breakthroughs in quantum computing will establish a technological and knowledge base that others will struggle to replicate.
  - For instance, **China's Micius satellite (2016)** enabled **quantum-secured long-distance communication**, showcasing its lead in quantum tech and secure networks.

#### Do you know?



> **Frontier technologies** are defined as **new and rapidly developing technologies** that take advantage of digitalization and connectivity. It covers technologies like **Digital technologies** (Metaverse, IoT, AI, Quantum computing), **Physical technologies** (3D printing) & **Biological technologies** (Bioprinting, Genetic engineering).

## Key Challenges in Leveraging Quantum Computing for National Security



### Workforce Shortage

Only one qualified quantum candidate available for every three quantum job-openings (McKinsey (2022)) .



### Geopolitical Competition

Strategic gaps due to uneven quantum R&D investments. China (\$15B), U.S. (\$5B), India (\$0.75B)



### Resource Disparities

Lag in secure quantum communication for low-investment countries.



### Technological Immaturity

Early-stage quantum computers lacking stability and scale. E.g. IBM's 433-qubit Osprey processor still struggles with error rates.



### Data Risk

Threat of future data decryption by hackers

### Key Recommendations

- **Continuous Monitoring:** Set up a dedicated **quantum task force** to track global tech progress and adversarial capabilities.
- **Cryptographic Intelligence:** Conduct regular audits to identify **quantum-related vulnerabilities** in defense, finance, and critical infrastructure.
- **PQC Transition Plan:** Implement a **risk-prioritized roadmap** with accelerated **Proofs of Concept (POCs), testing, certification**, and cross-sector info sharing for post-quantum cryptography adoption.
  - Such as **Google Chrome's experiment** with post-quantum algorithms like **Kyber** in real-world browser encryption.
- **Strengthening the Quantum Workforce:** Initiate **Quantum information science (QIS) education** at higher education level, **workforce training** for the existing quantum workforce, and reform **immigration for global talent**.
- **Building a Quantum Ecosystem:** Such as the **US' Quantum Economic Development Consortium (QED-C)**; **Japan's Quantum Strategic Industry Alliance for Revolution**, whose primary focus is to enable and grow the quantum industry.
- **International Collaboration on Quantum** with like-minded partners to coordinate QIS technology development, such as **India and European Commission** signed an **"Intent of Cooperation on High Performance Computing (HPC), Weather Extremes & Climate Modeling and Quantum Technologies"** in 2022.
- **Others**
  - **Early Warning System:** Leverage scientific intelligence for potential breakthroughs.
  - **Crypto Agility Framework:** Issue clear directives to ensure organizations can swiftly adapt to quantum-era encryption changes or breakthroughs.
  - **Flexible R&D Funding:** Adapt investment priorities based on emerging breakthroughs.

**Conclusion:** With its transformative potential across defense, intelligence, and secure communications, quantum computing will be a cornerstone in India's journey toward strategic resilience and the **vision of Viksit Bharat @2047**.

### Steps Taken by India in Quantum Technology

- **National Quantum Mission (NQM) (2023):** With aim to seed, nurture and scale up scientific and industrial R&D and create a vibrant & innovative **ecosystem in Quantum Technology (QT)**.
- **Quantum-Enabled Science and Technology (QuEST) program (2018):** Initiated by **DST**, aimed at **R&D activities** via funding national quantum labs and developed infrastructure required to progress with developments in Quantum Technologies.

- **Quantum Academic Research and Innovation Hubs**
  - **IISc Bangalore**, hosting a dedicated center focused on quantum algorithms, information theory, and error correction.
  - **National Mission for Quantum Frontier**, which trains students and researchers with skills essential for the quantum technology field.
  - **IIT Madras**, established **Centre for Quantum Information, Communication and Computing (CQuICC)**.
- **Private Sector and Startup Contributions**
  - **QNu Labs**, selected as one of the **startups under NQM** working to build and deploy the **world's first end-to-end quantum- safe heterogeneous network**.
- **Other**
  - **Quantum Communication Lab at C-DOT, Delhi** and indigenously developed **Quantum Key Distribution (QKD) solution by C-DOT**.

Scan the QR code to know more about **Quantum Technology**

**Weekly Focus #69** - Quantum Technology in India: Exploring the possibilities ahead



## 4.2. NEWS IN SHORTS

### 4.2.1. TRENDS IN INTERNATIONAL ARMS TRANSFERS, 2024

**Stockholm International Peace Research Institute (SIPRI)** has released new data indicating significant shifts in global arms transfers between 2020 and 2024.

- SIPRI is an **independent international institute** dedicated to research into conflict, armaments, arms control, and disarmament.

#### Key Findings:

- **India:**
  - India is **now second-largest arms importer**, overtaken by Ukraine.
  - **Arms imports fell 9.3%** between 2015–19 and 2020–24, driven by **domestic production growth**.
  - **Russia remains a key supplier**, but India is diversifying with France, Israel, and the U.S.
- **U.S. increased** its global arms export share **to 43%**.
- **Russia's arms exports fell 64%**, dropping it to **third place behind France**.

### 4.2.2. SMUGGLING OF GOLD IN INDIA

An actor was recently arrested for allegedly **smuggling of gold**.

- Smuggling of gold is **linked to money laundering** and it **strengthens organized crime syndicates** while **depleting** the country's **foreign exchange reserves**.
- India has become a **major destination for illicit gold imports** with gold and silver predominantly originating from Gulf states such as the **UAE and Saudi Arabia, where these metals are sourced and available at lower prices** (due to lower tax).
  - It is estimated that up to one-fourth of the total volume of gold entering India arrives here through illicit trade.
- **Directorate of Revenue Intelligence (DRI)** is the **apex anti-smuggling body** of the Government of India.

#### The Laws Prohibiting Smuggling of Gold in India

- **The Customs Act, 1962:** It prohibits the **illegal import of gold without proper declaration and payment of applicable duties**, subjecting offenders to penalties including confiscation of goods, fines, and imprisonment.
  - **Baggage Rules, 2016:** **Customs duty for the gold ranges from 3-10%**, depending upon the weight of gold and whether carried by a man or woman.

- **Bhartiya Nyaya Samhita, 2023:** Smuggling is punishable under **Organized Crime** which punishes “**trafficking illicit goods**” with imprisonment of at least five years, extendable to life imprisonment.
- **The Unlawful Activities (Prevention) Act, 1967 (UAPA):** It carries the punishment for smuggling as a “**terrorist act**”, if it causes “**damage to the monetary stability of India**”.

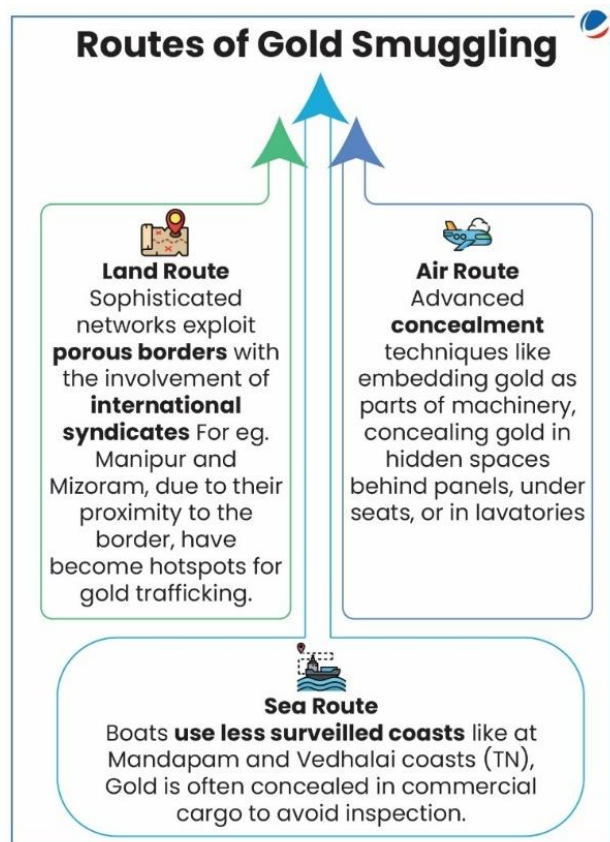
#### 4.2.3. C-DOT TRINETRA

Advanced **Cybersecurity Operations Centre (SOC)** has been launched for **Kerala Police** to strengthen **digital security**.

- It is based on the **Centre for Development of Telematics (C-DOT)**’s **TRINETRA** platform.
- **C-DOT** is an **autonomous Telecom R&D centre** of the **Department of Telecommunications (DoT), Ministry of Communications**.

##### About C-DOT’s TRINETRA

- An **AI-powered, indigenous, integrated cybersecurity platform**, tailored to meet the **cyber security defence** of enterprises and critical sectors.
- It helps in monitoring endpoints, network traffic, and user behaviour, while proactively identifying vulnerabilities, detecting anomalies, and mitigating cyber risk.



#### 4.2.4. MISSILE ‘GANDIVA’

The DRDO has officially designated its **air-to-air missile technology** as “Gandiva.”

##### Key Features of Gandiva/Astra MK-3

- It is next in line of the Astra series, building upon the success of its **predecessors, the Astra MK-1 and MK-2**.
- **Propulsion System:** It is powered by a **Solid Fuel Ducted Ramjet propulsion system**, a cutting-edge technology that utilizes atmospheric oxygen as an oxidizer.
- **Speed:** It can sustain supersonic speeds, reportedly up to **Mach 4.5**, over extended **ranges of 300–350 kilometres**.

#### 4.2.5. ASHWINI

The **Ministry of Defence** inked a capital acquisition contract with **Bharat Electronics Limited** for **Low Level Transportable Radar (LLTR) ‘Ashwini’** for the Indian Air Force.

##### About Ashwini

- An **active electronically scanned phased array radar** based on state-of-the-art **solid state technology**.
- **Indigenously** developed by **Electronics & Radar Development Establishment, DRDO**.
- **Key Features:**
  - Capable of **tracking aerial targets** from **high-speed** fighter aircraft to **slow moving targets** such as Unmanned Aerial Vehicles and helicopters.
  - Having an **instrumented range of 200 Km**

#### 4.2.6. SONIC WEAPON

**Serbia** denied using a banned ‘sonic weapon’ to disperse protesters in Belgrade.

##### About Sonic Weapon

- Also known as **Acoustic weapons** are devices that deliver very loud sounds over long distances.
  - They can also be used to act like voice amplifiers to deliver voice messages/other sounds.

- **Working:** Usually comprise hundreds of **modern transducers**, an electronic device that converts energy from one form to another to create highly concentrated and amplified sound, narrowing beams to focus on specific targeted areas.
- **Impact:** Tinnitus (perception of ringing, buzzing, or other sounds in ears **without an external source**); hearing loss etc.

#### 4.2.7. GOLDEN DOME

The United States has proposed to construct a **Golden Dome missile defence system**.

##### About Golden Dome

- **A missile defence programme of the USA** aimed to protect it **from** the threat of attack by ballistic, hypersonic, and cruise missiles, and other advanced aerial attacks.
- **Inspired from Israel's 'Iron Dome' missile defence system.**
  - Iron Dome is a **multi-layered missile defence system** developed to protect against short-range threats.

#### 4.2.8. CONVENTION ON CLUSTER MUNITIONS

Lithuania withdrew from **Convention on Cluster Munitions** citing security concerns over neighbouring Russia.


- **Cluster munitions** are weapons designed to **disperse numerous smaller explosive submunitions**, or "**bomblets**," over a wide area when deployed.

##### About Convention on Cluster Munitions (CCM)

- The CCM is an **international treaty** that **prohibits all use, stockpiling, production, and transfer of cluster munitions**.
  - CCM was the outcome of **Oslo Declaration on Cluster Munitions (2007)**.
  - Adopted in 2008 and entered into force in 2010.
- **Legal Status:** **Legally binding** international instrument under international humanitarian law.
- **India's Status:** **India is NOT a signatory** to the CCM.
  - **Countries like Russia, China, US, etc.** are also not party of it.

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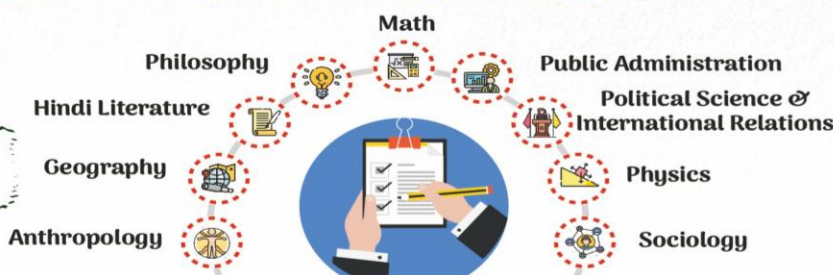


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<b>2026</b>	<b>ENGLISH MEDIUM</b> <b>13 APRIL</b>	<b>हिन्दी माध्यम</b> <b>13 अप्रैल</b>

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# OPTIONAL TEST SERIES

<b>2025</b>	<b>ENGLISH MEDIUM</b> <b>23 MARCH</b>	<b>हिन्दी माध्यम</b> <b>23 मार्च</b>
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## Exercises in News



<b>Exercise INDRA 2025</b> 	<ul style="list-style-type: none"> <li>➤ <b>14<sup>th</sup> Edition of Exercise INDRA</b> is taking place in Chennai from March 28, 2025 to April 02, 2025.</li> <li>➤ <b>About Exercise INDRA</b> <ul style="list-style-type: none"> <li>→ It is a <b>bilateral naval exercise between India and Russia</b>, taking place since 2003.</li> <li>→ The exercise will be conducted in two phases – <b>Harbour phase (at Chennai)</b>, and <b>Sea phase in Bay of Bengal</b>.</li> <li>→ <b>Participation:</b> Russian Federation Naval Ships <b>Pechanga, Rezkiy, and Aldar Tsydenzhapov</b> and Indian Naval Ships <b>Rana, Kuthar, and Maritime patrol aircraft P8I</b>.</li> </ul> </li> </ul>
<b>Exercise Prachand Prahar</b> 	<ul style="list-style-type: none"> <li>➤ <b>Indian Armed Forces</b> (Army, Navy, Air Force) conducted a tri-service integrated multi-domain exercise, <b>Prachand Prahar</b>, in Arunachal Pradesh.</li> <li>→ It validated <b>integrated planning, command and control, and seamless execution</b> of surveillance and firepower platforms across the three services.</li> </ul>
<b>Varuna Exercise 2025</b> 	<ul style="list-style-type: none"> <li>➤ Recently, <b>VARUNA Exercise 2025</b> was concluded.</li> <li>➤ <b>About Varuna 2025</b> <ul style="list-style-type: none"> <li>→ It is a <b>bilateral naval exercise between India and France</b>.</li> <li>→ <b>Location:</b> <b>Arabian Sea</b></li> <li>→ <b>Aim:</b> Enhanced jointmanship, upholding principles of rules-based maritime order, promoting stability in Indo-Pacific</li> <li>→ It included mock air-to-air combat between <b>French Rafale-M and Indian MiG-29K</b>.</li> </ul> </li> </ul>
<b>Bongosagar 2025</b> 	<ul style="list-style-type: none"> <li>➤ India-Bangladesh Naval Exercise Bongo Sagar 2025 and Coordinated Patrol was conducted in the Bay of Bengal.</li> <li>→ The exercise saw participation of INS Ranvir from the Indian Navy.</li> <li>→ The first edition of Bongosagar was held in 2019.</li> <li>➤ <b>Other bilateral exercise Between India and Bangladesh:</b> <ul style="list-style-type: none"> <li>→ <b>Exercise Sampriti:</b> Annual joint military exercise</li> <li>→ Focuses on <b>counterterrorism, disaster response, and military cooperation</b>.</li> </ul> </li> </ul>
<b>Exercise Khanjar</b> 	<ul style="list-style-type: none"> <li>➤ KHANJAR-XII edition of 2025 is set to take place in Kyrgyzstan.</li> <li>➤ <b>About Khanjar:</b> <ul style="list-style-type: none"> <li>→ It is an <b>India-Kyrgyzstan Joint Special Forces Exercise</b>.</li> <li>→ It is <b>held annually and conducted alternatively</b> in both the countries.</li> <li>→ <b>Aim:</b> To exchange experiences and best practices in <b>Counter Terrorism and Special Forces Operations</b>.</li> </ul> </li> </ul>
<b>TROPEX – 2025</b> 	<ul style="list-style-type: none"> <li>➤ TROPEX 25 conducted over a period of <b>three months from Jan to Mar 25</b>.</li> <li>➤ <b>About TROPEX</b> <ul style="list-style-type: none"> <li>→ It is the Indian Navy's premier <b>biennial war exercise</b>.</li> <li>→ <b>Aim:</b> To assess and enhance the operational preparedness of the Indian Navy in coordination with the Indian Army, Air Force, and Coast Guard</li> </ul> </li> </ul>
<b>Exercise Desert Hunt 2025</b> 	<ul style="list-style-type: none"> <li>➤ Exercise Desert Hunt 2025 was conducted by Indian Air Force at Air Force Station Jodhpur.</li> <li>➤ <b>About Exercise Desert Hunt 2025</b> <ul style="list-style-type: none"> <li>→ It is an <b>integrated Tri-Service Special Forces exercise</b>.</li> <li>→ It involved elite units from all three services, <b>Para (Special Forces) of Indian Army, Marine Commandos (MARCOS) of Indian Navy</b> and <b>Garud Special Forces</b> of Indian Air Force.</li> <li>→ It focused on <b>interoperability, synergy, and rapid response in simulated combat scenarios</b>.</li> </ul> </li> </ul>
<b>INIOCHOS-25</b> 	<ul style="list-style-type: none"> <li>➤ Indian Air Force to Participate in Multinational Air Exercise in Greece.</li> <li>➤ <b>About INIOCHOS-25</b> <ul style="list-style-type: none"> <li>→ It is an <b>annual multinational air exercise</b> hosted by Greece's Hellenic Air Force.</li> <li>→ It serves as a platform for air forces to hone their skills, exchange tactical knowledge, and strengthen military ties.</li> </ul> </li> </ul>

## 5. ENVIRONMENT

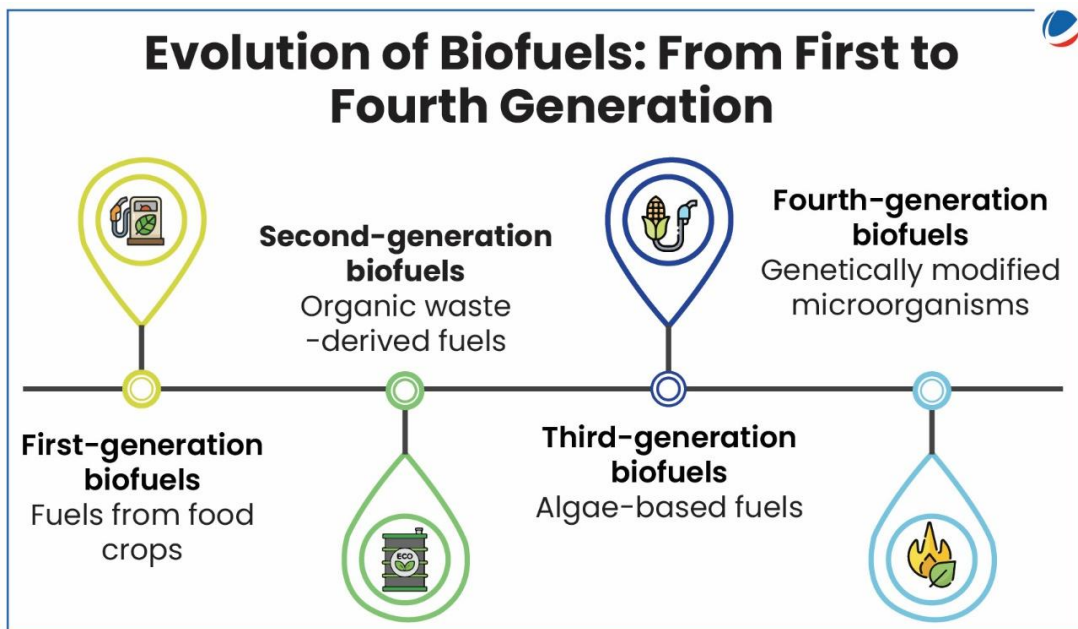
### 5.1. BIOFUELS

#### Why in the News?

India has emerged as the world's third-largest biofuel producer.

#### About Biofuels

- Biofuels are fuels produced from **renewable resources** and used in place of or blended with diesel, petrol, or other fossil fuels for transport, stationary, portable, and other applications.
- Types:** Categorised into **four generations** (refer to infographic).
- Key Players:** The USA is the largest producer followed by Brazil.
- It includes **ethanol and biodiesel blending, Compressed Biogas (CBG), Sustainable Aviation Fuels (SAF), etc.**



#### Significance of Biofuels

- Environmental Benefits:** Biofuels can reduce well-to-wheel emissions by up to 80% compared to their fossil fuel counterparts.
  - Biofuels also tackle the issue of **stubble burning**, by using the stubble itself to create biofuel. **E.g.** Asia's first 2G Ethanol bio-refinery in Haryana.
- Energy Security:** **E.g.,** During the last ten years, **ethanol blending in petrol** by Public Sector Oil Marketing Companies (OMCs) has resulted in savings of more than **Rs. 1,13,007 crore of foreign exchange** (as of 2024).
  - Biofuels could also aid mitigate the impact of **recurrent volatilities** in the oil and gas sector.
- Circular Economy/Waste Management:** Enables circularity by employing waste (e.g., **waste Municipal Solid Waste Management**) for **wealth creation** and delivering wider **socioeconomic benefits**.
- Fostering Rural Economy:** Provides additional financial incentives to farmers through the development of the market for **agricultural residues/wastes**.
  - Also, additional income for farmers through biofuel crop production.
- Downstream Product Applications:**
  - Renewable methanol** can be used to produce a wide range of polymers and fuels.
  - Biofuel production also generates byproducts with widespread industrial applications. **E.g., Crude glycerin**, obtained from the production of biodiesel

#### Existing Challenges with Biofuel

- Feedstock challenges:**
  - Feedstock for biofuels** competes with other commercial applications of feedstock – for instance, forest residue is also used in paper manufacturing.
  - Seasonal and regional availability of agricultural waste. **E.g.** Paddy straw
  - Lignocellulosic biomass** is quite resistant to breakdown and affects the commercial viability of advanced biofuel production.

- **Infrastructure Constraint:** E.g. Absence of **decentralised storage** and **sorting facilities**.
- **Food Security vs. Fuel Dilemma:** Including major crops like Sugar to produce more biofuels will further negatively impact India's food security.
- **Funding Requirement:** Investments of at least USD100-270 billion in biofuels by 2030 are necessary to meet the targets outlined in current policies. (**International Energy Agency (IEA)**)
- **Competition from Conventional Fuel:** SAF is between 2-10x more expensive than conventional jet fuel.
- **Low Energy Efficiency:** Biofuels have less energy density than fossil fuels, requiring greater volume to offer equal power output. **E.g.** Diesel provides 46 megajoules of energy per kilogram whereas Biodiesel provides 38.

#### Key Initiatives/Steps which Promoted Production of Biofuels

##### Policy and Roadmap Initiatives

- **National Policy on Biofuels (2018, amended in 2022):** Expanded the feedstock base for biofuels, allowing sugarcane juice, damaged grains, and agricultural waste.
  - Also, introduced incentives for second-generation (2G) biofuels.
- **Ethanol Blended Petrol (EBP) Programme:** India has achieved 19.6% ethanol blending in petrol (as of January 2025) and is on track to reach 20% a target by 2025 ahead of its original 2030 target.

##### Infrastructure & Production Support

- **Pradhan Mantri JI-VAN Yojana (2019):** Promotes latest advancements in 2G ethanol capacity.
- **GOBAR-Dhan (Galvanizing Organic Bio-Agro Resources) Scheme:** Promotes biogas and **compressed biogas (CBG)** from agricultural waste and animal dung.
- **Sustainable Alternative Towards Affordable Transportation (SATAT) Initiative (2018):** To extract economic value from bio-mass waste in the form of Compressed Bio Gas (CBG) and bio-manure.

##### International Collaborations

- **Global Biofuels Alliance (2023):** India-led initiative to promote biofuel production and technology exchange.
- **Bilateral Mechanism:** India and Brazil have launched a Center of Excellence on Ethanol.
  - Technical exchange initiatives are improving the production efficiency of sugarcane/molasses ethanol.

##### Other

- Reduction of GST rate for procurement of biodiesel for blending programme from 12% to 5%.
- Roll out of E20 fuels, ETHANOL 100, etc.

#### Conclusion

India's rise as the third-largest biofuel producer highlights its push for energy security and decarbonization. While biofuels offer economic and environmental benefits, challenges like feedstock shortages and high costs persist. Strengthening R&D, policy support, and global collaboration will be key to scaling sustainable biofuel production for a cleaner, self-reliant future.

## 5.2. NATIONAL BOARD FOR WILDLIFE (NBWL)

#### Why in the News?

The Prime Minister of India chaired the 7th National Board for Wildlife meeting at Gir National Park in Gujarat.

#### More on the News

- The recent meeting of the National Board for Wildlife (NBWL) took after over **10 years**.
  - The **last full-body NBWL** meeting was held in 2012.
  - The **first** NBWL meeting was held in 2003.
- During the meeting, the Prime Minister released the report of **the first-ever riverine dolphin estimation**, which estimated a total of **6,327 dolphins**.
- **Prime Minister** announced the initiation of the **16th cycle of lion estimation** to be conducted in 2025 (the last one was done in 2020).

#### About the National Board for Wildlife

- It is a **statutory body** established in 2003 after the amendment of the **Wildlife (Protection) Act, 1972 in 2002**.

- **Genesis:** The Government of India during **1952** had constituted an advisory body designated as the Indian Board for Wildlife (IBWL).
  - **Sri Jayachamaraja Wadiyar** (Maharaja of Mysore) was its first chairman.
  - **IBWL** was instrumental in setting in place the **Wild Life Protection Act, 1972**, the establishment of the **Gir National Park for Asiatic Lions**, declaring the **tiger as the national animal**, etc.
- **Members:**
  - **Chairperson:** Prime Minister of India.
  - **Vice-Chairperson:** Union Minister in charge of the Ministry of Environment & Forests and climate change.
  - **Member-Secretary to the Board:** Additional Director General of Forests (WL) & Director, Wildlife Preservation.
  - **Five persons** to represent non-governmental organisations to be nominated by Central Government.
  - **Ten persons** to be nominated by the Central Government from amongst eminent conservationists, ecologists and environmentalists.
- **Standing Committee:** NBWL constitutes a **Standing Committee** for the purpose of exercising powers and performing duties as may be delegated to the Committee by the National Board.
  - **Chairman:** Minister of Environment and Forests and Climate Change.
- **Functions of NBWL:**
  - To promote the **conservation and development** of wild life and forests by such measures as it thinks fit.
  - **Framing policies** and advising Central Government and State Governments on **ways and means** of promoting wildlife conservation and effectively controlling poaching and illegal trade of wildlife and its products.
  - **Making recommendations** on setting up of and management of national parks, sanctuaries and other protected areas and on matters relating to restriction of activities in those areas.
  - **Carrying out or causing to be carried** but impact assessment of various projects and activities on wild life or its habitat.

#### Concerns related to NBWL

- **Approval of Projects in Protected Areas:** E.g., **Ken-Betwa River linking project**, involving Daudhan Dam, was cleared despite submergence of nearly **100 sq km** of the **Panna Tiger Reserve**.
- **Threats to Endangered Species:** E.g., **Oil exploration** in Hollongapar Gibbon Sanctuary (Assam), threatens the habitat of the **Hoolock Gibbon**, India's only ape species.
- **Reduced Role of Independent Members:** Since 2014, the standing committee has held **50 meetings** without the requisite number of conservation experts and non-governmental members.
- **Neglect of Local Communities Opinion:** Local opposition was ignored during clearance of a **coal mining project** in the **Hasdeo Arand forest** in Chhattisgarh, home to elephants.
- **Insufficient Monitoring Post-Clearance:** In the last 5 years, 718 project proposals in wildlife sanctuaries and protected areas have been granted wildlife clearance by NBWL.
  - However, the **certificates of compliance** are not being sent by the state chief wildlife warden. (77th meeting of standing committee in February 2024)

#### Way forward

- **Need for Expertise:** Ensure presence of **qualified wildlife scientists**, and **conservation NGOs**, in both NBWL and its Standing Committee. Regular, inclusive meetings can restore credibility.
- **Monitoring Post-Clearance:** An annual compliance certificate on the stipulated conditions shall be submitted by the **User Agency** to the State Chief Wild Life Warden and an annual compliance certificate shall be submitted by the State Chief Wild Life Warden to **Government**.
- **Institutionalize Local Community Participation:** Require Free, Prior, and Informed Consent (FPIC) from affected tribal and forest-dependent communities.
- **Balancing development and environment:** NBWL should encourage eco-sensitive alternatives like rerouting roads, using tunnels, or renewable energy over large dams or open-pit mining.
  - **E.g.**, realignment of **NH-7** in Pench Tiger Reserve (Maharashtra-MP) using overpasses helped protect tiger corridors.
- **Leverage Scientific and Technological Tools:** Use wildlife movement data, **satellite imagery**, and **AI-based habitat modelling** to assess and predict impacts before approval.

## 5.3. PROJECT LION AND IUCN GREEN STATUS OF SPECIES

### Why in the News?

Union Government approved funds for the Project Lion to enhance conservation efforts.

### More on the News

- The government also approved the establishment of a **National Referral Centre for Wildlife (NRC-W)** in **Gujarat's Junagadh district**.
  - **NRC-W** aims to **track wildlife diseases**, especially those **transmissible to humans**. E.g., the **Babesiosis (targets red blood cells in lions)** outbreak in 2020 killed 23 lions in **Gujarat's Gir National Park**.
  - **Nodal Agency**: Central Zoo Authority
- Also, the **International Union for Conservation of Nature (IUCN)** released the **First Green Status Assessment** for the Lion under the **Green Status of Species (See box)**.
  - IUCN has placed lions under the **Largely depleted** category.
  - The assessment also showed that **human impacts are preventing the lion from being fully ecologically functional** across its range.
  - Also, the assessment highlighted that Lions are extinct from **North Africa** and **Southwest Asia**.

#### IUCN Green Status of Species

It provides a **global standard for measuring species recovery** and **assessing conservation impact**.

- **Key features**
  - **Coverage**: Any species except microorganisms.
  - **Eight Green Status Categories**: Extinct in the Wild, Critically Depleted, Largely Depleted, Moderately Depleted, Slightly Depleted, Fully Recovered, Non-Depleted and Indeterminate.
  - **Complements the Red List**: While the **Red List** focuses on **extinction risk**, **Green Status** adds insight into how species **can recover** and **what conservation actions are required**.
    - ✓ There are now **over 100 IUCN Green Status of Species assessments** on the IUCN Red List.
  - **A Green Status of Species assessment** is optional part of **Red List assessments**.
- **How Green Status Defines Species Recovery?**
  - **A species is fully recovered if**:
    - ✓ It is present in **all parts of its historical range** (including areas lost due to human impact).
    - ✓ It is **viable** (not at risk of extinction) across its range.
    - ✓ It **performs its ecological functions** in all parts of its range.

**Note**: IUCN also releases a **Green List of Protected and Conserved Areas**.

### About Project Lion (2020)

- **Objective**: Securing the future of Asiatic lions through comprehensive, long-term conservation efforts.
- **Key Focus Areas**:
  - Landscape **ecology-based conservation**, ensuring sustainable lion habitats.
  - **Habitat restoration** and securing additional areas for lions.
  - **Community participation**, creating livelihood opportunities for local residents.
  - **Disease management**, establishing India as a global hub for big cat health research and treatment.
- **Time Period**: 10 years
- **Implementation**: By the State Government of Gujarat and other stakeholders like the **Central Zoo Authority**.

#### About Asiatic Lion (Indian Lion)

- **Habitat**: Grasslands, savannas, dense scrub, and open woodlands.
- **Distribution**: At present **Gir National Park** and **Wildlife Sanctuary** (Gir landscape in Saurashtra region in Gujarat) is the **only place** of the Asiatic lion.
  - Lion once ranged from **Iran to Palamau in Eastern India**.
  - **Barda Wildlife Sanctuary** (Gujarat) has emerged as a **"second home"** for lions.

- **Key Characteristics/Features**

- Adult male lions are much larger than females
- **Lifespan is** around 16-18 Years
- Lions live in large groups called **prides**.
- Primarily **Nocturnal and Gestation period** lasts approximately 100 to 119 days.
- **Male lions patrol** their **territories regularly**

- **Ecological Role:**

- Lions are **apex predators/keystone species**, by controlling the populations of herbivores, they ensure the health and regeneration of forests and grasslands.
- Also, Lions help prevent the **spread of diseases** within **prey populations** by targeting the **weakest members**.

- **Population Status:** 674 in 2020 (increased from 523 in 2015)

- **Conservation Status**

- **IUCN Red List:** Vulnerable
- **Wildlife (Protection) Act 1972:** Schedule I and IV
- **CITES:** Appendix I
- Included under the **Species Recovery Programme**

- **Subspecies of lions**

- **Northern lion (*Panthera leo leo*):** Populations of this subspecies are found in North, Central, and West Africa.  
  - > This subspecies also includes the Asiatic lion and regionally extinct Barbary lion.
- **Southern lion (*Panthera leo melanochaita*):** Covers the East and South African lion populations.

## Asiatic Lion



### Several other Initiatives have further consolidated the conservation of Asiatic lions

- **International Big Cats Alliance (IBCA):** Launched in 2023, the IBCA reinforces the global commitment to conserving big cats, including lions.
- **Asiatic Lion Conservation Project:** Launched by the Ministry of Environment, Forest and Climate Change.
- **Greater Gir Concept:** Involves developing **additional suitable habitats** beyond the traditional Gir National Park & Sanctuary.
  - Sanctuaries like **Girnar, Pania, and Mitiyala** have been notified to expand the protected area network.
- **Strengthened Protection Mechanisms:** **Wildlife Crime Cell** is created at the state level and a Task Force for the **Greater Gir Region (GGR)**.
- **Other:**
  - Supported under the **Centrally Sponsored Scheme- Development of Wildlife Habitat (CSS-DWH)**
  - **Habitat Improvement Measures (E.g.** establishment and maintenance of additional water points)
  - **Observing World Lion Day** (10 August).

### Conclusion

Project Lion is a significant step toward securing the future of Asiatic lions through habitat conservation, advanced monitoring, and conflict mitigation. Other potential sites, such as **Kuno National Park** and **Palpur-Kuno Wildlife Sanctuary** (Madhya Pradesh), etc., should be developed as alternative habitats beyond the Gir landscape.

#### Gir landscape

- Gir Forest is the **largest compact tract of dry deciduous forests** in the semi-arid western part of India
- **Topography:** made up of successive rugged ridges, isolated hills, plateaus and valleys.
- **Key Rivers:** Hiran, Machhundri, Raval, Shetrunji, Shingoda, etc.
- **Flora:** Teak, Dudhlo, khair, etc.
- **Fauna:** Leopard, Hyena, Chital (Deer), Sambar, etc.
- **Human Settlement:** Maldharis (tribal Community) have survived through the ages by having **symbiotic relationship** with the lion.
  - Their settlements are called "**nesses**".

## 5.4. RIVER DOLPHINS

### Why in the News?

The first-ever comprehensive survey of river dolphins has revealed a population estimate of 6,327 dolphins mainly in the Ganga, Brahmaputra and Indus River basins.

### More on news

- **Conducted by:** Survey was conducted by **Wildlife Institute of India** under **Project Dolphin 2020**.
- **Name of the report:** Survey findings are published in the Report titled '**Population Status of River Dolphins in India-2024**'.

### Key findings of 'Population Status of River Dolphins in India – 2024' Report

- **Decline overtime:** Number of Ganges River dolphins were estimated to be around 4,000-5,000 by the end of the 20th century, but dropped to about 1,800 individuals.
- **Population:** Overall river dolphin population in India is 6327 including Gangetic River dolphins (6324) and Indus River Dolphins (only 3).
  - Uttar Pradesh has the highest dolphin population at followed by Bihar, West Bengal, Assam Jharkhand, Madhya Pradesh and Rajasthan. Punjab recorded the lowest, with three dolphins.
- **Indus River Dolphin:** Indus River Dolphin in India, currently observed in the Beas River, is worryingly low in numbers and demands urgent conservation attention.
- **Umbrella species:** The report stated that the dolphins act as an umbrella species and their conservation has direct impacts on their habitat and biodiversity.

### Facts about Gangetic River dolphins

- **Location:** The majority of Ganges River dolphins are found in the Ganges, Brahmaputra, Meghna and Sangu Karnaphuli River systems in India and Bangladesh, with fewer in tributaries in Nepal.
  - India is home to 90% of the world's Ganges river dolphins.
- **National aquatic Animal of India:** They have been designated as the National aquatic Animal of India.
- **Local name:** Known as **susu**, which refers to the noise the dolphin is said to make when it breathes,
- **Apex predator:** Top most predator interconnected river system in three countries and called the “tiger of the ganges”.
- **Protection: CITES:** Appendix I, **Wildlife Protection Act:** Schedule I, **IUCN:** Endangered.
- **Indicator species:** The Gangetic dolphin is an indicator species, whose status provides information on the overall condition of the ecosystem and of other species in that ecosystem.
- **Socialization:** Ganges river dolphins are most frequently found alone, but they gather in small groups, sometimes at the confluence of tributaries.
- **Physical details:**
  - **It is blind** and finds its way and prey in river waters through echolocation.

### Wildlife Institute of India



- **Genesis:** 1982, WII was accorded autonomy in April 1986.
- **Ministry:** Ministry of Environment Forest and Climate Change.
- **Governance:** Wildlife Institute of India's governance is run under the Society, chaired by the Union Minister of Environment & Forests.
- **Mission:** To nurture the development of wildlife science and promote its application in conservation, in consonance with our cultural and socio-economic milieu.
- **Functions:** Training program, academic courses and advisory in wildlife and biodiversity research and management.
- **Important cells:** Environmental Impact Assessment cell, National Wildlife Database, Centre on Environment Information System (ENVIS).

### Know the term

- **Umbrella Species:** An umbrella species is defined as a species whose conservation is expected to **confer protection to a large number of naturally co-occurring species**.
- **Indicator Species:** An indicator species is any species (**plant, animal, bird, insect or even bacteria**) that reflects the condition of its environment. Indicator species are often the first in their ecosystem to be affected by environmental change.
- **Echolocation:** A technique used by **dolphins** and other **animals to determine the location of objects using reflected sound**. This allows the **animals to move around in pitch darkness**, so they can **navigate, hunt, and avoid obstacles**.

- **Color:** Ganges river dolphins are usually a **grey or light brown colour**, but may also have a pinkish tone to the belly.

#### Key facts about Indus River dolphin (IUCN: Endangered)

- **State aquatic animal:** Indus river dolphin is Punjab's state aquatic animal as declared in 2019.
- **Appearance;** Indus Dolphins are brown/grey in colour, but blind and navigate through echolocation.
- **Location:** Indus River system in Pakistan and small population in Beas River Punjab.
- **Local name:** Bhulan.
- **Ganges and Indus river dolphins are two distinct species:** The **Wild Life (Protection) Amendment Act, 2022** includes Gangetic River Dolphin and Indus river dolphin as two different species in **Schedule I of the Act** based on genetic and morphological data.

#### Threats to Gangetic river dolphins

- **Fisheries-related mortality and unsustainable fishing:** Bycatch is the number one cause of river dolphin mortality, which together with intentional killing of river dolphins for fish bait and meat.
- **Man-made water infrastructure:** hydropower dams, irrigation barrages and embankments all affect habitat connectivity, isolates them into smaller subpopulations with low genetic diversity.
  - For example, The Farakka Barrage spans the entire width of the Ganga River affecting movement.
- **Water quality:** mining, agriculture, and industrial activities can all degrade water quality.
  - Around 2 billion liters of untreated human waste from five separate states enter the Ganges every day.
- **Human Disturbance:** Increased boat traffic, dredging activities, and noise pollution from human activities disrupt dolphin behavior and habitat quality.
- **Climate Change:** The effects of climate change are driving more saltwater into their river habitats making it unsuitable for dolphins.
  - For example, Freshwater dolphins were disappearing from the Sundarbans delta, due to a reduction in freshwater flow and increased salinity.

#### Indian Initiatives to protect River Dolphins

- **Comprehensive Action Plan (2022-2047):** Ministry of Environment, Forest and Climate Change has prepared a Plan which focuses on river dolphin protection, habitat improvement etc.
- **Development of Wildlife habitats scheme;** Gangetic river dolphin have been included as one of the 22 critically endangered species for providing financial assistance to States'.
- **Protected Areas:** Important habitats of Gangetic river dolphin along the Ganges River has been notified as Protected Areas, such as **Vikramshila Dolphin Sanctuary, Bihar**.
- **Chambal River Conservation Zone:** Government has designated it as a **Dolphin Conservation Zone** to implement targeted protection efforts.
  - A 200 km stretch in Madhya Pradesh, Rajasthan, and Uttar Pradesh has been recommended for targeted protection efforts.
- **National Dolphin Day:** October 5th is celebrated as "**National Dolphin Day**" to raise awareness.
- **Guidelines for States:** States have been urged to **align with International Whaling Commission regulations**, appointing **Dolphin and Whaling Commissioners** for conservation efforts.
- **India's first National Dolphin Research Centre (NDRC):** It inaugurated in Patna, Bihar for dedicated study of Gangetic dolphins.
- **Ganges River Dolphin Tagging:** In 2024, India successfully achieved satellite-tagging the first-ever Ganges River Dolphin in Assam under Project Dolphin.

#### Conclusion

Effective river dolphin conservation requires bridging the information gap through large-scale satellite tagging, engaging communities as "Dolphin Rescue Volunteers," promoting sustainable fishing with electronic pingers, and strengthening international partnerships with Nepal and Bangladesh by initiatives like Global Declaration for River Dolphins.

## 5.5. JUMPING SPIDERS

### Why in the news?

A collaborative research has reported the discovery of **two new species of jumping spiders** from the **Shendurney Wildlife Sanctuary (Kerala) in Western Ghats**.



### About New Species

- Two new species belong to the **genus Epidelaxia**.
- This marks the **first time the genus has been recorded from India**, which was earlier considered endemic to Sri Lanka.

### About Jumping Spiders

- Family:** Jumping spiders belongs to the largest family of spiders.
- Habitat:** They are **very common in the tropics**, but some also live in northern and even Arctic regions.
- Characteristics:**
  - Jumping spiders can **jump a distance thirty times the length of their body**.
  - Jumping spiders tend to have **larger front legs helping them grasp and hold their prey** while their **back legs are used for jumping**.
- Most spiders have **eight or six eyes but poor vision**. **Jumping spiders with 8 eyes arranged in pairs are an exception** which can see more colours than humans.
  - The **day-hunting jumping spider can see in the red spectrum, green spectrum, and in UV light**.
- Behaviour:**
  - Jumping spiders are **active predators** eating insects and other spiders.
  - A **jumping spider's silk is also used to build "pup tents"** where they will

### Spiders vs. Insects

	<b>Spiders</b> 	<b>Insects</b> 
<b>Classification</b>	> Class Arachnida	> Class Insecta
<b>Body Structure</b>	> Two body segments. (cephalothorax, abdomen) Eight legs	> Three body segments (head, thorax, abdomen) Six legs
<b>Key Features</b>	> No antennae > No wings > No metamorphosis	> Have antennae > Often have wings > Undergo metamorphosis
<b>Similarities</b>	<b>Both are in phylum Arthropoda</b> Both have exoskeletons and jointed legs	

### About Shendurney Wildlife Sanctuary

- Name:** The name "Shendurney" owes its name to a tree, locally called "**Chenkurinji**" an endemic tree.
- Location:** Located in **Kollam District** of Kerala and forms **part of Agasthyamala Biosphere Reserve**.
- Vegetation:** Tropical evergreen, semi-evergreen, and moist deciduous forests.
- Fauna:** Elephants, Tigers, Leopards, Gaurs (Indian Bison), Sambar Deer, Bonnet Macaques, Nilgiri Langurs, and Lion-tailed Macaques.
- Unique Ecosystem:** **Myristica Swamps** (unique freshwater swamp ecosystems dominated by Myristica species—a genus of primitive, evergreen trees—found in Southern Western Ghats) are found in the sanctuary.
- International Recognition:** Shendurney has been designated as an **Important Bird Area** by BirdLife International.

## 5.6. MARINE HEATWAVES

### Why in the News?

The world experienced a 240 per cent increase in the average number of marine heatwave (MHW) days in the summers of 2023-24 as per a study published in NATURE CLIMATE CHANGE.

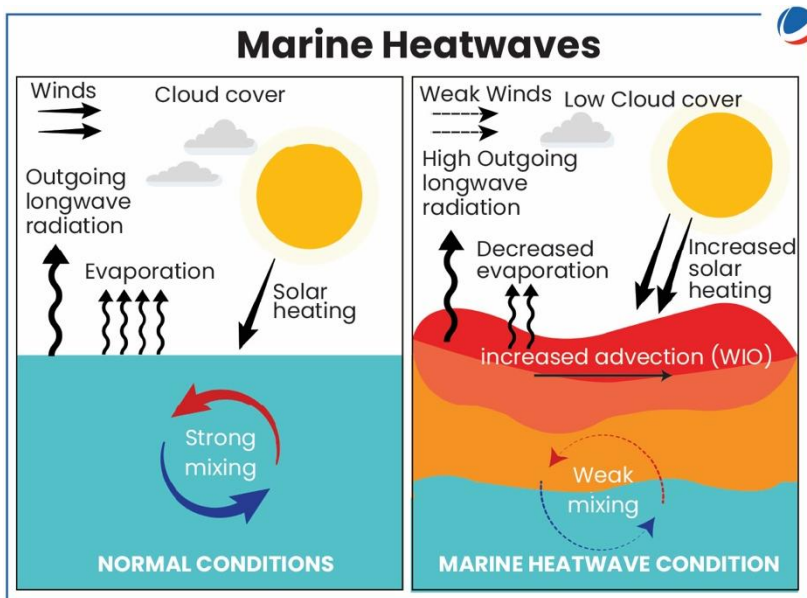
### Key Finding of the study

- Trend:** The past two years (2023–2024) have been the warmest on record across both land and ocean, and increases in MHWs due to anthropogenic heating are expected to continue.

- **Global phenomena:** Marine heatwaves observed all over globe, **with 8.8% of the ocean experiencing** the highest sea surface temperatures ever recorded; **almost four times** more than the historical annual average.
- **Locations:** Record-breaking events were particularly evident in the **North Atlantic, southwest Pacific, eastern Pacific and western Indian Oceans.**

#### What is a marine heatwave?

- Marine heatwaves (MHWs) are anomalously warm and sustained sea surface temperature extremes.
  - It occurs when the surface temperature of a particular region of the sea rises to **3 or 4 degree Celsius above the average temperature** for at least five days.
- **No fix temperature:** Unlike heatwaves that occur on land, there is no set temperature that defines a marine heatwave because ocean temperatures naturally vary in space and time.
  - The ocean temperature is colder closer to the poles and warmer near the equator. At the surface they're warmer in summer and colder in winter.
  - A marine heatwave is most commonly detected when the water is warmer than it was on 90 percent of previous measurements.
- **Duration:** MHWs can last for days, weeks, months or even years.
- **Increase in frequency:** The number of marine heatwave events has doubled since 1982.



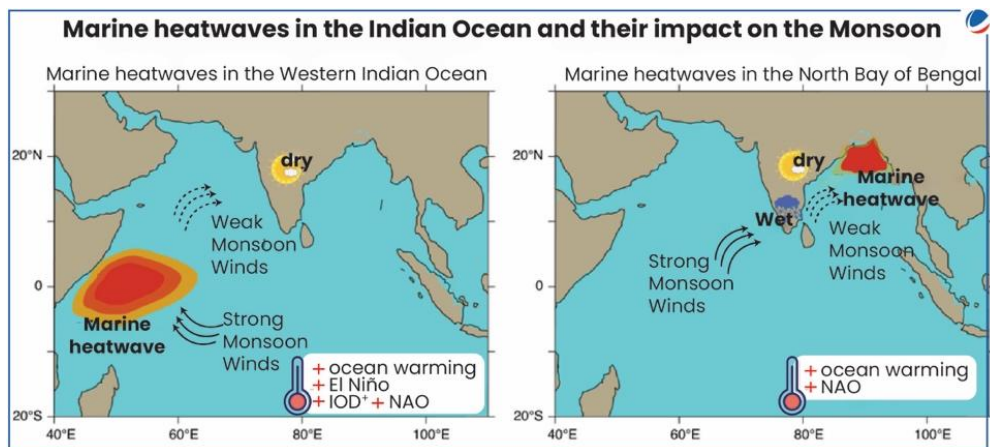
#### Causes of marine heat wave

- **Combination of atmospheric and oceanic processes:** Such as blocking high pressure weather systems that develop over the Gulf of Alaska, in combination with remote tropical Pacific teleconnections, can cause sudden changes in oceanographic conditions leading to MHWs.
  - The El Niño in the eastern tropical Pacific can result in long duration MHW events in this region.
- **Surface heat flux:** Heating from the atmosphere, this tends to occur when an atmospheric high-pressure system sits above a region of water for an extended period.
  - The Coastal Peruvian 2017 MHW and the Tasman Sea 2017–18 MHW were associated with anomalously high heat fluxes from the atmosphere into the ocean.
- **Advection:** The movement of warmer waters into the region by ocean currents can also contribute to MHWs.
  - For example; Western Australia 2011 MHW and the Tasman Sea 2015–2016 MHW caused primarily by anomalous horizontal advection of warm waters.
- **Human induced Global warming:** Oceans have absorbed 90 per cent of the additional heat caused by the release of greenhouse gases into the atmosphere in recent decades. This has increased the global mean sea surface temperature by close to 0.9 degree Celsius since 1850.

#### Impacts of the marine heat wave

- **Biological impacts:** These included a global coral bleaching event, loss of vital ecosystems such as kelp forests, sea grass, and coral reefs.
  - **85 per cent of the corals in the Gulf of Mannar** near the Tamil Nadu coast got bleached after the marine heatwave in May 2020 affecting the wider food web, raising concerns about potential impacts on fish populations.
- **Influenced weather patterns:** Due to 'supercharging' the heat and moisture exchanges between sea and air creating record number of storms and rainfall.
  - **In 2024, Hurricane Beryl** (amplified by MHWs) became the earliest category 5 hurricane on record by time of year and devastated parts of the Caribbean and United States.

- **Deoxygenating:** Observations on the Baltic Sea reveal heatwaves can contribute to seawater oxygen deficiency, especially in the shallow areas.
- **Impact on Monsoon rainfall:** Marine heatwaves in the Bay of Bengal usually means a drier monsoon for central India and enhanced rain over India's southern peninsula.
  - The **northern Bay of Bengal** had experienced an intense marine heatwave in June 2023 leading to India's usually arid northwest receiving extreme rainfall.
- **Acidification Amplified by MHWs:** Higher temperatures increase hydrogen ion concentration ( $[H^+]$ ), lowering pH and increasing acidity.
- **Loss of livelihood and ecosystem services:** Losses to aquaculture, due to increased temperatures negatively affects snorkeling and scuba diving tourism and fishing.
  - MHW in the Pacific Ocean caused mass mortality of **farmed salmon in Chile** due to harmful algal blooms, with an estimated export loss of US \$800 million.
- **Sea-level rise:** Heat causes the volume of water to increase, called the thermal expansion of water, and this is responsible for more than half of the sea-level rise in the Indian Ocean -larger than the changes arising from glacier and sea-ice melting.



#### Strategies to tackle marine heatwaves

- **Proactive interventions to reduce impact:** It included moving corals to deeper, cooler water to prevent bleaching and to assist mating as done in Florida.
- **Reactive interventions:** Can be carried out in response to already changing conditions, including fisheries closures and shifting fishing practices to target opportunistic species.
- **Ex-situ conservation methods:** In Tasmania, a quarter of the remaining population of the critically endangered red handfish were collected and maintained in an aquarium for the duration of MHWs to aid conservation.
- **Geoengineering interventions:** Ocean interventions such as the oxygenation of Macquarie Harbour, Australia and marine cloud brightening in the Great Barrier Reef and North Pacific can be helpful reducing heat exchange.
- **Implementation of climate change initiatives effectively:** As agreed to under the Paris Agreement governments must invest in renewable and nature-based solutions alongside ambitiously reducing fossil fuel-based emissions.
- **Preparation of MHW forecasts:** It Allow effective preparation, preparedness and mitigation measures. For example, in Australia, specific national briefings and regional response plans were developed to prepare decision-makers.

## 5.7. GEOLOGICAL SURVEY OF INDIA

### Why in the news?

The Geological Survey of India (GSI), one of the oldest scientific organizations in the country, is **celebrating its 175th Foundation Day**.

### About Geological Survey of India (GSI)

- It was conceived as "**Geological Survey of India**" by **John McClelland** who initiated the appointment of **David Hiram Williams** as the Geological Surveyor on February 5, 1846 by the East India Company.
  - However, the **appointment of Thomas Oldham as the new Geological Surveyor in 1851** marked the beginning of the functioning of the GSI.
  - **Second oldest survey body** in India after **Survey of India (founded in 1767)**.
  - **First Indian Head:** Dr. M. S. Krishnan.

- Initially established to **locate coal deposits for the Railways**, the GSI has evolved into a premier institution with international recognition, serving as a **comprehensive repository of geoscience data**.
- Headquarters: Kolkata.**
  - Six Regional offices** at Lucknow, Jaipur, Nagpur, Hyderabad, Shillong and Kolkata.
- Nodal Ministry:** Attached office to the **Ministry of Mines**.

#### Functions of GSI

- Its **core functions** include the creation and regular updating of **national geoscientific information** and **mineral resource assessment**.
- It carries out all activities **under five Missions**
  - Mission-I** (Ground, Aerial and Marine Surveys),
  - Mission-II** (Natural Resource Assessments & Augmentation of Minerals, Coal & Lignite),
  - Mission-III** (Information and dissemination),
  - Mission-IV** (Fundamental and Multi-disciplinary Geoscience Research) and
  - Mission-V** (Training and Capacity Building).

#### Achievements of GSI

- Baseline Geoscience Data Generation:** Published **India's first geological map in 1877**.
  - Initiated the **National Geoscience Data Repository (NGDR)** to consolidate **national geoscience data**.
  - Launched major national surveys: **Systematic Geological Mapping (SGM)**, **National Geochemical Mapping (NGCM)**, etc.
- Natural Resource Assessment:** Undertaking around **448 mineral exploration projects** during 2024-25, including **several projects on critical and strategic minerals** like **Rare Earth Elements, Lithium, potash, tungsten, graphite** etc.
- Geoinformatics:** Operates multiple **GNSS (Global Navigation Satellite System)** stations, across the country for tectonic studies and research.
  - Developed **Bhukosh**, a Geospatial portal, to disseminate multi-thematic geoscientific information freely.
- Geoscience & Disaster Management**
  - Seismic/Earthquake Geology:** In 1899, **Richard Dixon Oldham** of GSI studied the **Great Assam Earthquake (1897)** and identified **three distinct types of seismic waves**—significantly advancing understanding of Earth's interior.
    - GSI runs the **Seismo-Geodetic Real Time Data Processing Centre (SGRDPC)** to monitor and process seismic data for earthquake parameter analysis.
  - Landslide Hazard Studies:** Designated as the **Nodal Agency for landslide investigations in India**.
    - Through the **LANDSLIP project**, GSI developed a **prototype Early Warning System (EWS)** for rainfall-induced landslides.
  - Antarctic Studies:** Conducts Antarctic Studies under **Antarctic studies programme**; Mapped the **Gjelsvikfjella region** using the Norwegian station TROLL as base, and monitors recession pattern of **Dakshin-Gangotri Glacier** annually.
- Others:** Declares **geo-heritage sites and national geological monuments** (e.g., **National Fossil Wood Park, Sattanur, Tamil Nadu**).
  - Recently participated in the **Future Mineral Forum 2024 (Saudi Arabia)** and the **37th International Geological Congress (Korea)**.

## 5.8. NEWS IN SHORTS

### 5.8.1. IUCN GREEN LIST

Four new sites have been added to the IUCN Green List.

- These include **Sharaan Nature Reserve and King Abdulaziz Royal Nature Reserve of Saudi Arabia, Aqaba Marine Reserve of Jordan and Sir Bu Nair Protected Area from UAE**.

## About IUCN Green List

- It is a **global programme of certification** aiming to achieve and promote effective, equitable, and successful protected and conserved areas.
- Focus:** Highlights **best practices**, and sets **benchmarks** for progress in conservation management.
- Objective:**
  - increase number of **protected and conserved areas** that are effectively and equitably managed.
  - deliver **conservation outcomes**, contributing to **SDG 15 “Life on land”** and towards meeting **Aichi Target 11** of the **Convention on Biological Diversity (CBD)**.

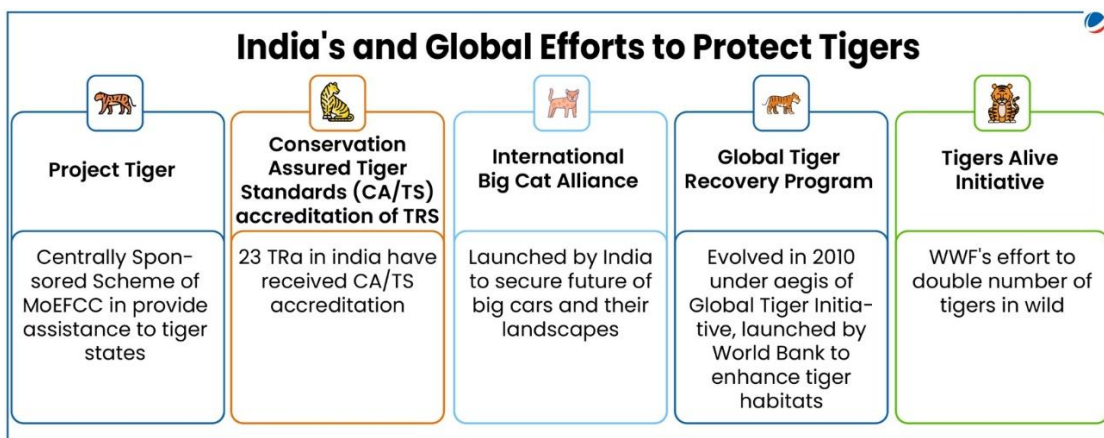
### 5.8.2. 58TH TIGER RESERVE (TR)

Madhav National Park in Madhya Pradesh (M.P) became India’s 58th Tiger Reserve.

- It becomes **ninth tiger reserve** from M.P to get the recognition. Other TRs from M.P includes **Ratapani**, Veerangana Durgavati, Sanjay Dhubri, Satpura, Panna, Bandhavgarh, Pench etc.

## About Madhav National Park

- Location:** Shivpuri district in **Chambal region** and on northern fringe of **Central Highlands of India** forming a part of **Upper Vindhyan Hills**.
  - It was **notified as a National Park** in **1958**.
- Lakes:** **Sakhya Sagar** and **Madhav Sagar** in southern part of park.
- Fauna:** Nilgai, Chinkara, Chowsinga, Chital, Barking Deer, Marsh Crocodile, Leopard, Jackal, Python etc.
- Flora:** Northern **Tropical dry deciduous mixed forest** and **dry thorn forest**. **Kardhai** is **dominant tree species**.



## Process of declaring tiger reserve in India

- Tiger Reserves are notified by State Governments** as per provisions of **Section 38V of Wildlife Protection Act (WPA), 1972** on advice of National Tiger Conservation Authority (NTCA).
- Following steps are involved in notification:**
  - Proposal is **obtained from State**.
  - In-principle approval is communicated from **NTCA**, soliciting detailed proposals under section **38V of WPA, 1972**.
  - NTCA** recommends proposal to State after due diligence.
  - State Government notifies** area as a TR.

### Tiger (*Panthera tigris*)

- Habitat:** Tropical forests, evergreen forests, woodlands, mangrove swamps, grasslands, savannah.
- Characteristics:** Largest of all Asian big cats, tigers **rely primarily on sight and sound rather than smell** for hunting.
  - Live solitary**, apart from associations between mother and offspring.
  - Nocturnal** and **ambush predators**.
  - Good swimmers** and have been known to drown their prey.
- Conservation status:** Endangered (IUCN); Appendix I (CITES); Schedule 1 (WPA, 1972).

### 5.8.3. BIODIVERSITY HERITAGE SITES (BHS)

**Kasampatty Sacred Grove** is declared as **Tamil Nadu (TN)**'s second BHS (Arittapatti in Madurai being the first in TN).

- It is located near the **Alagarmalai Reserve Forest** in Dindigul district.

#### About Biodiversity Heritage Site

- BHS are **unique, ecologically fragile ecosystems** having rich biodiversity comprising - **species richness, high endemism, presence of rare, endemic and threatened species, keystone species**, etc.
- Notified as per **Section 37 (1)** of the **Biological Diversity Act, 2002**.
  - It states that **State Government**, in consultation with the local bodies, notify in the Official Gazette, areas of biodiversity importance as BHS.

### 5.8.4. UNITED NATIONS WORLD WATER DEVELOPMENT REPORT

The report published by **UNESCO** highlights the **vital role of mountains and alpine glaciers (water towers)** in sustaining ecosystems, economies and societies.

#### Mountain Ecosystem

- Ecosystem:** Forests cover approximately **40%** of the global mountain area and at higher elevation consists of grasslands and alpine tundra.
- Water Regulation:** An estimated two-thirds of irrigated agriculture globally depends on runoff contributions from mountains.
- Carbon Storage:** Mountain soils with permafrost contain approximately 66 Pg of soil organic carbon, which is **4.5% of the global pool**.
- Biodiversity:** Mountain systems host **25 of the world's 34 biodiversity hotspots** containing high endemic biodiversity, preserving vital agricultural and medicinal plant gene pools etc.

#### Vulnerabilities of Mountain Ecosystem:

- Glacier Loss:** Rapid melting in Andes (30–50% since 1980s), Hindu Kush Himalayas (50% glacier loss by 2100) etc. **threatens water security**.
- Watermelon snow (glacier blood) effect:** Red algae blooms **lower surface albedo** and accelerate snow melt.
- Urbanization:** It significantly alters the hydrological cycle, results in overexploitation of resources and **disturbs ecological balance amplifying disasters**.
- Atmospheric Pollution:** Due to long-range transport, ice cores and lake sediments have shown an **increase in black carbon**.

#### Hindu Kush Himalayas (HKH)

It is the **largest and highest alpine ecosystem** globally, averaging 4,000 m above sea level and covering 5 million km<sup>2</sup>.

It holds **100,000 km<sup>2</sup> of glaciers**, the **largest storehouse of snow and ice outside the Arctic and Antarctic**, feeding **12,000+ lakes and 10+ major river systems**.

HKH, Tibetan Plateau, Pamir, Hengduan, Tien Shan, and Qilian mountains collectively span **5 million km<sup>2</sup>** and are known as the **Third Pole or Water Tower of Asia**.

### 5.8.5. GLOBAL ENERGY REVIEW

International Energy Agency published its **Global Energy Review 2025** report.

#### Key Highlights of the Report

- Global energy demand** grew by 2.2% in 2024 with Emerging and Developing Economies accounting for over 80% of this demand.
- 80%** of the increase in global electricity generation in 2024 was provided by **renewable sources and nuclear**, which together **contributed 40% of total generation** for the first time.
- Deployment of solar PV, wind, nuclear, electric cars and heat pumps since 2019 now **prevents 2.6 billion tonnes of CO<sub>2</sub> annually**, the equivalent of 7% of global emissions.

### 5.8.6. WORLD AIR QUALITY REPORT, 2024

7th annual World Air Quality Report 2024 released by IQAir.

- The Report evaluates the global state of air quality for the year 2024.

#### Key findings of the report

- **Seven countries met the WHO annual average PM<sub>2.5</sub> guideline of 5 µg/m<sup>3</sup>:** Australia, Bahamas, Barbados, Estonia, Grenada, Iceland, and New Zealand.
- **The five most polluted countries in 2024 were:** Chad>Bangladesh>Pakistan>Democratic Republic of Congo>India.
  - **Delhi remains the most polluted capital city.**
- **Byrnihat (Assam),** India was the most polluted metropolitan area of 2024.
- **Oceania** is the world's cleanest region.

### 5.8.7. BUDGET FOR CLIMATE ACTION

Ahmedabad Municipal Corporation (AMC) becomes 1<sup>st</sup> Urban Local Body to include separate Climate chapter in its Budget.

- **AMC** has **earmarked one-third of its budget for Climate Action** for 2025-26 focusing on implementing **Net-zero Climate Resilient City Action Plan** aligned with India's 2070 target.
- Earlier, unlike AMC, **Brihanmumbai Municipal Corporation (BMC)** unveiled Climate Budget consisting **33% capital expenditure** for climate-related projects.

#### About Climate Budgeting

- It is a **governance system mainstreaming climate commitments into decision-making on policies, actions and budget.**
- This means **integrating climate targets from city's Climate Action Plan into city's budgeting process** and assigning responsibility for implementation and monitoring across city government.
- **Importance of Climate Budgeting for Cities**
  - Foster **climate-resilient development; curb emissions** and aid in achieving global and national climate targets.
  - **Aids in estimating climate finance gap by analysing expenditures** and promote innovative financial models mobilising climate finance.

#### Mechanisms for Local Government Climate Finance



**Green and Sustainability-linked Bonds**  
E.g. Vadodara Green Muni Bond.



**Performance-based fiscal transfers** to Local Governments for climate action E.g. UNCDF's (UN Capital Development Fund) and Local Climate Adaptive Living Facility (LoCAL).



**Pollution and congestion charges** E.g. London Congestion Charge and Low-Emission Zones.

#### Role of Local Administration in Climate Action

- **Varied localized climate action:** Impact of climate change is **geographically and socio-economically varied**, making local actions more effective.
  - E.g. In 2024-25, **Mumbai (BMC)** allocated **~30%** of its capital budget to **tackle urban flooding**.
- **First Responder** to climate change induced **extreme weather events**. E.g. Landslides
- Access to **local and traditional knowledge** for climate **adaptation and mitigation**. E.g. Kundi rainwater harvesting in Rajasthan.

To know more about **Climate finance**, refer to **Article 5.3. Climate Finance in November 2024 Monthly Current Affairs Magazine**.

### 5.8.8. 2030 GLOBAL FOREST VISION

2030 Global Forest Vision (GFV): Priority Actions for Governments in 2025 released by Forest Declaration Assessment

- **Forest Declaration Assessment (FDA)**, established as New York Declaration on Forests (NYDF) Progress Assessment in 2015, is a civil society-led effort to assess **progress towards NYDF goals**.
- NYDF was **adopted in 2014** by an alliance of governments, companies, indigenous peoples and NGOs, and was **endorsed at the 2014 Climate Summit**.
- NYDF is **voluntary in nature**, has **ten goals** and has **not been endorsed by India yet**.

#### Eight Priority Actions in 2030 GFV

- **Ambition: Integrate** forest goals in **national climate and biodiversity plans** and in UNFCCC COP30 outcomes.
- **Trade:** Partner to promote legal and **deforestation-, conversion- and degradation-free trade**.
- **Finance:** Significantly scale up finance for forests in line with the **Forest & Climate Leaders' Statement on Forest Carbon Results-Based Payments and Credits**, adopted in 2024.
- **Rights:** Secure the **land rights of Indigenous Peoples (IPs) and Local Communities (LCs)**.
- **Supervision:** Governments and financial supervisors' mandates should ensure that **forest-related risks** are sufficiently **assessed, managed and mitigated** by financial institutions.
- **Subsidies:** **Repurpose subsidies** that harm forests towards sustainable food systems transformation, bioeconomy transition and sustainable forest management.
- **Governance: Strengthen governance** in land-use sector, aligning them with global commitments.
- **Debt:** Increase fiscal flexibility in multilateral development finance by **incorporating value of forest's natural capital as assets** in countries' debt management.

### 5.8.9. ANTARCTIC CIRCUMPOLAR CURRENT (ACC)

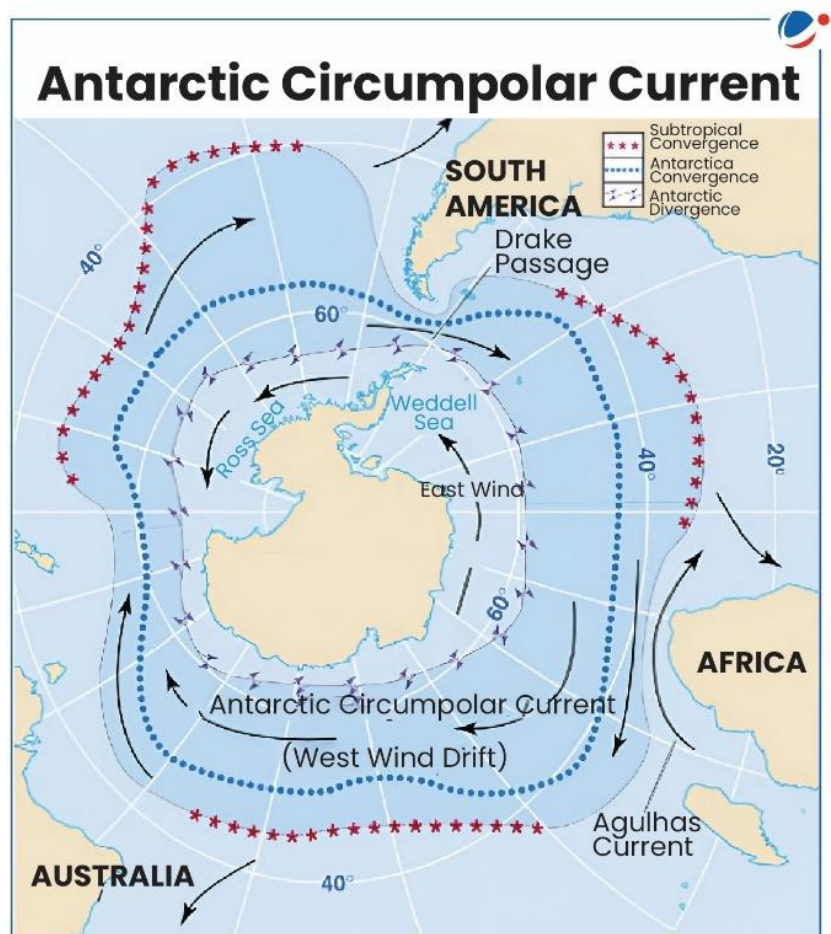
Scientists have warned that ACC **might slow down by around 20 per cent by 2050** in the **high carbon emissions scenario**.

#### What is ACC?

- ACC is the **strongest and the largest wind-driven current on Earth** and moves clockwise around Antarctica, driven by **strong westerly winds**.
- It is the **only current that goes all the way around the planet** and **connects the Atlantic, Pacific, and Indian Oceans**.
- **Significance:**
  - It's a **type of cold current that acts as a barrier** and **prevents warmer waters** from reaching Antarctica.
  - Significantly influences **uptake of heat and carbon dioxide** in the ocean.
  - Blocks **invasive species** (e.g., bull kelp, shrimp, mollusks) from other continents reaching Antarctica.

#### Reasons for weakening of ACC

- **Changes in Ocean Salinity:** Due to **accelerated melting of ice shelves (from global warming)** around Antarctica has resulted in weakening of **Antarctic Bottom Water (AABW)**.



- AABW is a **sinking process** and a critical component of global ocean circulation tied to circulation of ACC.
- **Changes in Wind Patterns:** Climate change can alter **pattern of westerly winds in Southern Hemisphere**.
- **Positive Feedback Loop:** Reduced sea ice can **exacerbate warming & freshwater input**, creating a feedback loop that **further weakens ACC**.

#### Potential Impact of weakening of ACC

- **High climate variability** with increasing instances of greater extremes in certain regions.
- **Accelerated global warming** due to a reduction in the ocean's capacity to act as a carbon sink.
- **Impact on the food web** due to arrival of **invasive species** onto the fragile Antarctic continent.
- **Impact on global ocean current system** due to weakening of the AABW.

### 5.8.10. DEEP-SEA ECOSYSTEMS DISCOVERED IN ANTARCTICA

Thriving deep-sea ecosystems discovered in Antarctica after iceberg detaches from George Vi Ice Shelf

- The discovery came from **Challenger 150 initiative** which is endorsed by **UNESCO/Intergovernmental Oceanographic Commission (IOC)** as part of the **Ocean Decade Action (2021-2030)**.

#### Key Findings

- **Flourishing Ecosystems:** At depths of up to 1,300 meters (**Mesopelagic Zone**), ecosystems were thriving, with **large corals** and **sponges** as well as **supporting diverse animal**. E.g., icefish & giant sea spiders.
  - These ecosystems had been isolated under **150-meter-thick ice** for centuries, completely cut off from surface nutrients, **essential for deep-sea life**.
- **New Species Discovered:** Giant-sea spiders, Octopi, giant phantom jellyfish (can grow up to 1 meter wide), Vase-shaped sponge (possibly hundreds of years old).

#### About Deep-Sea Ecosystem

- **Definition:** Defined as the sea and seabed below 200m, the aphotic zone (**where light fades**) makes up **90% of Earth's marine environment**, representing the **planet's largest biome**.
- **Unique Deep-Sea Habitat and Biodiversity:**
  - **Abyssal Plains:** Dark and muddy seafloor; Species rely on **marine snow** for sustenance. E.g., Sea cucumbers.
    - > **Marine Snow:** Consists of **organic matter** drifting down **from ocean surface**; serve as **food & aid carbon sequestration**.
  - **Hydrothermal Vents:** Hot, mineral-rich towers; Species rely on **chemosynthetic bacteria** for sustenance. E.g., Tubeworms and Yeti crabs
  - **Whale Falls:** As whale carcass sinks, it creates a temporary ecosystem, supporting scavengers. E.g. Hagfish.

## An Overview of Deep-Sea Ecosystem

### Biodiversity's Adaptation



#### Bioluminescence

Species produce light to attract prey, mates, or confuse predators. E.g., Anglerfish & Ctenophores.



#### Vertical Migrations

Zooplankton and fish migrate daily, feeding at the surface and returns to deeper levels.



#### Slow Metabolism

In food-scarce areas, animals survive with minimal energy. E.g., Sleeper shark.

### Significance



#### Climate Regulation

Regulates Earth's temperature through thermohaline circulation (mixing warm and cold waters) which influences climate patterns.



#### Carbon Storage

Abyssal plains, with carbon-rich sediments up to 5km thick, play a key role in carbon sequestration.

### 5.8.11. OKJÖKULL GLACIER

It is believed to be **the first glacier to be officially declared dead due to climate change**

- In 2014, the Okjökull glacier in Iceland was declared dead after it became so thin that it stopped moving.
- Okjökull was a **dome-shaped glacier** situated around the summit crater on **Ok shield volcano**, northwest of Reykjavík (Capital of Iceland).
- **Other glaciers that disappeared** include Anderson Glacier, Clark Glacier and Glisan Glacier (USA), Baumann Glacier (New Zealand), Calderone Glacier (Italy), Martial Sur Glacier (Argentina), Pico Humboldt Glacier (Venezuela), Pizol Glacier (Switzerland), Sarenne Glacier (France), and Schneeferner Glacier (Germany).

#### About Glaciers

- Glacier is a large, perennial **accumulation of snow and ice that slowly flows over land** under the influence of its own weight and gravity.
- Typically, glaciers exist in areas where **mean annual temperatures are close to freezing point** and **winter precipitation** produces significant accumulations of **snow**.
- **Importance of Glaciers:**
  - **Water Reservoirs:** Glaciers store about three-quarters of Earth's freshwater, making them the largest freshwater reservoirs.
  - **Food Systems:** Glaciers are source of irrigation in many regions while glacial fed rivers make grounds fertile for agriculture.
  - **Biodiversity:** Glacier melt delivers nutrients into lakes, rivers, and oceans, driving blooms of phytoplankton—the base of aquatic food chains.

#### Impact of Melting of Glaciers due to Climate Change

- **Disrupted Water Cycles:** Threaten freshwater, ecosystems, and agriculture.
- **Natural Disasters:** Increases risks of Glacial Lake Outburst Floods and Avalanches.
- **Sea Level Rise:** Causing coastal erosion, habitat loss, biodiversity loss etc.
- **Climate Feedback Loop:** Lower Earth's reflectivity, accelerating global warming.

#### Initiatives to Protect Glaciers

- **Global:** Designation of 2025 as the International Year of Glaciers' Preservation by UN, UNESCO Intergovernmental Hydrological Programme etc.
- **India:** Network Programme on the Himalayan Cryosphere, Centre for Cryosphere & Climate Change Studies, HIMANSH research station etc.

### 5.8.12. NARWHAL

Recently Narwhal's have been studied for the first time for their tusking behaviour.

#### About Narwhals

- Narwhals are known for their **long tusk, which is actually a tooth**.
- Males have a tusk while females do not, but there are variations. Some females may have a small tusk, some males may lack one, and some narwhals can even have two tusks.
  - **Uses of Tusks:** sensing salinity and water temperatures, **hunting, adaptation to environmental changes**
- **Scientific Name:** Monodon monoceros (Meaning: **whale with one tooth and one horn**)
- Location: **Arctic waters of Canada, Greenland, Norway and Russia.**
- **IUCN Status:** Least Concern
- **Lifespan:** Females (~100 years), Males (~84 years)
- **Reproduction:** Gestation Period (~13 to 16 months).

### 5.8.13. BLUE FLAG

Rushikonda Beach wins back the Blue Flag tag which was earlier withdrawn due to poor maintenance.

- **Rushikonda Beach in Visakhapatnam** is the only Blue Flag beach in Andhra Pradesh and is among the 13 Blue Flag beaches in India.

#### About Blue Flag tag

- **Conferred upon:** For beaches, marinas, and sustainable tourism boats. (has different criteria for each)
- **Conferred by:** Denmark-based **Foundation for Environment Education (FEE)**.
- **Criteria:** Applicants have to comply with a number of stringent environmental, educational, safety and accessibility criteria at the time of the award.

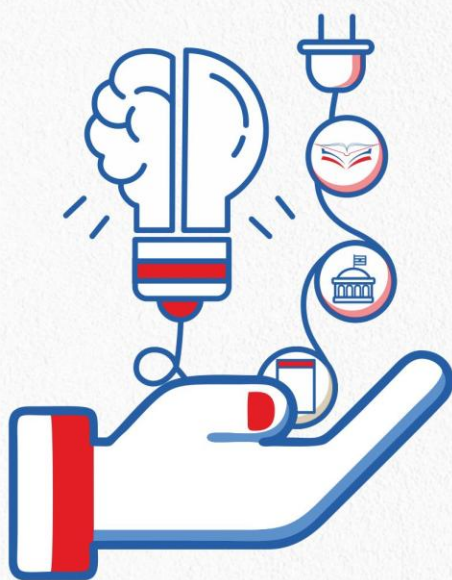


**SMART QUIZ**

You can scan this QR code to practice the Smart Quiz of Environment at our open test online platform for testing your understanding and recalling of the concepts.



## OPTIONAL SUBJECT CLASSES 2026



» Geography » Sociology  
» Political Science and  
International Relations

**20 JUNE, 2 PM**

» Physics

**15 JULY**

» Public Administration  
» Anthropology » Hindi Literature

**STARTING SOON**

## 6. SOCIAL ISSUES

### 6.1. CINEMA AND SOCIETY

#### Why in the News?

The Kerala High Court emphasized that although violent content in media can have significant social impact, any measures taken must uphold the fundamental right to free speech.

#### About Cinema

- Cinema, a **popular form of mass media** is regarded as the “**seventh art**”, the newest form of art which simultaneously combines the existing ancient disciplines of art.
  - Painting, Sculpture, Architecture, Literature, Theatre and Music are the remaining 6 forms of art.
- Emerging at the end of the 19th century, this new art form became one of the most is remarkably **effective medium for conveying drama and evoking emotion**.
- By blending diverse artistic and cultural elements, Indian cinema has crafted a unique language that **reflects both individual and societal narratives**.

Art is not a mirror held up to reality but a hammer with which to shape it.

— Bertolt Brecht



#### Evolution of Indian Cinema (1950s-2025)

Indian cinema has evolved from the wave of nationalism, reflecting traditional norms, social realism, and reflecting on contemporary issues such as gender equality, caste discrimination, and LGBTQ+ rights.

Time Period	Description
<b>1950s-60s: Social Realism and Nationalism</b>	<ul style="list-style-type: none"> <li><b>Nationalism:</b> Films like <b>Haqeeqat</b> depicted <b>real-life experiences of Indian soldiers during the Sino-Indian War</b>, boosting the stature of the armed forces.</li> <li><b>Social realism:</b> <b>Do Bigha Zamin</b> depicted farmer hardship, <b>Satyajit Ray's 'Pather Panchali'</b>, depicted the inherent hardship associated with <b>rural Bengal</b>.               <ul style="list-style-type: none"> <li><b>Dahej and Devi</b> portrayed women as <b>submissive</b> often sacrificing their personal happiness for the family</li> </ul> </li> </ul>
<b>1970s: Angry Young Man and Social Unrest (emergency period)</b>	<ul style="list-style-type: none"> <li><b>Social Injustice:</b> <b>Calcutta 71'</b> by Mrinal Sen reflects the times of Naxal plagued Bengal.</li> <li><b>Parallel Cinema and social satire:</b> Movies like <b>Manthan</b>, <b>Sparsh</b> highlighted issues like <b>the struggles of marginalized communities, rural life, and complex human relationships</b>.</li> </ul>
<b>1990s: Commercial Cinema and Cultural Shifts</b>	<ul style="list-style-type: none"> <li><b>Globalization, Materialism and Identity:</b> Themes of wealth, individualism, and happiness became central, alongside discussions on changing gender roles in movies like <b>Mirch Masala</b>.</li> <li><b>Patriarchy and Reform:</b> Films like <b>Astitva</b> critiqued male chauvinism, extramarital affairs, and spousal abuse, <b>exploring a woman's quest for independence outside marriage</b>.</li> <li><b>Relationships and Individuality:</b> <b>'The Play of God' (Malayali, 1997)</b> was an adaption of Shakespeare's Othello, <b>'Antareen'</b> by Mrinal Sen.</li> </ul>
<b>Early 2000s: Realism, and Social Critique</b>	<ul style="list-style-type: none"> <li><b>Realism:</b> Films like <b>Chandni Bar</b>, and <b>Black Friday</b> exposed the harsh realities of <b>Mumbai's underworld</b>, including exploitation, prostitution, and violence.</li> <li><b>Globalization and Identity:</b> The <b>Namesake</b> explored <b>migration</b>, cultural assimilation, and generational divides in a changing world.</li> <li><b>Social issues:</b> Movies like <b>Pink</b>, and Malayali movie <b>'Jaya Jaya Jaya Hey'</b> highlighted the prejudices women face and supported the idea of their freedom from societal norms.</li> <li><b>LGBTQ+ Representation:</b> <b>'Kaathal'</b>, <b>'Samo -The Equals'</b> explored LGBTQ+ issues, promoting societal acceptance and challenging stigma.</li> </ul>

<b>Post 2020: OTT Cinema and Regional cinema</b>	<ul style="list-style-type: none"> <li>Regional cinema, that have traditionally, struggled for space in multiplexes, have got due recognition on <b>OTT platforms</b>.</li> <li>OTT's content-focused approach has especially helped low-budget regional films with powerful storytelling.</li> <li>For instance, <b>The Great Indian Kitchen</b> (Malayalam) gained national attention for its strong feminist narrative, while <b>Court</b> and <b>Sairat</b> (Marathi) <b>found widespread acclaim</b>.</li> </ul>
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## How does the Cinema Shape the Society?

### Positive Impact of Cinema on Indian Society

- **Global Recognition of Indian Culture:** Indian cinema's international success, like **The Elephant Whisperers**, RRR winning **Oscar**, creates national pride and showcases Indian culture and creativity on the world stage.
- **Reflection of Cultural Diversity:** Films like **Dedh Ishqiya** highlight Lucknow's Nawabi culture, **Piku** showcase Bengali culture, **Khoobsurat** features **Rajasthan's forts**, etc.
- **Reflection of Evolving Family values:** Indian Cinema earlier explored family conflicts shaped by societal norms and western influences, as seen in **Khandaan** (1965). Over time, films began addressing **issues like illegitimacy (Masoom, and Kal Ho Na Ho)**. Post-2000s, the focus shifted to contemporary issues being faced by nuclear families.  
Example,
  - **Kabhi Alvida Naa Kehna** delved into **extramarital relationships and divorce** once considered taboo.
  - **Goodbye** portrayed the emotional journey of a father and his children after the loss of their mother, highlighting intergenerational gaps and the growing emphasis on emotional expression and individual space within families.
- **Women Empowerment:** Films like **Durga Sohay (Bengali)** show **femal protagonist** going against the social limitations and prejudices, and turns out to be the reflection of Goddess Durga.
- **Awareness on Educations:** **Nil Battey Sannata** captures the journey of a mother, a housemaid, who goes back to school to motivate her daughter to study, **highlighting the transformative impact of learning**.
- **Strong Tool For Societal Change**
  - **Raising Awareness:** Films like Paa and Taare Zameen Par educated audiences about progeria and dyslexia.
  - **Changing Social Attitudes:** Fire and Aligarh sparked important conversations about LGBTQ+ rights. Aligarh, Bala, etc.
  - **Shaping Nationalistic Views:** Films influence public opinion on national events, from Tamil cinema's political impact (Muthu, Annamalai) to patriotic Bollywood productions (Swadesh)

### Negative Impact of Cinema on Indian Society

- **Gender Stereotypes and Toxic Masculinity:** Women still often shown as objects (item songs), and domestic Violence against them is normalised in movies like Hum Tumhaare hain Sanam, Pushpa.
  - Additionally, Films like **Kabir Singh** and **Animal** glorify aggression and unhealthy male behavior.
- **Promoting Unrealistic Body Standards:** Cinema often promotes the idea that fair skin is superior, often casting fair-skinned actors as leads.
  - It also **encourages body shaming**, where both **too thin and overweight individuals are ridiculed**.
- **Questioning Institution of Family:** Cinema frequently depicts love marriages and live-in relationships more favorably offering a contrast to traditional family values, as seen in films like OK Jaanu.
- **Shift in Cultural Preferences:** Cinema's growing focus on Western dance styles (like hip-hop and jazz) and music (like rap) has influenced youth preferences, sometimes overshadowing traditional Indian art forms like Bharatnatyam and Kathak.
- **Poor Representation of the Vulnerable Community:** Indian cinema often presents vulnerable communities like LGBTQ individuals, people with disabilities etc with great insensitivity, reducing them to stereotypes or comedy.
  - Films like Dostana **mocks homosexuality**, while Golmaal **mocks speech impairment and blindness**.
- **Glorification of Substance Use:** Films like Dev D often portray drinking and smoking as trendy or a way to cope, influencing teens to see them as part of a "cool" lifestyle.
- **Deepening Divide:** Propaganda-driven movies are increasingly promoting specific political ideologies, stirring up old issues to manipulate emotions and fuel animosity, deepening social divides.

### Regulation of Content in Cinema

- **Bharatiya Nyaya Sanhita (BNS), 2023:** Criminalizes obscene acts, with penalties including fines and imprisonment.
- **Indecent Representation of Women (Prohibition) Act, 1986:** This law prohibits the indecent portrayal of women in publications, advertisements, and media.
- **Cable Television Networks (Regulation) Act, 1995:** Ensures telecasted programmes meet societal decency standards, with penalties for violations.
- **Cinematograph Act, 1952:** Mandates certification of films by the Central Board of Film Certification (CBFC) before their public exhibition.
- **Advertising Standards Council of India (ASCI):** ASCI (self-regulatory body) aims to regulate advertisements and ensure they meet public decency standards. (Self-regulation)

### Conclusion

Cinema is a powerful mirror of society that reflects our values, however, it also challenges our beliefs, and shapes how we think and feel. Cinema should evolve as a force for social change that promotes inclusivity, diversity, and empathy, while also respecting public sensibilities and promoting **Constitutional and Social morality**.

## 6.2. SOCIAL MEDIA AND ADOLESCENTS

### Why in the News?

A recently released **web series named 'Adolescence'** has sparked debates worldwide on **online radicalization and digital safety of adolescents**- the issues faced by children due to unregulated exposure to internet and related social influences.

### More on the News

- The **UK** is planning to stream the **series in schools** accompanied by discussion guides for teachers and parents.
- In **2024, Australia** banned social media use for children less than **16 years of age** citing **online safety issues** and holding social media platforms **responsible** for compliance.

The internet mirrors, magnifies and makes more visible, the good, the bad and the "ugly of everyday life"

— Danah Boyd



### Harmful Impact of Online Spaces/Social Media on Adolescents

- **Negative Social Conditioning:** Access to **unregulated content** potentially has a negative **influence** on adolescent's **personality development and behavior**.
  - E.g. **Pornography, misogynistic hate content** encourages **anger and hatred**; **beauty standards** related content may **induce self-doubt** etc.
- **Online radicalization:** Social media **algorithms** tend to promote formation of '**echo-chambers**' i.e. a community validating a thought process as being **absolute**.
  - For example, **forums and chat rooms** promoting idea of '**manosphere**'-justifying **misogyny and toxic masculinity** as a counter to **feminist ideology**.
- **Social Media Addiction and Alienation:** Prolonged use of online spaces **disconnect** children from **real-world connections** with their **parents and peers** leading to **social isolation & alienation**, making them **vulnerable to online propagandas**.
- **Mental health issues:** Adolescents, who are in the **transitory phase of identity formation**, may face mental health issues like **anxiety, depression, and body image insecurity**.
  - E.g. **Comparison** with idealized online persona, **Fear of missing out (FOMO)** and **validation-seeking behaviours** (likes and comments equated to **self-worth**).
- **Lack of empathy & Cyber-Bullying:** Most interactions in online spaces lack empathy which is reflected in the **trolling, rude comments and posting of sensitive content detrimental to others**.
  - E.g. "**Bois Locker Room**" incident in **Delhi (2020)**: obscene images were shared on a schoolboys' group.



## How various Stakeholders shape Personality Formation of Adolescents?



### Peers

- ⊕ **Value formation:** Peer groups define what is acceptable/unacceptable and aid in development of beliefs through discussions etc.
- ⊕ **Behavioral modelling:** Adolescents tend to copy peers' desirable behaviours.
  - **Peer pressure** can also have a negative influence E.g. bullying in schools or at play, **cyberbullying**, youth violence.



### Social

- ⊕ **Family/ Parents**
  - **Primary Socialization:** Family and parents are responsible for the early learnings of children.
- ⊕ **Society at large**
  - Cultural expectations and community values:** The need to conform to the acceptable **social roles** guides adolescent behaviour.



### Institutional

- ⊕ **Internet/ Social media Platforms**
  - **Socialization:** Exposes adolescents to **different personas** helping in **opinion and personality** development.
  - **Identity formation:** Adolescents can form their **digital identity**, **critic** others' **opinions** and promote **creative expression**, having both positive and negative impacts.
- ⊕ **School/ educational institutions**
  - **Secondary socialization:** Along with **academic** education, schools teach **value-based education** through peer and teacher **interactions**.
- ⊕ **Governments**
  - **Policy Formation:** Government policies on **education** are vital in providing direction to adolescents' development.

### What are the Challenges in curbing negative impacts of social media on Adolescents?

- **Outdated policy approach:** Rapid pace of changes in digital realm outpaces **policy changes** and make it difficult for the **parents, social institutions** like schools to **adapt**.
- **Lack of Digital Literacy:** Adolescents, having an **autonomous agency** online, lack the digital literacy to **critically engage** with content and provide an **informed consent**.
- **Content moderation versus free speech:** Regulation of social media platforms has been **contentious** due to the argument **against regulation** due to the **democratic principle of free speech**.
  - Internet and social media have become an **integral part** of our lives for **access to information**, as a platform for **self-expression** and **connecting** people with **shared identities and interests**.
  - Keeping children away from the exposure will be **temporary** and largely ineffective in the long-term.



Adolescence is a time in which you experience everything more intensely

— Edward Zwick



- **Loopholes in content moderation: Age-based content restriction** is bypassed by loopholes exploited by access to **dark web, piracy** etc.
- **Intergenerational Digital Divide:** Adolescents, as digital natives, adopt new technologies quickly, while older generations may resist or misunderstand them. E.g. Indian parents **misunderstanding emojis or memes**.
  - Cultural dilemmas arise when **youth espouse liberal global values** clashing with traditional Indian familial norms.
- **Lack of awareness:** Among **parents, schools and society** about the negative influences on social media. E.g. changing **symbolic interactions** through changing meaning of **language terminologies and emojis**.

#### Way Forward

- **Promoting Digital Citizenship among adolescents:** Digital citizenship is when you use the internet in a **legal, safe, respectful and responsible way**.
- **Digital Ethics of Care:** Learning the competencies of **digital responsibility, digital empathy, digital care and kindness, and digital respect**.
- **Promoting Digital Literacy:** Enabling **children** to make **critical decisions** and transforming them from passive consumers to **active users**.
- **Parental Oversight:** Parents need to promote **open dialogue** and provide better **emotional support structures** to prevent social alienation and loneliness.
- **Reforms in School system:** Better anti-bullying programs, counsellor support, partnership with parents, training teachers in understanding and handling the issues faced by adolescents better.
  - E.g. including **Relationship, Sex and Health Education (RSHE)** curriculum, as in the UK.
- **Policy Reforms:** Adopting a **multi-faceted approach**, acknowledging that it is **responsibility** of all stakeholders (police, schools, social media firms, parents, society) **to ensure children's digital safety**.
  - **Education policies, juvenile justice laws and data protection laws** need to cater to the specific needs of adolescents.
- **Accountability for Tech Companies:** Instead of banning social media, tech companies can be held accountable for creating safer, child-friendly spaces.

### 6.3. CHANGING INSTITUTION OF FAMILY

#### Why in the News?

Recently, Supreme Court remarked that **family values are eroding**, with parents and children litigating against each other over property and maintenance, pushing the country toward a "**One Person, One Family**" model, in contrast to the '**Vasudhaiv Kutumbakam**'.

#### More on the News

- In **Samtola Devi v. State of Uttar Pradesh & Ors.**, the Supreme Court also ruled that the **Maintenance and Welfare of Parents and Senior Citizens Act, 2007** ensures maintenance for elderly parents but does not explicitly permit eviction of children from the home of the said parents.

#### Changing Institution of Family in India

Aspect	Traditional Family	New Trends
<b>Structure</b>	<b>Joint family system</b> with multiple generations including grandparents, uncles, aunts, nieces, and nephews living together in the same household.	Predominantly <b>nuclear families</b> , often consisting of parents and non-adult children only.
<b>Decision-Making</b>	<b>Patriarchal hierarchy</b> with decisions made <b>collectively by elders</b> .	<b>Increasingly more egalitarian approach</b> with <b>shared decision-making</b> between men and women.
<b>Marriage Practices</b>	<b>Arranged marriages</b> often negotiated by elders; emphasis on lineage and family unity.	Increased acceptance of <b>love marriages, live-in relationships</b> , and non-traditional unions like <b>same-sex partnerships</b> .
<b>Values</b>	<b>Collectivism</b> emphasizing family <b>loyalty, unity, and interdependence</b> over individualism.	Growing <b>individualism</b> with focus on <b>privacy, independence, and personal aspirations</b> .

## Factors behind the changes in Indian family institution

- **Economic factors:** Urbanization, expanding labour market demand, higher cost of living in urban areas, dual-income households, etc.,
- **Changing gender role:** Improved women's access to education and formal employment challenged the traditional patriarchal norms in households.
- **Westernization:** Emphasis on values like **individualism**, leads to a preference for **smaller and more private family settings**.
- **Globalization:** Exposure to global cultures through **media and physical connectivity** has introduced alternative family models and values. **E.g., Multi Nation Corporations' (MNCs) work cultures** often favour smaller and more flexible family units.
- **Role of Technology:** Enhanced communication through modern tools (e.g., Skype, WhatsApp), though allows families to stay connected but have **reduced face-to-face interactions, affecting the depth of relationships and emotional bonding**.

## Impact of Changing Family Institution

Positive Impacts	Negative Impacts
<ul style="list-style-type: none"> <li>• <b>Active parenting:</b> Fathers are increasingly involved in their children's upbringing, moving away from the traditional role of being just financial providers.</li> <li>• <b>Strong parent child bond:</b> In nuclear families, focused attention on children's education and personal development fosters deeper emotional connections, encouraging open communication and trust between parents and children.</li> <li>• <b>Reduced familial conflict:</b> Nuclear living can reduce disputes related to intergenerational control or property.</li> <li>• <b>Greater autonomy:</b> Individuals, especially women, can lead independent lives.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Inter-Generational conflicts:</b> Differences in <b>values and lifestyles (Generation gap)</b> between parents and children, aggravated by technological advancements, can lead to <b>misunderstandings and conflicts</b>.</li> <li>• <b>Loss of traditional values:</b> With strong emphasis on <b>individualism</b>, children raised in nuclear families may miss out on learning values like <b>respect for elders, collectivism, and social norms</b> that joint families traditionally instill.</li> <li>• <b>Loneliness</b> <ul style="list-style-type: none"> <li>○ <b>In Children:</b> The absence of siblings or cousins in smaller families can lead to <b>feelings of isolation</b>, impacting the welfare of child.</li> <li>○ <b>In parents:</b> Similarly, neglect in old age can lead to <b>physical ailment, mental health issues and social marginalization</b> among parents.</li> </ul> </li> <li>• <b>Pressure on social infrastructure:</b> Greater demand for institutional elder care, child care, and public health support.</li> </ul>

## Way Forward

- **Strengthen community-based support systems:** Build robust **neighbourhood-based elder care**, crèche, and mental wellness centers.
  - **Encourage RWAs and Panchayats** to foster **local social capital**. Example: **Kerala's Kudumbashree network** integrates community and care economy, especially for the elderly and women.
- **Education and social awareness:** Include value education and emotional intelligence in school curricula to nurture family empathy.
- **Promote intergenerational living through urban planning:** Incentivize housing projects that accommodate multi-generational homes.
- **Redefining the concept of family:** States policies and governance framework need to move beyond traditional definition (joint/ nuclear) of families to include and accommodate single-parent families, elderly living alone, etc.
  - This can help in **effective targeting and delivery of welfare programmes** for different types of families.
- **Policy Interventions:** Effective implementation of **Maintenance and Welfare of Parents and Senior Citizens Act, 2007** which specifies that children can be legally held liable for not supporting their parents.
  - Also, **free legal aid for elderly** can help them assert their rights and challenge neglect or abuse.

Scan the QR code to know more about **changing family structures in India**

**Weekly Focus #118**– Changing Dynamics of Family Structure in India



## 6.4. WOMEN-LED DEVELOPMENT

### Why in the News?

Recently, on the 30th anniversary of the **Beijing Declaration and Platform for Action**, governments adopted a **declaration** on the **empowerment of women and girls** reaffirms the principle of **Women-Led Development**.

### Beijing Declaration and Platform for Action (BPfA)

- It was originally adopted in **1995** at the **Fourth World Conference on Women**, stressing on upholding all **human rights** and **fundamental freedoms** for **every** woman and girl, without exception.
- On its 30<sup>th</sup> anniversary, **Beijing + 30 Action Agenda**, with **6 priority actions** were released.
  - **Digital Revolution**: Access to new skills, bridging Digital Gender Gap, etc.
  - **Freedom from Poverty**: **Social protection and high-quality public services** for health, education and care.
  - **Zero Violence**: **Comprehensive national action plans** involving **community-led** organizations.
  - **Full and Equal Decision-making Power**: In both private and public domains.
  - **Peace and Security**: Gender-responsive humanitarian actions
  - **Climate Justice**: Prioritising rights of women from **Indigenous communities**, **promoting green jobs**, etc.

### Women's Development vs. Women-led Development

Women's Development	Women-led Development
<ul style="list-style-type: none"><li>• Involves <b>programmes designed to help women</b>, without necessarily involving them in their planning, implementation, and evaluation.</li><li>• <b>e.g.</b>, maternal health programs, girls' education projects, quotas for women in educational institutions, etc.</li><li>• <b>Under this women are seen as passive recipients of development programs.</b></li><li>• <b>Top-down approach to decision-making</b> about women development <b>lacking women's adequate participation.</b></li></ul>	<ul style="list-style-type: none"><li>• Marks a <b>paradigm shift</b> where women are seen not just as beneficiaries, but as <b>leaders, decision-makers, and innovators in the process of development.</b></li><li>• <b>e.g.</b>, enhanced women's representation in local governance, corporate leadership, etc.</li><li>• Recognizes that <b>women often have unique insights into community needs</b> and can offer <b>innovative solutions based on their lived experiences.</b></li><li>• <b>Bottoms-up approach</b> to encourage <b>women's participation in decision-making. E.g., SHG movement.</b></li></ul>

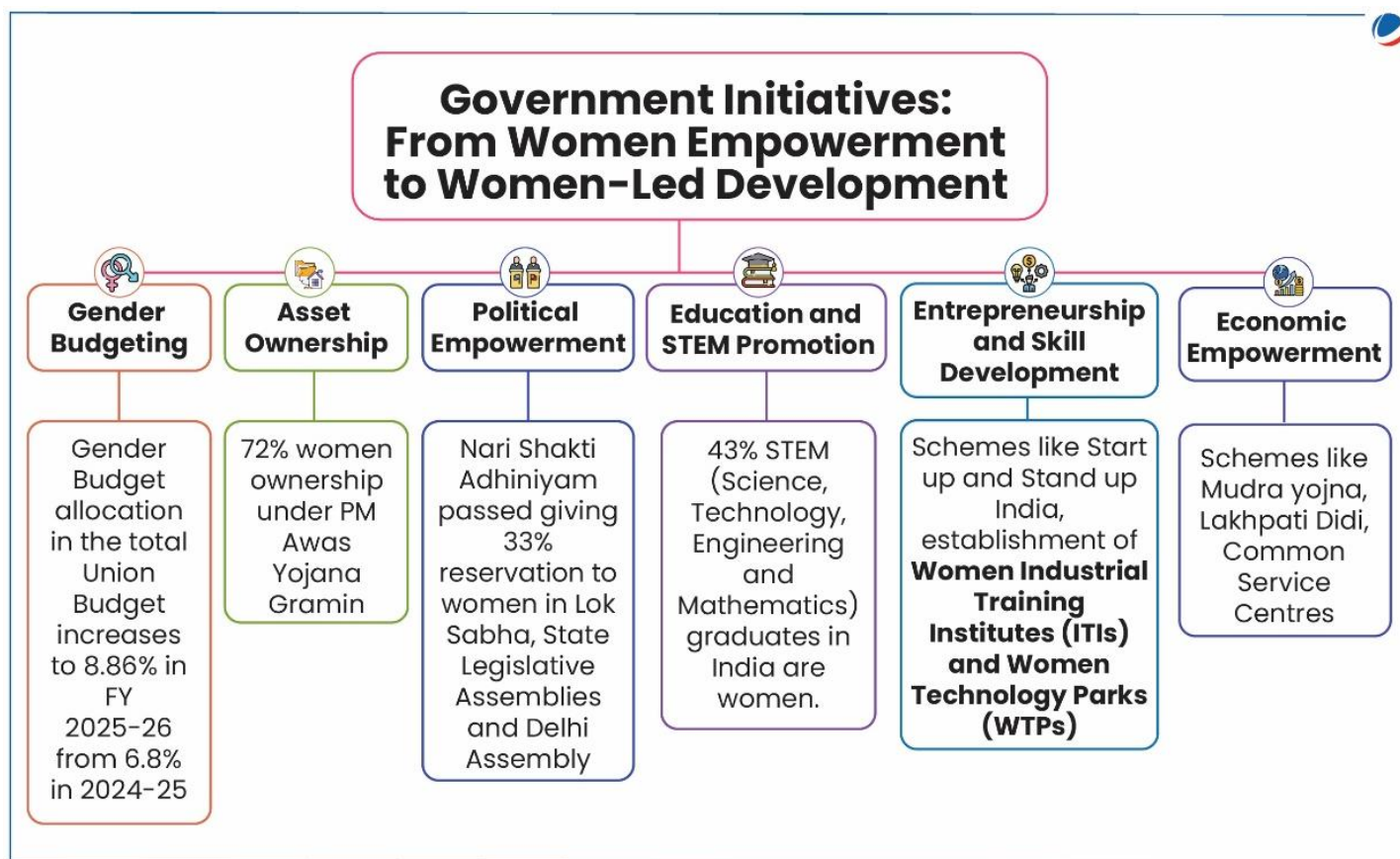
### Why Women-Led development is important for Society?

- **Women as Agents of Empowerment**: Shifting the narrative from women as mere recipients of welfare.
- **Gender Equality**: Tackles generational inequality (Global Gender Gap Index 2024: India ranked 129th out of 146 countries) by breaking gender stereotypes and rejecting norms that sustain gender disparity.
- **Economic Empowerment**: Indian women, despite constituting 48% of the population, contribute only 18% to the GDP (NFHS-5). Bridging the gender gap in employment could potentially lead to a 30% increase in the country's GDP.
- **Rural Development and Poverty Alleviation**: Women-led initiatives transform villages.
  - **Deendayal Antyodaya Yojana - National Rural Livelihood Mission (NRLM)** mobilised a total of 8.01 Crore women from poor and vulnerable communities in self-help groups, increasing household incomes by 22%.
- **Inclusive growth**: It channelizes potential of women for actively shaping and driving economic, social, and political progress at all levels of governance.
- **Sustainability**: Empowering women in climate-related decision-making strengthens community resilience and allows them to adapt to the changing environment.

- The Deccan Development Society collaborates with nearly 5,000 Dalit and Indigenous women small farmers to restore thousands of hectares of farmland through sustainable agricultural practices.

### Obstacles on the Path to Women-Led Development

- **Patriarchal Social Norms:** Deep-rooted patriarchy limits women's decision-making rights, reinforcing gender inequality.
  - NFHS-5 (2019-21) states only 3% of women make decisions independently.
  - Women shoulder a disproportionate share of unpaid care and domestic work.
- **Education:** Average female literacy rate throughout world is 79.9%, while India lags behind at 62.3%
- **Workplace Discrimination:** Women face harassment, unequal pay, and limited career growth due to glass-ceiling effect.
  - Women earn 20% less than men for equal work (WEF Gender gap report, 2023).
- **Gender digital divide:** Only 15% of women in India have access to internet (Mobile Gender Gap 2021 Report).
- **Early Marriage and Motherhood Penalty:** Early marriage and childbirth reduce women's educational and career prospects.
  - NFHS-5 states 23% of women aged 20-24 were married before 18.
- **Women safety:** Increasing violence restricts women's mobility and freedom.
  - NCRB (2022) reported 4.5 lakh crimes against women.



### Global Initiatives to ensure Women-Led Development

- **Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), 1979:** Created with the efforts of **United Nations Commission on the Status of Women** (established in 1946 to monitor the situation of women and promote women's rights.).
- **UN Women:** Created in 2010 by the **United Nations General Assembly** as an entity dedicated to **gender equality** and the **empowerment of women**.
- **International Women's Day:** Celebrated globally on **8<sup>th</sup> March** recognizing achievements of women across national, ethnic, linguistic, cultural, economic or political boundaries.
  - The **theme** for 2025 is **"For ALL Women and Girls: Rights. Equality. Empowerment."**

## Conclusion

Empowering women as equal participants in development **fosters inclusive growth**. Through political, economic, and social reforms, women are transforming from welfare recipients to active change-makers. Ensuring equal rights, opportunities, and representation paves the way for sustainable progress and a truly women-led development model in India.

## 6.5. NEWS IN SHORTS

### 6.5.1. NEW SDG INDICATOR ON MINIMUM DIETARY DIVERSITY (MDD) ADOPTED BY UN STATISTICAL COMMISSION

This indicator adds to nearly 250 indicators **tracked under Sustainable Development Goals (SDGs) framework** adopted in 2017.

- **FAO and UNICEF jointly manage** this new indicator, addressing absence of an SDG measure for healthy diets.
- This indicator captures a crucial aspect previously lacking in tracking progress toward ending malnutrition and **achieving SDG 2 (Zero Hunger)** and broader 2030 Agenda.

#### About MDD

- According to WHO, MDD is achieved when a diet includes **five or more of following eight food groups**: breast milk, grains, legumes, dairy products, flesh foods, eggs, fruits, and vegetables.

#### Significance of MDD Indicator

- **Improved Nutritional Assessment:** It specifically tracks nutritional needs of women (MDD-W) and children (MDD-C), who are most vulnerable to malnutrition.
- **Tracking Global Health Targets:** Supports SDG 2, aimed at eliminating hunger and improving nutrition.
- **Policy Tool:** Aids policymakers in developing strategies to combat malnutrition by addressing health risks linked to poor dietary habits.
- **Evaluating Program Impact:** Helps evaluate nutrition programs.



### Status of MDDF (minimum dietary diversity failure) in India (For Year 2019-21):

- **Regional Disparities:** Certain states of India, particularly Uttar Pradesh, Rajasthan, Gujarat, Maharashtra, and Madhya Pradesh, has over 80% of children with MDDF.
- **Age Impact on MDDF:** 77% children in India aged 6-23 months lacking minimum dietary diversity.
- **Vulnerable Sections:** Children from Other Backward Classes have the highest MDDF (79%), followed by Scheduled Castes (77.2%) and Scheduled Tribes (76%).

## 6.5.2. WORLD HAPPINESS REPORT

World Happiness Report 2025 was published by **Wellbeing Research Centre** at the University of Oxford, in partnership with **Gallup, the UN Sustainable Development Solutions Network** and an independent editorial board.

### About the Report

- Global Happiness Ranking is based on single question derived from the **Cantril Self-Anchoring Striving Scale (Cantril Ladder)**.
  - Top of the ladder represents best possible life while at the bottom represents worst possible life.
- **Parameters:** GDP per capita, social support, healthy life expectancy at birth, freedom to make life choices, generosity, and perceptions of corruption.
- Finland ranks first, followed by Denmark and Iceland while **India is ranked 118<sup>th</sup>** out of 147 countries.

## 6.5.3. SWAVALAMBINI

**Ministry of Skill Development and Entrepreneurship** in collaboration with **NITI Aayog** have launched Swavalambini—Women Entrepreneurship Programme.

### About Swavalambini– Women Entrepreneurship Programme

- It is a movement towards **women-led multi-staged entrepreneurship**.
- **Objective:** Empower female students in **Higher Education Institutions** with entrepreneurial **skills, resources, and mentorship**.
- **Structure:** Includes **Entrepreneurship Awareness Programme**, Women Entrepreneurship Development Programme, mentorship, and faculty training.
- **Implementation:** By **National Institute for Entrepreneurship and Small Business Development**.
- **Impact:** Aims for minimum **10% of trained participants to establish enterprises**, fostering women-led economic growth in India.

## 6.5.4. PM-YUVA 3.0

**Ministry Of Education** Launches PM Scheme For Mentoring Young Authors (PM-YUVA 3.0).

### About PM-YUVA 3.0

- **Aim:** Aims to train young authors below 30 years of age to promote reading, writing, and book culture.
- **Selection and Training Process:** 50 authors will be selected through an All India Contest.
- **Implementation:** National Book Trust, India is an implementing agency ensuring structured mentorship.
- **Significance:** Strengthens Ek Bharat Shreshtha Bharat by promoting cultural and literary exchange.

## 6.5.5. INTERNATIONAL OLYMPIC COMMITTEE



Zimbabwean former swimmer **Kirsty Coventry becomes** the first female president of the IOC.

- IOC is a **not-for-profit independent** body **overseeing the Olympic movement**.

### About IOC

- **Headquarters:** Lausanne (the Olympic Capital), Switzerland.
- **Genesis:** Founded at the first Olympic Congress in Paris (1894).
- **Vision:** To Build a Better World through Sport

- **Funding:** Entirely **privately funded** and **distributes 90% of its revenues** for the development of sports and athletes at all levels.
- **Function:**
  - **Decides Olympic sport inclusions** and **host city** selections.
  - Facilitates **collaboration** among Olympic stakeholders, including athletes, National Olympic Committees (NOCs), and sports federations.
    - > **Indian Olympic Association (IOA)** serves as India's NOC.

 <p><b>SMART QUIZ</b></p>	<p>You can scan this QR code to practice the Smart Quiz of Social Issues &amp; Social Schemes at our open test online platform for testing your understanding and recalling of the concepts.</p>	
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# Lakshya

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<b>2025</b>	<b>5 MONTHS</b>	<b>31 MARCH</b>
<b>2026</b>	<b>16.5 MONTHS</b>	<b>15 APRIL</b>

**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

## 7. SCIENCE AND TECHNOLOGY

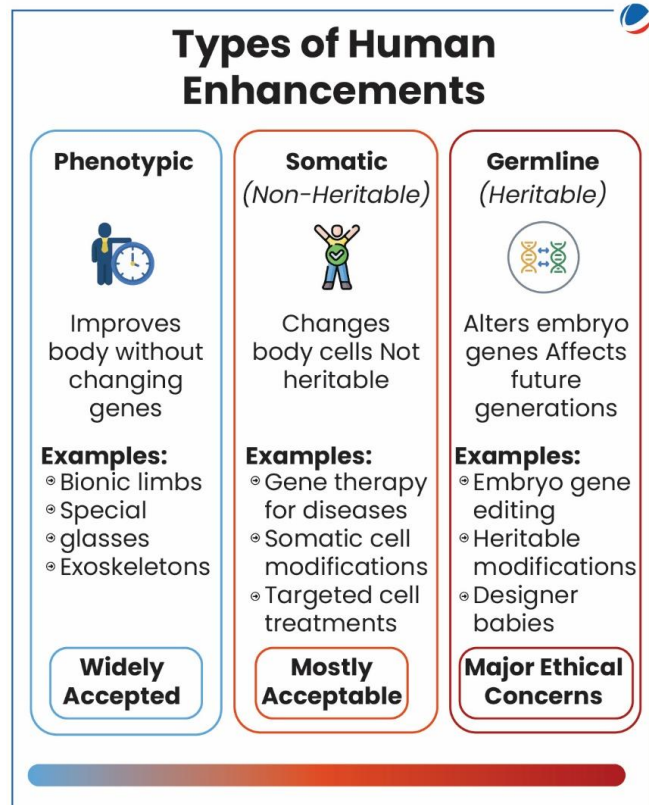
### 7.1. HUMAN ENHANCEMENT

#### Why in the News?

The human enhancement industry was worth \$125 billion in 2024 and is expected to grow to \$348.5 billion by 2033, according to a recent report by IMARC.

#### What is Human Enhancement?

- Human enhancement refers to a natural, artificial, and technological **alteration of the body to enhance cognitive and physical capabilities and functions of individuals.**
- It is undertaken using **drugs, hormones, implants, genetic engineering to dietary supplements and cosmetic surgeries** for self-improvement.
  - Unlike traditional medicine, which seeks to treat or cure illness, human **enhancement focuses on surpassing typical human limits.**
    - > **For example,** advances in human enhancement technologies provide **resistance against diseases like malaria, tuberculosis, and Lyme.**
- The debate around human enhancement is shaped by two key views:
  - Transhumanists:** Support using advanced technologies to **radically enhance human abilities and extend life.**
  - Bioconservatives:** They believe in preserving the natural human condition and oppose using technology to drastically change or extend human life, **fearing it may harm our human essence.**



#### Concerns Associated with Human Enhancement

- Equity:** Access to enhancements may be limited, increasing social inequality.
- Identity:** Changing core human traits may challenge our sense of being human raising concerns about the loss of identity.
- Consent:** Forced or non-consensual enhancements threaten individual freedom.
- Social Pressure:** Widespread use could create discrimination against those who remain unenhanced.
- Health Risks:** Long-term effects of genetic or neural modifications are still unknown.
- Environment:** Longer lifespans could add pressure on resources and ecosystems.
- Genetic Diversity:** Genetic engineering might reduce diversity, raising disease vulnerability.
- Regulation:** Effective regulation is needed to ensure safe, fair, and ethical use of these technologies.

#### Conclusion

Human enhancement technologies can boost abilities, extend life, and drive progress, but they raise ethical, social, and environmental concerns. Responsible regulation, equitable access, and awareness of long-term impacts are essential to preserving core human values.

### 7.2. STRATEGIC CRYPTO RESERVE

#### Why in the News?

The U.S. President signed an executive order establishing a Strategic Bitcoin Reserve (SBR) and the U.S. Digital Asset Stockpile to have a **Strategic Crypto Reserve (SCR)**.

## More on the news

- It aims to include cryptocurrencies like **Bitcoin, Ethereum, XRP, Solana's SOL and Cardano's ADA** in efforts to elevate America's crypto industry.
- It also aims at **addressing the crypto management gap** as the US will have a strategic advantage to being among the first nations to create an SBR.

## What is Cryptocurrency?

- Cryptocurrency is a **digital or virtual currency** that uses cryptography for security and operates **on decentralized blockchain technology**.
- Unlike traditional fiat currencies, cryptocurrencies are **not controlled by any central authority** such as a government or central bank.
- **Examples:** Bitcoin (BTC), Ethereum (ETH), Ripple (XRP), Tether (USDT).

## Key features of Cryptocurrencies



**Decentralization:** Transactions are recorded on a distributed ledger, reducing reliance on intermediaries.



**Limited Supply:** Many cryptocurrencies, like Bitcoin (21 million coins), **have a fixed supply**



**Transparency:** Blockchain technology ensures **transaction data is open and verifiable**.



**Security:** Cryptographic encryption provides robust security against fraud and counterfeiting.



**Borderless Transactions:** Enables fast and low-cost global transactions.

## About Strategic Crypto Reserve (SCR)

- SCR is a **government-held stockpile of cryptocurrencies** maintained as **part of national financial reserves** to hedge against economic uncertainties, enhance financial sovereignty, and leverage blockchain technology for economic resilience.
- Functions as a digital alternative to traditional reserves such as **foreign exchange (forex) and gold**.
- **The operational mechanics** of a strategic cryptocurrency reserve **remain to be fully defined**,
  - **Some see similarities to the Strategic Petroleum Reserve**, which serves as a way for the government to limit the impacts of petroleum supply disruptions.

## Should India have a Strategic Cryptocurrency Reserve?

### Arguments in favour

- **Diversification of National Reserves:** Cryptocurrencies exhibit low correlation with traditional assets like gold, bonds, and equities, reducing portfolio risk.
- **Hedging Against Economic Shocks:** Acts as a hedge against US dollar fluctuations and global monetary instability.
  - **Example;** Reduces vulnerability to geopolitical shifts (e.g., sanctions, trade wars).
- **Cost-Efficient Remittances:** Crypto transactions could slash remittance fees from 6.4% (global average) to less than 1%, saving India billions annually.
- **Technological Leadership:** Leverages India's tech talent pool to innovate in blockchain and DeFi (Decentralized Finance).

- **High Return Potential:** Historical crypto returns outpace traditional assets, offering asymmetric growth opportunities.
  - **Example:** Bitcoin's 200X growth over a decade outperformed stocks like NVIDIA (50X) and Apple (10X).
- **Financial Sovereignty:** Reduces reliance on external financial systems (e.g., SWIFT) and strengthens economic independence.

#### Arguments Against

- **Volatility and Market Risks:** Extreme price swings (e.g., Bitcoin's 80% drop in 2022) could destabilize reserves.
- **RBI's Reservations and Policy Stance:** The **Reserve Bank of India (RBI)** has repeatedly warned against the risks of cryptocurrency, citing financial instability.
  - RBI favors a **Central Bank Digital Currency (CBDC)** over decentralized cryptocurrencies, seeing them as a threat to monetary sovereignty.
- **Regulatory Challenges:** Conflicts with existing financial laws and the uncertainty of future regulations.
- **Security Vulnerabilities:** Cyberattacks on crypto wallets or exchanges could lead to massive losses.
  - **Example:** \$600M Poly Network hack (2021).
- **Environmental Impact:** Energy-intensive mining (e.g., Bitcoin's proof-of-work) conflicts with climate goals.
- **Adoption Barriers:** Public scepticism and limited institutional trust in crypto as a reserve asset.
  - Liquidity challenges in converting large crypto holdings to fiat currency.

#### Way forward for India

- **Start Small:** Can allocate 1-2% of forex reserves (\$6–12 billion) to crypto for controlled experimentation.
- **Build Regulatory Frameworks:** Can learn from Singapore and Japan's balanced models to mitigate risks while encouraging innovation.
- **Leverage Tech Expertise:** Can develop secure custody solutions and blockchain infrastructure using domestic talent.
- **Focus on Utility:** Can prioritize crypto use cases like remittances and DeFi to drive real-world adoption.
- **Monitor Global Trends:** Can align with evolving international standards (e.g., US Bitcoin ETFs, EU's MiCA regulations).

## 7.3. LIGHT SUPERSOLID

#### Why in the News?

For the first time scientists of Italy's National Research Council have **made supersolid from light**.

#### About Supersolid

- **Definition:** It is a **rare state of matter** that **exhibits both solid-like structure and frictionless flow**.
  - It is **defined by quantum mechanics** where **particles condense into an orderly, crystalline solid but also move like a liquid** that has no viscosity (thus, zero friction exist in their movement).
- **Initial Research:** **First predicted in the 1960s**, Supersolid were demonstrated in **2017** using **ultracold Bose–Einstein Condensates (BEC)**.
  - So far Supersolid **required extremely low temperatures** usually very **close to absolute zero** (0 Kelvin or -273.15°C) where **quantum effects appear**.
  - At this temperature, **atoms have minimal energy**, and matter behaves in unusual ways, such as forming the **fifth state of matter** also termed as **BECs**.
  - While scientists **cannot reach absolute zero exactly**, they can get extremely close in laboratory conditions.
- **Current Research:** The new research used a **novel mechanism** that relies on the properties of "**polariton**" **systems**.
  - **Polaritons** are formed by **coupling light and quasiparticles like excitons** through strong electromagnetic interactions.
  - **Quasiparticles** are mathematical construct which **treat elementary excitations in solids**, like spin waves, **as particles**.
    - > As the particles do not consist of matter, they **are called quasi particles**.

## What is the Significance of Converting Light into Supersolid?

- Supersolid light could play a **crucial role in developing more stable quantum bits (qubits)**, which are essential for the advancement of quantum computing.
- The **ability to manipulate light** in this way could **revolutionize optical devices, photonic circuits, and even fundamental quantum mechanics research**.
- The ability to **manipulate light at this level allows researchers to explore new realms of material science** and could lead to advancements in how we understand and use energy.

### About Light

- The **fastest physical thing** in the universe is **light**, which travels at **299,792.458 km/s**.
- **Light is believed to exhibit the wave-particle duality.**
  - A **particle** on the classical view is a **concentration of energy and other properties** in space and time, whereas a **wave** is **spread out over a larger region** of space and time.
- **Quantum mechanics** tells us that **light can behave simultaneously as a particle or a wave**.

*To know more about **Bose-Einstein Condensates**, refer to **Article 7.2 Satyendra Nath Bose (S. N. Bose) in November 2024 Monthly Current Affairs Magazine**.*

## 7.4. ANTI-RETROVIRAL THERAPY (ART) DRUGS

### Why in the News?

The Supreme Court of India has directed all States to file responses regarding systemic issues in the procurement and supply of Anti-Retroviral Therapy (ART) drugs for People Living with HIV/AIDS (PLHIV).

### About Anti-Retroviral Therapy (ART) drugs

- ART is the treatment of people infected with **human immunodeficiency virus (HIV) using anti-HIV drugs**.
- A primary goal of ART is **to reduce the viral load to an undetectable level**, which significantly reduces the risk of HIV transmission.
  - This is often referred to as **"Undetectable = Untransmittable" (U=U)**.
- ART typically involves taking a **combination of different HIV medicines** (usually 2 to 4 drugs) to increase effectiveness (often called Highly Active Antiretroviral Therapy (**HAART**)).
  - **Example:** TLD Tablet (Tenofovir, Lamivudine, and Dolutegravir).
- It should be noted that **ART is not a cure for HIV**, but it can help people with HIV live long and healthy lives.
- In India, ART drugs are **managed by National AIDS Control Organisation (NACO)**, ensuring procurement, distribution, and regulation.
  - NACO implements the **National AIDS Control Programme (NACP)**.

### About HIV/AIDS

- **HIV (human immunodeficiency virus):** It is a virus that **attacks the body's immune system**, specifically the **CD4 cells (T cells)**, which help fight infections.
- **AIDS (Acquired immunodeficiency syndrome):** It is the **final and most severe stage** of HIV infection and it occurs when the **immune system becomes too weak** to fight off life-threatening infections.
  - Not everyone with **HIV develops AIDS**, especially with proper treatment.
- **Transmission:** HIV spreads through **direct contact with certain body fluids** from an infected person such as unprotected sexual contact, blood-to-blood contact, mother-to-child transmission, etc.
- **Status in India:**
  - As per the recent **INDIA HIV ESTIMATIONS 2023 report**, **over 2.5 million people** are living with HIV in India.
  - North-east region States have the highest adult HIV prevalence (2.70% in Mizoram, 1.36% in Nagaland and 1.05% in Manipur).
  - The four high-prevalence states of Southern India (**Andhra Pradesh, Maharashtra, Karnataka, Tamil Nadu**) account for 55% of all HIV infections in the country.

- **Measures Taken:**

- **Global Efforts:**

- > UNAIDS 95-95-95 Goal (By 2030):
      - ✓ **95% of people living with HIV should know their status.**
      - ✓ **95% of diagnosed individuals should receive Anti-Retroviral Therapy (ART).**
      - ✓ **95% of those on ART should achieve viral suppression.**
    - > **The Global Fund to Fight AIDS, Tuberculosis and Malaria:** Provides financial support for **HIV/AIDS, Tuberculosis and Malaria** programs in developing countries.

- **India:**

- > **National AIDS Control Programme (NACP):** Launched in **1992**, currently in its **fifth phase (NACP-V)** (2021-2026).
    - > **Free ART Treatment & Care:** India provides **free ART drugs** through **700+ ART centres** across the country.
    - > **Legal Protection:** **HIV/AIDS (Prevention and Control) Act, 2017** mandates free ART for all HIV-positive individuals.

## 7.5. NEWS IN SHORTS

### 7.5.1. OBESITY

Recently Prime Minister stated that **in 2022, one in eight people globally is living with obesity** with **cases among children and adolescents** (5 to 19 years) has **quadrupled**.

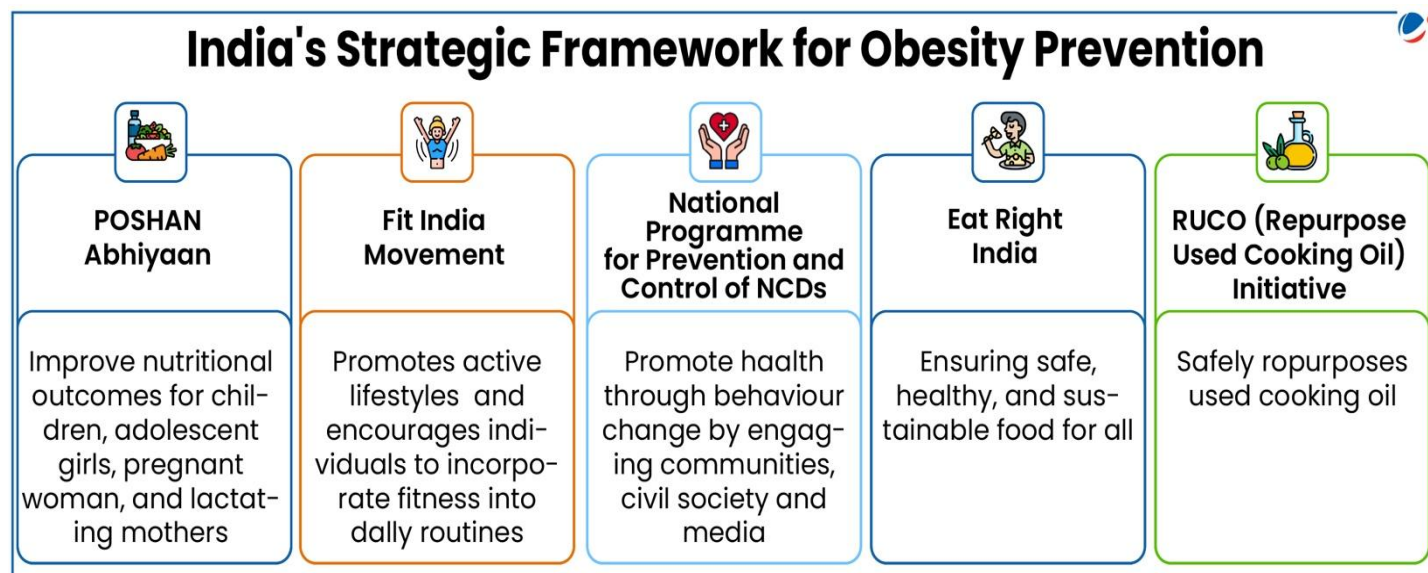
- PM also called for 10% cut in edible oil consumption to fight obesity.

#### About Obesity

- Defined as an **abnormal or excessive fat accumulation** that presents a risk to health (World Health Organization).
  - **Body Mass Index (BMI)** is used to classify obesity. It is calculated by **dividing a person's weight in kilograms by their height in meters squared ( $\text{kg/m}^2$ )**.
  - **BMI of 25 or above** is considered **overweight** and **30 or above** is classified as **obese**.
- **Health Consequences:** Rising cardiovascular diseases, diabetes, cancers, neurological disorders, chronic respiratory diseases, etc.

#### Status of obesity in India as per NFHS-5 (2019-2021)

- Overall, **24% of women** and **23% of men** are overweight or obese.
- At all India level, Child (under 5 years) overweight rates **increased from 2.1% to 3.4% between 2015-16 and 2019-21**.



## Factors Driving obesity in India

- **High-Calorie, Low-Nutrient Diets:** Increased consumption of refined carbohydrates, saturated fats and **easy access to processed foods**.
- **Sedentary Lifestyles:** Long sitting hours, excessive screen time, minimal movement in daily routines etc.
- **Use of Genetically modified crops:** Altered food composition, impacting metabolism and weight gain.

### 7.5.2. NATIONAL GENE BANK

Union Government has announced the **establishment of second National Gene Bank (NGB)** to conserve 10 lakh crop germplasm, ensuring future food and nutritional security.

- The **first** NGB was established in **1996** at the **ICAR-National Bureau of Plant Genetic Resources (NBPGR) in New Delhi**.

#### About Gene Banks

- Gene banks are **biorepositories** that store genetic material of plants, animals, and microorganisms **to preserve biodiversity and ensure long-term food security**.
- **Types of Gene Banks:** **Seed Banks** (Svalbard Global Seed Vault, Norway), **Field Gene Banks** (live plants conserved in **natural conditions**), **Cryo-preservation Banks** (preserve **tissues, embryos, and cells**), **Pollen and DNA Banks**, etc.
- **Other Gene Banks in India**
  - **Animal Gene Bank:** ICAR-National Bureau of Animal Genetic Resources (NBAGR), Haryana.
  - **Microbial Gene Bank:** ICAR-National Bureau of Agriculturally Important Microorganisms (NBAIM), Uttar Pradesh.

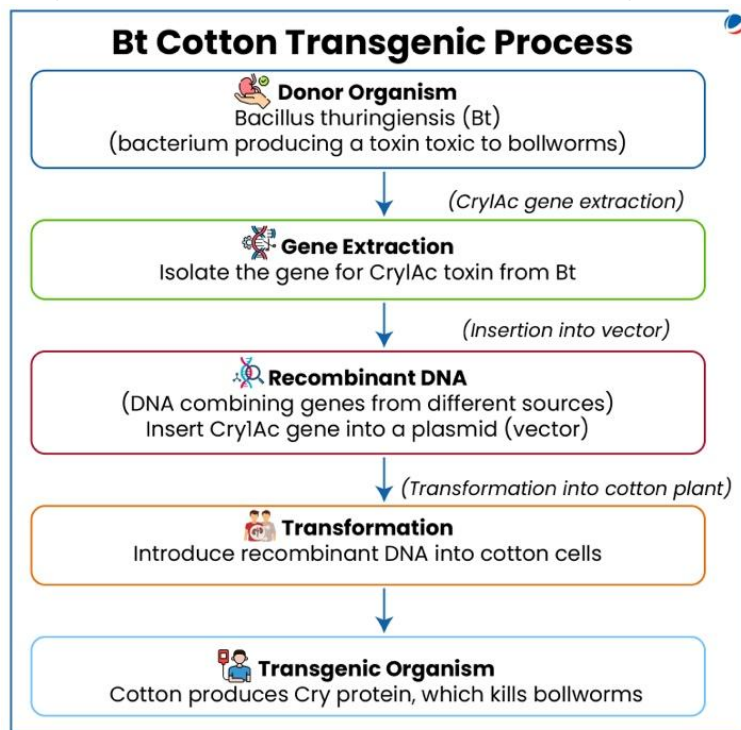
### 7.5.3. TRANSGENIC ORGANISM

Transgenic mice is in spotlight following the US President misstatement on 'transgender mice' funding.

- **Transgenic** refers to an organism or cell whose genome (**entire set of DNA instructions found in a cell**) has been altered by the introduction of **one or more foreign DNA sequences from another species**.

#### About Transgenic Organisms

- **Concept:** Transgenic organisms express new traits or proteins not native to their species, with '**trans**' meaning from '**one to another**' and '**genetic**' referring to **genes**.
- **Transgenic Mouse:** key model for studying biological processes due to its **physiological, anatomical, and genomic similarities with humans**.
- **Purpose & Applications**
  - **Understanding Normal Physiological Processes:** E.g., Transgenic mice created to study metabolism & blood cell production.
  - **Modeling Human Diseases:** E.g., Transgenic pigs, used to model human diseases like Alzheimer's.
  - **Developing New Treatments:** E.g., Transgenic zebrafish, accelerate drug testing & therapy development.
  - **Production of Therapeutic Proteins:** E.g., **Transgenic goats** developed to produce **human antithrombin** (a blood-clotting protein).
  - **Disease Resistance Crops:** E.g., **Bt Cotton** is genetically modified to be resistant to bollworms.



- **Challenges**
  - **Ethical Concerns:** Related to animal welfare, and unintended consequences due to genetic modification.
  - **Environmental Risks:** Potential for Transgenic organisms to disrupt ecosystems.
- **Regulation in India: 'Rules, 1989' under the Environment (Protection) Act, 1986,** Genetic Engineering Appraisal Committee (GEAC), etc.

#### 7.5.4. MEITY LAUNCHED MULTIPLE INITIATIVES TO BOOST THE AI ECOSYSTEM

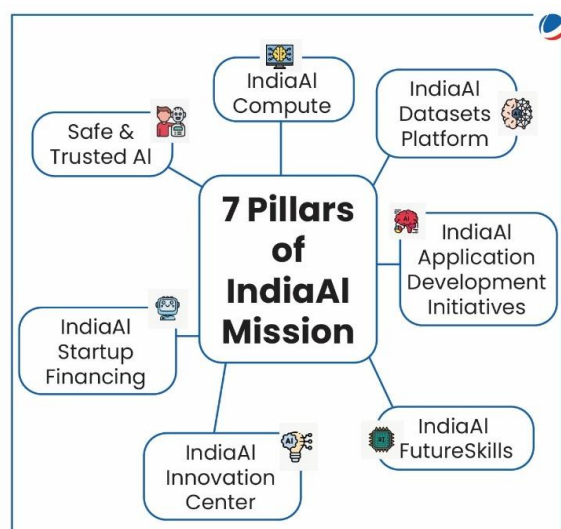
The initiatives have been launched under the **IndiaAI Mission** during its anniversary celebration.

##### Key Initiatives Launched

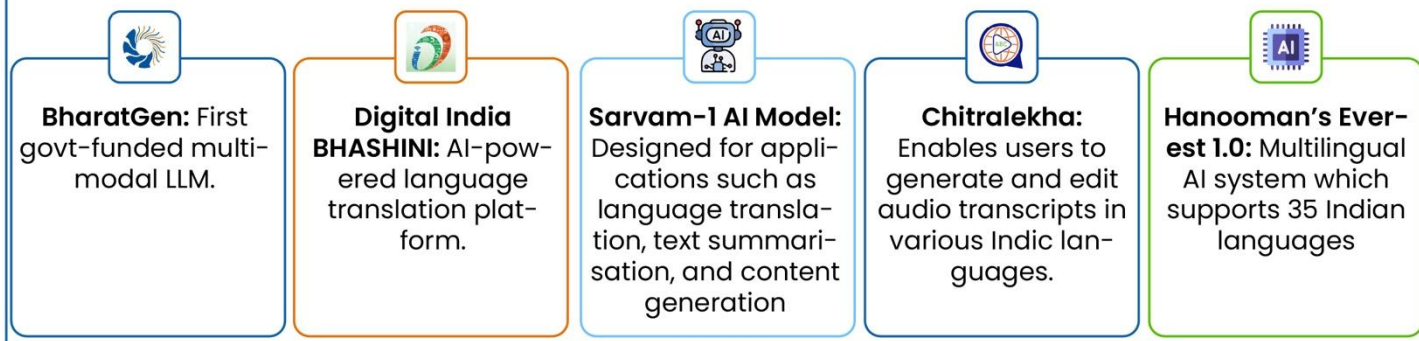
- **AIKosha: IndiaAI Datasets Platform:** A secured **repository of datasets, AI models, and use cases** with AI sandbox capabilities.
- **IndiaAI Compute Portal:** Provides **subsidized AI compute, storage, and network services** with access to 10,000+ **graphics processing units (GPUs)**.
  - A **GPU** is a circuit that performs mathematical calculations to process graphics and videos.
- **AI Competency Framework:** Equips **public sector officials with AI skills** and competency mapping.
- **iGOT-AI for Government Officials:** AI-powered personalized learning on the **iGOT Karmayogi platform**.
- **Other Initiatives:** IndiaAI Startups Global Acceleration Program, IndiaAI Innovation Challenge, and IndiaAI FutureSkills Fellowship.

##### About IndiaAI Mission

- **Launched:** March 2024, with a budget of ₹10,371.92 crore.
- **Aim:** Foster AI innovation **through public-private partnerships** and advanced AI infrastructure.
  - It will be achieved by democratizing computing access, providing startup risk capital, ensuring socially impactful AI projects, bolstering ethical AI, etc.
- **Ministry:** An umbrella programme by **MeitY**.
- **Implementing agency:** 'IndiaAI' Independent Business Division under Digital India Corporation.



#### India's Key AI Models & Language Technologies



#### 7.5.5. AI WASHING

Venture capitalists are concerned about **AI washing used by startups** to secure funding.

##### About AI Washing

- AI washing is the **practice of overstating or misrepresenting the use of AI** in products, services or business strategies.

- AI washing takes its name from **greenwashing**, which is when companies make false or misleading claims about positive impact they have on the environment.
- **Examples of AI Washing:** Mislabelling automation as AI, Superficial AI claims , Using buzzwords phrases like “AI-driven” etc.

### 7.5.6. NATIONAL INNOVATION CHALLENGE FOR DRONE APPLICATION AND RESEARCH (NIDAR)

The Ministry of Electronics and Information Technology (MeitY), in collaboration with **the Drone Federation India (DFI)**, launched the **NIDAR** under the SwaYaan initiative.

- NIDAR aims to inspire and engage India’s student and research communities **to develop collaborative autonomous drones, addressing real-world challenges in the field of Disaster Management and Precision Agriculture.**

#### About SwaYaan

- Approved by **MeitY in 2022.**
- Focuses on **capacity building for human resource development** in Unmanned Aircraft Systems (UAS), including drones and related technologies.

### 7.5.7. NORTH INDIA’S FIRST NUCLEAR POWER PROJECT

North India’s first nuclear power project will be established in Gorakhpur, Haryana.

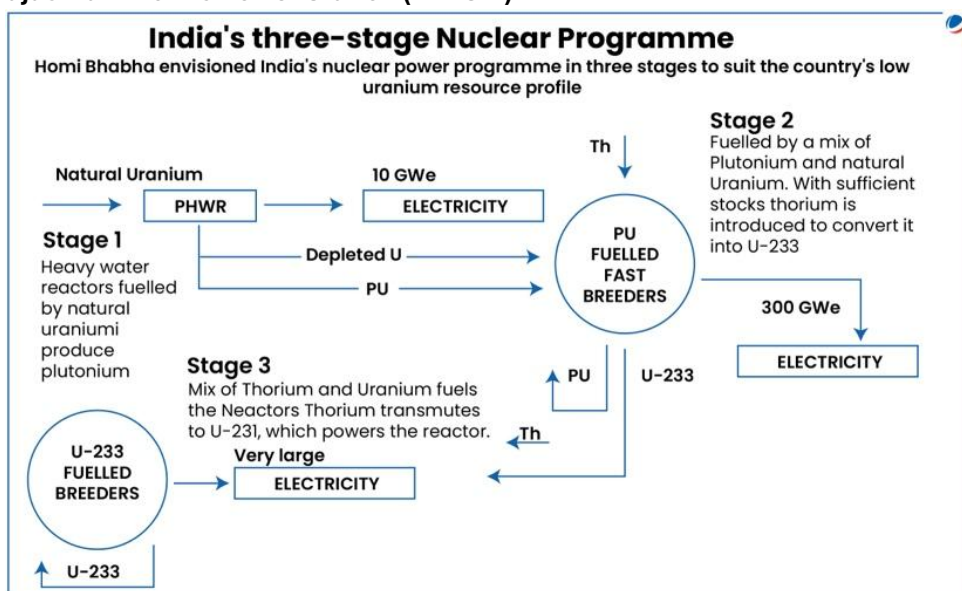
- Gorakhpur project consists of two twin units, each with a **Pressurized Heavy Water Reactor (PHWR)**, for a **total capacity of 2800 MW**

#### About PHWR

- A **PHWR** uses **Heavy Water ( $D_2O$ )** as both coolant and moderator, with **natural uranium** as fuel.
  - Heavy water is **water that contains heavy hydrogen** (also known as deuterium) in place of regular hydrogen.
  - Heavy water is used because it **slows down neutrons** effectively and also has a **low probability of absorption of neutrons.**
- **India’s PHWR Development**
  - Introduced through **Indo-Canadian nuclear cooperation** in the 1960s.
  - First **220 MW reactor** built at **Rajasthan Atomic Power Station (RAPS-1).**
  - After **Pokhran-1 (1974)**, Canada withdrew support, leading India to **indigenously develop and standardize** the 220 MW PHWR design.

#### Recent Developments in Nuclear Energy in India

- **Nuclear Energy Mission** envisages deployment of **100 GWe of nuclear energy by 2047.**
  - India currently has about 8.1 GW installed.
- New Uranium Deposit discovered in **India's oldest Uranium Mine, the Jaduguda Mines** in Jharkhand.
- First two units of the indigenous **700 MWe PHWR at Kakrapar, Gujarat (KAPS - 3 & 4)** have **started commercial operation** in FY 2023-24.
- **Country's first Prototype Fast Breeder Reactor (PFBR 500 Mwe)** achieved key milestones in 2024.



- **NPCIL and NTPC formed ASHVINI**, a Joint Venture to build and operate nuclear plants including the upcoming **4x700 MWe PHWR Mahi-Banswara Rajasthan Atomic Power Project**.

*To know more about **Nuclear Energy Mission**, refer to **Article 7.1. Nuclear Energy Mission in February 2025 Monthly Current Affairs Magazine**.*

### 7.5.8. NASA'S ASTRONAUTS RETURN TO EARTH AFTER BEING STUCK IN SPACE FOR 286 DAYS

NASA astronauts, Sunita Williams and Butch Wilmore, had travelled to the **International Space Station (ISS)** on board **Boeing's CST-100 Starliner**.

- Starliner experienced **helium leaks and a malfunctioning thruster**, which helps steer and control reentry making it unsafe for astronauts.
- Soviet cosmonaut **Valeri Polyakov holds the record for the longest single stay** in space, spending 438 days aboard the **Mir space station**.

#### Opportunities from Extended Stay

- **Medical Research:** Offers a rare chance to study **unplanned long-term space exposure** and its effects on the human body.
- **Technology Testing:** Helps assess how life-support systems, spacecraft, and onboard equipment perform beyond their intended mission durations.
- **Deep-Space Mission Preparation:** Provides valuable data for planning **future Mars and lunar missions**, where astronauts will spend extended periods in space.

#### Health Challenges in Space:

- **Space Radiation:** Exposure to cosmic rays and solar radiation increases the **risk of cancer and other radiation-induced illnesses**.
- **Gravity Fields:** Microgravity leads to **muscle atrophy and bone density loss**, while re-exposure to Earth's gravity can affect balance and coordination.
  - NASA observes weight-bearing bone loss of **1% to 1.5% per month** in microgravity.
- **Isolation and Confinement:** The psychological effects of being in confined spaces away from Earth can **impact mental well-being and team dynamics**.

#### International Space Station (ISS)



It is a **habitable artificial satellite**, in low Earth orbit (at an altitude of between 370–460 km).



**Key partners:** European countries (represented by European Space Agency), United States (National Aeronautics and Space Administration), Japan (Japan Aerospace Exploration Agency), Canada (Canadian Space Agency) and Russia (Roscosmos).



**Objectives:** Scientific research, technology testing, and deep-space exploration preparation.

### 7.5.9. STARLINK SATELLITE INTERNET

Indian telecom companies Airtel and Reliance Jio ink pacts with SpaceX to bring starlink's satellite internet services to India.

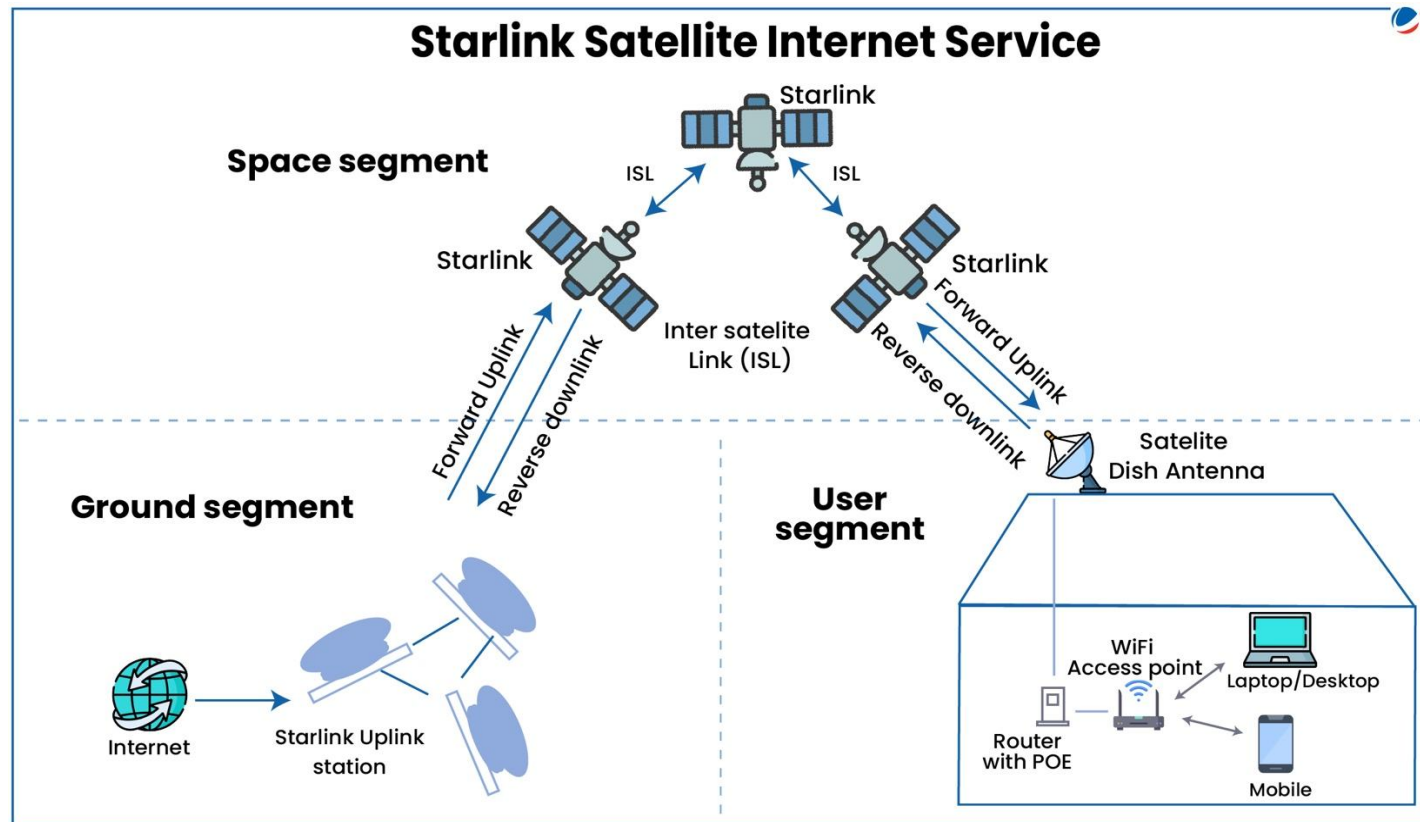
- Starlink is the **world's first and largest satellite constellation that uses Low Earth Orbit (LEO)** to provide high-speed, low-latency broadband internet.

#### Satellite Internet

- It is a **wireless internet through communication satellites** orbiting the Earth and is location independent, providing global coverage.
- Satellites communicate with each other using **lasers**, reducing dependence on **ground stations**.

## Starlink Satellite Internet Service

- Presently, there are around **7,086 starlink satellites** in orbit.
- Each starlink satellite:
  - Contains **3 space lasers** (Optical Intersatellite Links or ISLs) operating at up to 200 Gbps, which together across the constellation form a global internet mesh.
  - Uses **5 advanced Ku-band phased array antennas** and **3 dual-band (Ka-band and E-band) antennas** to provide high-bandwidth connectivity.



## Significance of Satellite Internet

- **Improving access:** Suited for unconnected areas or areas with unreliable connectivity.
- **Connectivity during Disasters:** Starlink provided connectivity to Tonga after a massive volcano eruption and tsunamis.
- **Military applications:** Provides connectivity between military bases and military planes, ships, drones etc.

## Concerns

- **Astronomical Interference:** Bright light emitted by satellites in the night sky could interfere with astronomical observations.
- **Atmospheric changes:** Plan to steering out of service starlink satellites into Earth's atmosphere risks altering the atmospheric chemistry.
- **Technical limitations:** Disruptions by extreme weather conditions and geomagnetic storms.

## 7.5.10. METEORITE

Scientists confirm meteorite fall in a village in Beed (Maharashtra).

- **Meteorites** are when a **meteoroid** survives its trip through the atmosphere and **hits the ground**.

## Difference between Meteoroid, Meteor and Meteorite



### In space

#### Meteoroid

- ⊗ **They are space rocks**, usually, pieces of other, larger bodies that have been broken or blasted off. E.g. Planets, asteroids, comets.
- ⊗ They are both rocky and/or metallic.
- ⊗ They are smaller than asteroids and contain less water and ice than comets.



### In atmosphere

#### Meteor

- ⊗ They are formed when meteoroids enter the Earth's or a planet's **atmosphere**.
- ⊗ They are called '**shooting stars**' as they enter with **high speed** and burn up due to atmospheric pressure.
- ⊗ '**Meteor showers**' is a celestial event where several meteors hit Earth's atmosphere over a short period.



### On earth

#### Meteorite

- ⊗ When a meteoroid survives the trip through the atmosphere and hits the ground, it is called a Meteorite.
- ⊗ **Types:** stony, iron, and stony-iron. They have a dark, burned exterior
- ⊗ with a roughened, smooth, or thumbprint surface due to thermal ablation.
- ⊗ They can create '**Impact Craters**' on impact with the surface. E.g. Lonar Lake (Maharashtra)

**Note1:** >50,000 meteorites have been found on Earth. Of these ~99.8% come from asteroids. (NASA).

**Note2:** In India, Geological Survey of India (GSI) is the custodian of all meteorite falls/finds in the country.

### Significance of studying Meteorites

- **Understanding Solar Systems:** They contain in themselves past records of **our solar system's history**.
- **Geological composition:** They provide insights into **geochemistry and mineral composition** of the planets and solar system.
- **Helps in understanding evolution of terrestrial planets** including Earth and probe origin and evolution of life.

### Exploration Initiatives

- **NASA All Sky Fireball Network:** It is a network of cameras to observe **meteors** in the sky **brighter than Venus**, which are called **fireballs**.
- **Canada's CMOR (Canadian Meteor Orbit Radar):** It aims to detect the speed, direction, and location of meteoroids.

## 7.5.11. GLOBAL ASTROMETRIC INTERFEROMETER FOR ASTROPHYSICS (GAIA)

European Space Agency (ESA) shut down its **space observatory mission, GAIA**.

### About Global Astrometric Interferometer for Astrophysics (GAIA)

- It is a **mission** to chart a **three-dimensional map** of our Galaxy, the Milky Way.
- Gaia was positioned in **Lagrange point 2 (L2)**, around 1.5 million kilometres '**behind**' the Earth, when viewed from the Sun.
  - **Lagrangian Points** are locations in space where **gravitational forces and the orbital motion** of a body **balance** each other.
- **Objective:** Designed for **astrometry** (the science of mapping the cosmos) through precise measurement of the location and movement of **stars and other celestial bodies**.

### 7.5.12. ABEL PRIZE

Japanese mathematician **Masaki Kashiwara (78)** won the **Abel Prize**, often called the "**Nobel of Mathematics.**"

- He was honored for his work in **algebraic analysis, representation theory, D-modules, and crystal bases.**

#### About the Abel Prize

- **Annual award** for outstanding mathematicians.
- **Named after mathematicians** Niels Henrik Abel (1802–29).
  - Abel demonstrated the **impossibility of solving the general quintic equation in radicals.**
  - He was also an innovator in the field of **elliptic functions (Abelian functions).**
- **Established** in 2002 by the Norwegian Government.
- **Managed by** the Norwegian Academy of Science and Letters.
- **First winner:** Jean-Pierre Serre (2003).
- **Prize:** 7.5 million kroner (~\$720,000) and a glass plaque.

**NOTE:** International Mathematical Union, with UNESCO's support, declared **2000** as **World Mathematical Year.**



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## 8. CULTURE

### 8.1. UNESCO WORLD HERITAGE SITES

#### Why in the News?

Six sites have been added to **India's Tentative List by UNESCO's World Heritage Centre** in 2025.

#### More on the News

- A tentative list is an **“inventory” of properties** a country believes **deserves to be a World Heritage Site**.
- **Process:** After inclusion in Tentative List, the country has to prepare a **nomination document** that will be considered by **UNESCO World Heritage Committee**.
  - In India, **Indian National Commission for Co-operation with UNESCO (INCCU)**, and **Archaeological Survey of India (ASI)** play a key role in this regard.
- **In India, 62 sites** are listed on UNESCO's **Tentative List**.
- The 6 sites are
  - **Mudumal Menhirs** of Telangana
  - **Kanger Valley National Park** in Chhattisgarh
  - **Ashokan Edict Sites** in multiple states
  - **Chausath Yogini Temples** in Madhya Pradesh and Odisha
  - **Gupta Temples** in multiple states
  - Palace-Fortresses of the **Bundelas in Madhya Pradesh and Uttar Pradesh**.

#### Do you know?

➤ International Council on Monuments and Sites (ICOMOS) **celebrates April 18** as International Day for Monuments and Sites, popularly known as **World Heritage Day**.

#### What are UNESCO World Heritage Sites (WHS)?

- A **World Heritage Site** is a location recognised by **UNESCO** for its **“outstanding universal value”**.
- It is guided by Convention Concerning Protection of World Cultural and Natural Heritage (called **World Heritage Convention**).
- **Three categories:** Cultural heritage, Natural heritage, and Mixed heritage (cultural as well as natural).

#### Criteria for selection

- **A site must meet at least one of these criteria:** represent human creative genius, showcase cultural or historical significance, exemplify architectural, ecological, or geological importance, or contain exceptional natural beauty and biodiversity. It should contribute to human heritage, on-going natural processes, or conservation efforts.
  - **Other considerations:** The **protection, management, authenticity and integrity** of properties.

#### World Heritage Convention (Adopted in 1972 by General Conference of UNESCO)

- It came in to effect in 1975 and **defines** kind of **natural or cultural sites** which can be considered for inscription on **World Heritage List**.
- **World Heritage Committee (WHC)** was constituted based on Convention within UNESCO.
- **List of World Heritage in Danger** and **World Heritage Fund** were established in **1975** under the Convention.
- India ratified the **World Heritage Convention** in **1977**.

#### Key Developments under World Heritage Convention



➤ **Budapest Declaration on World Heritage (2002):** Highlighted Strategic Objectives- **“4 Cs”** namely, **Credibility, Conservation, Capacity-building and Communication**.

➤ This was modified to **“5 Cs”** by adding **Community** to Strategic Objectives.



**The World Heritage Partners Initiative (PACT) (1992):** To encourage **public-private partnerships (PPP)** and develop a framework for inclusion of various institutions and individuals in conservation of WHSs.



**Warsaw Recommendation on Recovery and Reconstruction of Cultural Heritage (2018):** Provide universal **guidelines** to recover and reconstruct WHSs following **armed conflicts, disasters and natural hazards**.

## UNESCO World Heritage Committee (Intergovernmental Committee for Protection of the Cultural and Natural Heritage of Outstanding Universal Value)

- **Composition: Members** selected from amongst **196 States Parties**. (India is currently a **member**)
- **Term of office: 6 years** (Most States Parties voluntarily choose to be Members for only **4 years**)
- **Functions:**
  - It meets at least once a year, to deliberate **addition, removal, or modification** of items on WHSs list.
  - Performs **regular audits** of designated Sites, Can List a threatened site as **World Heritage in Danger**.
  - **To remove a property from list** whose Outstanding Universal Value is **lost or destroyed**.
- **India for 1st time hosted 46th World Heritage Committee Meeting** in July **2024** in **New Delhi**. It was organized by **ASI** on behalf of **Ministry of Culture**.
  - **'Moidams'** The Mound-Burial System of Ahom Dynasty Inscribed in the **UNESCO World Heritage List** as India's 43rd Entry.
- **World Heritage Fund (Fund for Protection of World Cultural and Natural Heritage of Outstanding Universal Value):** It was established in **1977** under **WHC**.
  - **Resources:** Contributions from **States Parties**, **voluntary** contributions by governments, foundations, private sector, or the public.



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# World Heritage Site



- The architectural work of Le Corbusier (Chandigarh)

- ★ Keoladeo national park
- The Jantar Mantar, Jaipur
- Jaipur City
- Hill forts of Rajasthan
  - Jaisalmer fort
  - Chittorgarh fort
  - kumbhalgarh fort
  - Gagron fort
  - Ranthambore fort
  - Amber fort

- Dholavira Harappan city
- Rani-ki-vov the queen's Stepwell) at patan
- Historic city of Ahmedabad
- Champaner pavagadh archaeological park



- Chhatrapati Shivaji Terminus (formerly victoria terminus)
- Victorian gothic and art deco ensembles of Mumbai
- Elephanta caves
- Ajanta coves
- Ellora caves



- Churches and convents of Goa

- Group of monuments at Pattadakal
- Group of monuments at Hampi
- Hoysala Temples

- Qutub Minar
- Redfort complex
- Humayun tomb



- ★ Great Himalayan National conversation park
- Kalka Shimla Railway

- ★ Nanda devi and Valley of Flowers National Parks



- Taj Mahal
- Fatehpur Sikri
- Agra Fort

- Archaeological Site of Nalanda Mahavihara at Nalanda, Bihar
- Mahabodhi Temple Complex, Bihar



- ▲ Khangchendzonga national park



- ★ Kaziranga national park
- ★ Manas wildlife sanctuary
- Moidams of Assam



- ★ Sundarbans national park
- Santiniketan
- Darjeeling Himalayan Railway



- Sun temple, Konark



- ★ Western ghats



- Group of monuments at Mahabalipuram
- Great living chola temples
- Nilgiri mountain railways



- Khajuraho group of monuments
- Buddhist monuments at sanchi
- Rock shelters of Bhimbetka

- Cultural Sites (35)
- ★ Natural sites (7)
- ▲ Mixed site (1)

**Note: The Darjeeling Himalayan Railway** (West Bengal), **Nilgiri Mountain Railway** (Tamil Nadu) and **Kalka Shimla Railway** (Himachal Pradesh) together form one World Heritage Site called the Mountain Railways of India

Scan the QR code to know more about **India's Cultural heritage**

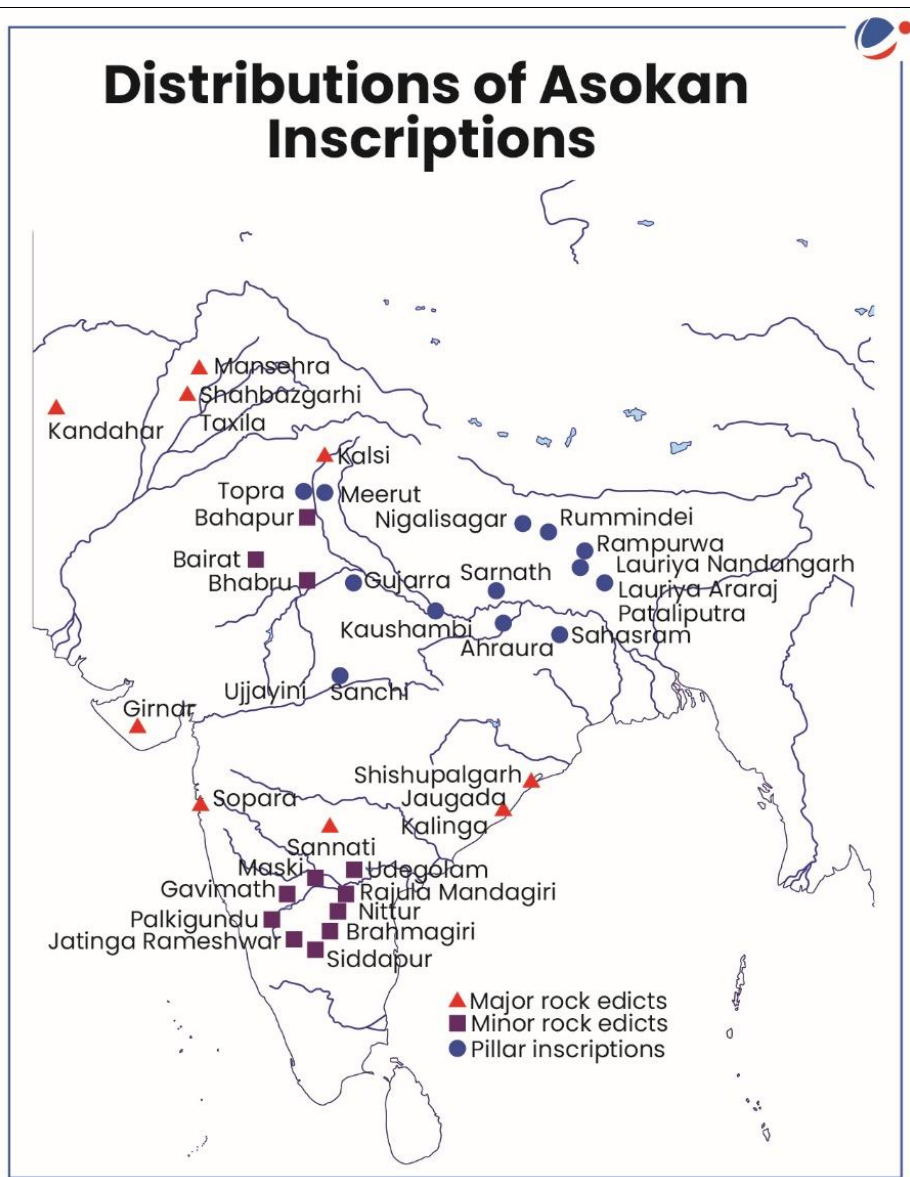
**Weekly Focus #123**- India's cultural Heritage: Preserving the past, Inspiring the future



### 8.1.1. ASHOKAN EDICT SITES

- **Period:** Collection of more than 30 **inscriptions on rocks, pillars, boulders, and cave walls**, made by **Emperor Ashoka of Mauryan Empire** during his reign, from 268 BCE to 232 BCE.
  - They are the **first written inscriptions in India** following decline of **Harappan civilization**.
  - There are **14 Major Rock Edicts, seven Pillar Edicts and some Minor Rock Inscriptions** to his credit.
- **Purpose:** His inscriptions were **royal decrees**, mostly in his own words, **pertaining to social, cultural and administrative matters** addressed to nobility, officials or general populace.
- **Language:** Primarily Prakrit, with Aramaic and Greek in northwestern region.
- **Script:** Brahmi (Main Script), Kharoshti (Used in Gandharan Region), Greek and Aramaic.
- **Materials:** Pillars were made from buff-colored hard sandstone from Chunar and spotted red and white sandstone from Mathura.
- **Other Features of edicts:**
  - Locations of **his edicts (Dhamma-lipis)** which were majorly inscribed to advertise **his policy of Dhamma** allows us to estimate vast territorial spread of his empire.
  - Ashoka uses his name "**Devanampiya**" (**Beloved of the Gods**) in four places namely: **Maski, Brahmagiri (Karnataka), Gujjara (MP), and Nettur (AP)**.
  - **Kanganahalli Inscription** Found on a stupa in Karnataka, identifies Ashoka as "**Ranyo Asoka**" (**King Ashoka**).

- **Major Rock Edicts:** Girnar (Gujrat), Dhauli (Odisha), Jauguda (Odisha), Sopara (Maharashtra), Kalsi (Uttarakhand), Erragudi (Andhra Pradesh), Sannathi (Karnataka), Shishupalgarh (Odisha); Mansehra and Shahbazgarhi (Pakistan); Kandahar (Afghanistan) (earliest known Ashokan inscription)
- **Minor Rock Edicts:** Sasaram and Ratanpurwa (Bihar), Panguraria, Rupnath and Gujjara (Madhya Pradesh), Bairat (Rajasthan), Brahmagiri, Siddapura, Jatinga-Rameshwara, Maski, Gavimath, Pavigunda, Udaegolam, Nittur (Karnataka); Rajula Mandagiri and Erragudi (Andhra Pradesh), Bahapur (Delhi), Ahraura (Uttar Pradesh)
- **Pillar Edicts:** Allahabad -Kosam (Queens edict- Uttar Pradesh), Lauriya-Araraj, Lauriya-Nandangarh and Rampurwa (Bihar); Delhi-Meerut, Delhi-Topra, Sanchi (Madhya Pradesh).
- **Others:** Sarnath Schism edicts (Uttar Pradesh), Barabar cave inscription (Bihar).





## Major Ashokan rock edicts

Edict	Key Points
I	<b>Prohibits animal slaughter</b> and <b>festive killings</b> ; Ashoka stops his own hunting practices.
II	Medical care for humans/animals; mentions <b>Chola, Pandya, Satyaputra, and Keralaputra</b> , and Greek ruler <b>Antiochus II</b> .
III	Issued 12 years after coronation; promotes generosity to Brahmins; instructs Yuktas (subordinate officers), <b>Pradesikas</b> (district heads), and <b>Rajukas</b> (rural officers) to spread Dhamma.
IV	Advocates <b>Dhammaghosa</b> (sound of righteousness) over <b>Bherighosa</b> (sound of war); emphasizes moral and ethical governance; promotes peace and righteous conduct in society.
V	Declares "Every human is my child"; appoints <b>Dhamma Mahamatras</b> ; addresses slavery.
VI	Emphasizes welfare and administration; Ashoka's communication with subjects.
VII	Encourages tolerance and respect among religions/sects.
VIII	Ashoka's <b>first Dhamma Yatra</b> to Bodhgaya.
IX	Condemns extravagant ceremonies, emphasizes simple rituals aligned with Dhamma.
X	Criticizes pursuit of fame and glory; prioritizes <b>Dhamma over materialism</b> .
XI	Declares Dhamma as primary policy, emphasizes respect for elders, kindness to servants/slaves, and ethical conduct.
XII	Promotes tolerance among religions; highlights <b>Mahamatras</b> for women's welfare; inscribed in <b>Kandahar Greek Edict</b> .
XIII	Largest and <b>most detailed inscription</b> ; expresses remorse after <b>Kalinga War</b> , mentions Ashoka's Dhamma diplomacy with <b>Greek rulers</b> (Antiochus II, Ptolemy II, Magas, Antigonus, Alexander of Epirus) and <b>South Indian dynasties</b> (Pandyas, Cheras, and Cholas).
XIV	Mentions the dissemination of inscriptions across the empire.

### 8.1.2. GUPTA TEMPLES

- **Gupta Empire (c. 320–550 CE)** is often hailed as “**Golden Age**” of classical India as it marked a transformative era in temple architecture.
- Structure **combines** elements of the **Nagara (North Indian)** and **Dravida (South Indian)** architectural styles.
- Temples transitioned from modest, flat-roofed shrines to structured complexes featuring **garbhagrihas (sanctums)**, **mandapas (pillared halls)**, **mukhmandapa**, and **towering śikhara (spires)**.
- **Royal patronage** for temples dedicated to Vishnu, Shiva, and Shakti was prevalent from Gupta rulers like Chandragupta I, Samudragupta, and Chandragupta II.
- **Key Features of Gupta Temples**
  - **Early stage in development of temple architecture:** Exhibiting architectural features influenced by both **Buddhist and Hindu traditions**.
  - **Structural Permanence:** This period saw a **shift** from **perishable materials** like wood to **widespread adoption of stone** alongside the continued use of brick.
  - **Emergence of 5 key temple typologies:** Square flat-roofed temples, square temples with covered ambulatories, rectangular barrel-vaulted shrines, square temples with curvilinear śikhara, and circular/octagonal temples.

- **Pillars:** Pillars in Gupta period had a new form of capital known as “vase capital” or “purnakalsa” which replaced **Mauryan tradition of inverted lotus or bell capital**.
- **Other Features:** Terraced platforms, intricate decorative elements, and integration of religious symbolism.
- **Socio-economic Significance:** Temples functioned as **economic hubs** through **land grants (Devadana)**, agrarian management, and **trade networks** (attracted traders and pilgrims along routes like **uttarāpatha (Grand Trunk Road)**), fostering **urbanization** and specialized labour guilds.

### Gupta Temples

#### Dashavatara Temple, Deogarh (Uttar Pradesh)

- It is a **late Gupta Period type** of temple built in early **6<sup>th</sup> century CE**.
- It is situated on **bank of Betwa River** which encircles it from three sides.
- It gets its name from **10 incarnations of Lord Vishnu depicted** on the temple.
- It **pioneered Shikhara form**, symbolizing **Mount Meru** as the cosmic axis.
- The tall **curving latina or rekha-prasada type** of shikhara indicates that it is an early example of **Nagara style** of temples.
- It showcases **Panchayatana style of architecture** i.e. the main shrine is built on a rectangular plinth with 4 smaller subsidiary shrines at the 4 corners.

#### Bhitargaon Temple, Kanpur (Uttar Pradesh)

- It is an **east-facing terraced brick temple** built in 5th century.
- A key feature is brick engineering adapted to sacred geometry.
- The temple is **square in plan** and has an **ardhamandapa, antarala and garbhagriha**.

#### Nachna temple, Panna (Madhya Pradesh)

- Built in the **5th-6th century CE**, it is a temple dedicated to **Shiva**.
- Popularly known as **Parvati temple**, it showcases a **mix of Nagara and Dravida architectural elements**.

#### Mahabodhi temple, Bodhgaya (Bihar)

- Original temple was built by **Emperor Asoka** in 3rd century B.C.E. Present temple dates between **5th-6th centuries**.
- It is one of earliest **Buddhist temples built entirely in brick**, still standing in India, from late Gupta period.

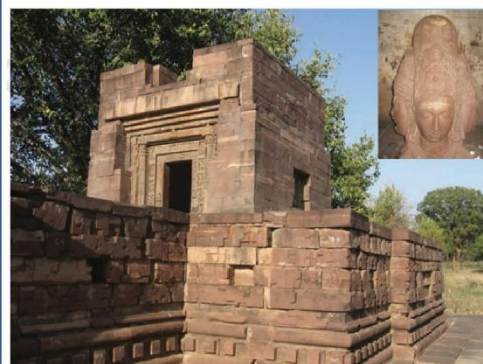
#### Other Gupta Temples

- **Madhya Pradesh:** Vamana temple, Deori; Cave No. 1, Udayagiri; Temple No. 17, Gupta Temple in Sanchi
- **Bihar:** Terraced brick temple, **Lauriya- Nandangarh**; Gupta temples at **Nalanda Mahavihara**; **Mundeshwari temple, Ramgarh** (Built of sandstone with an octagonal plan)
- **Uttar Pradesh:** Bhitari temple
- **Rajasthan:** Bhim-ki-chauri (Dara)

### Dasavatara Vishnu Temple, Deogarh



### Shiva Temple, Nachna-Kuthara, Madhya Pradesh



## 8.1.3. MUDUMAL MENHIRS OF TELANGANA

- It represents one of India's most expansive and impeccably preserved **megalithic astronomical observatory sites**.
- **Time Period:** Approximately **3500-4000 years old**.
- **Location:** Near the banks of **Krishna River** in **Telangana**.
- **Key Features**
  - **Considered largest megalithic burial site: In South India.**

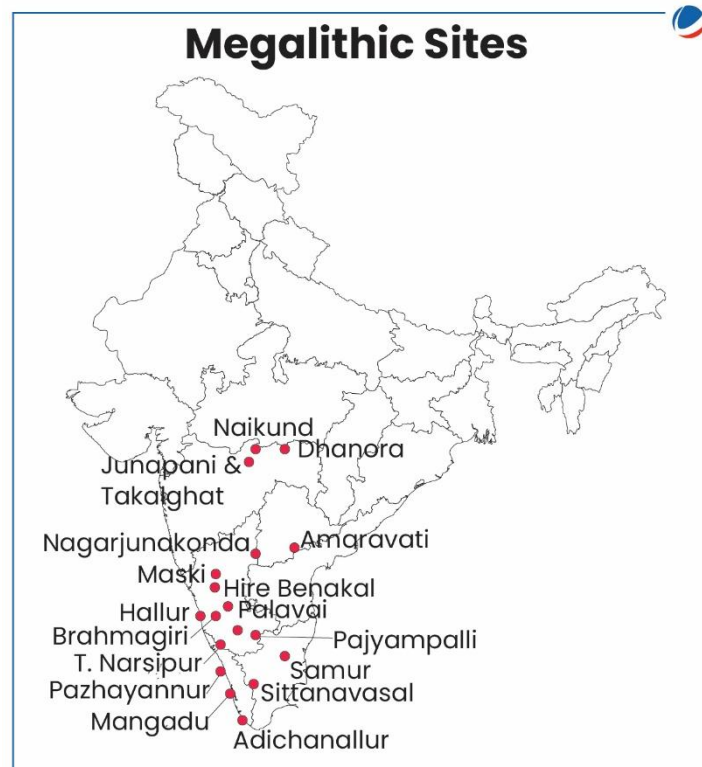
- **Depiction of Night Sky:** Only site in South Asia featuring **representations of night sky** i.e. Tangible depictions of **Ursa Major, Leo constellations** etc.
- **Ancient Observatory: Menhirs (Upright Stones)** are aligned with celestial events e.g. **solstices, equinoxes** etc.
- **Cultural Significance:** Menhirs are considered sacred by local population, who refer to them as "**Niluralla Thimmappa**" (Thimmappa of the Standing Stones), with one particular menhir being worshipped as **Goddess Yellamma**.

#### What are Megaliths sites?

- Megaliths are **large stone structures**, often used as burial sites or commemorative memorials, dating back to prehistoric cultures e.g. **Menhirs, Dolmen** etc.
- Construction of this type of structures took place mainly in the **Neolithic and continued into the Chalcolithic Age, Bronze Age and Iron Age**.

#### Megalithic Culture in India (~ 1000BC to ~ 1<sup>st</sup> century AD)

- The megalithic culture in South India was a **full-fledged Iron Age culture**.
- Megalithic culture is associated with **burial sites and Black and Red ware (BRW) pottery**.
  - **Earliest** Megalithic burials which yield first iron objects were found at **Piklihal and Hallur at Brahmagiri in Karnataka**.
- **Types of Megalithic burials: Polyolithic (Dolmen, Cairn, Cromlekh, Cist) and Monolithic (Menhir).** (See infographic)
- **Distribution:** Maharashtra, Karnataka, Tamil Nadu, Kerala, Andhra Pradesh, and Telangana.
  - **More than 1400 Megalithic sites** are known in Indian subcontinent, with **1116** of these in **Peninsular India**.
- **Subsistence:** Initially understood as settlements of nomadic pastoralists.
  - However, evidence indicates that early Iron Age communities in far south lived on a **combination of agriculture, hunting, fishing etc.** suggesting sedentary living.
- **Types of Pottery:** Included Black and Red Ware (BRW), Red Ware, and Burnished Black Ware.



#### 8.1.4. CHAUSATH YOGINI TEMPLES IN MADHYA PRADESH AND ODISHA

- The Chausath Yogini temples are temples with **64 images of Yoginis** in chambers lining **circumference** of the temple.

- **Yogini** refers to a female practitioner of yoga and **chausath** is Hindi word for the number 64.
- **Open central courtyard** has a shrine dedicated to **Lord Shiva/ Shakti** which is visible from each chamber. Dancers probably performed in central courtyard.
- **Key Features:**
  - The temples are typically **circular**, on **elevated ground** (or pedestal) and **open to the sky**.
    - > While most of these temples are circular in plan, ones in **Khajuraho, Badoh and Rikhiyan** are **rectangular**.
  - **Symbolic Representation:** Circular plan represents **time cycle, cosmic order and continuous flow of energy**.
  - **Carvings:** Temples are **simple stone load bearing structures** with **modest carvings** on the main temple structure whereas **sculptures** are **intricately carved**.
  - **Tantric and Yogic practices:** Were practised celebrating **feminine power, sensuality and fertility**.

#### Chausath Yogini Temples in India:

- **Madhya Pradesh:** Khajuraho, Mitaoli (Morena), DudhaiJabalpur, Badoh, Hinglajgarh, Shahdol, Naresar;
- **Uttar Pradesh:** Lakheri, Rikhiyan;
- **Tamil Nadu:** Kanchipuram;
- **Odisha:** Hirapur, Ranipur;

#### Chausath Yogini Temple, Morena (Ekattarso Mahadeva Temple)

- It is a circular temple constructed by **Maharaja Devapala of Kachchhapaghata dynasty** in 1323 A.D.
- Constructed using local sandstone, the temple displays intricate carvings and sculptures on its exterior and interior walls.
- Uniqueness of this Yogini temple is its **circular shape** that is popularly believed to have **inspired design of the old Indian Parliament**.
- Circular layout is believed to be a **representation of the Sri Yantra**, a sacred geometric diagram in Hinduism that symbolizes **cosmos and divine feminine energy (Shakti)**.

#### Chausath Yogini Temple, Khajuraho (Constructed in 9th century under patronage of Chandela dynasty)

- Of all the Chausath Yogini temples in India, the **Khajuraho temple** is the most **primitive** in construction and unique with its **rectangular form**.
- It is completely made of locally found coarse granite stone, unlike the other temples in Khajuraho that are built in sandstone.

#### Chausath Yogini temple, Badoh (Gadarmal temple)

- It consists of a **rectangular shrine** surmounted by a **massive shikhara**, with a small porch in front.
- The **roof** above this temple was **added later** and originally the Badoh temple must have been hypaethral (having no roof) like the other Yogini shrines.

### Chausath Yogini Temple, Morena



### Old Parliament Building



### 8.1.5. PALACE-FORTRESSES OF THE BUNDELAS IN MADHYA PRADESH AND UTTAR PRADESH

- Palace-Fortresses of the Bundelas consist of 6 significant components located in the **Bundelkhand region**, namely-
  - Garhkundar Fort:** Located in **Garhkundar**, **early capital** of Bundela Rajputs.
  - Raja Mahal (Orchha):** Commissioned during reign of Bundela ruler **Madhukar Shah**.
    - > Capital was **shifted to Orchha** in **16<sup>th</sup> century**.
  - Jahangir Mahal (Orchha):** Commissioned during reign of **Madhukar Shah** and saw major construction from the reign of **Bir Singh Deo**.
  - Datia Palace:** Known as the **Bir Singh Deo Palace**, it is a five-storied structure built by **Bir Singh Deo** in 1620.
  - Jhansi Fort:** Built by **Bir Singh Deo** in the **early 17<sup>th</sup> century**.
  - Dhubela Palace:** Built by **Maharaja Chhatrasal** in the 17<sup>th</sup> century and is strategically located near the Dhubela Lake.
- Key features of Bundela Palace-Fortresses**
  - Synthesis of Bundela Rajput and Mughal style:** Incorporating Mughal elements like ogee arches, domes, and vaulted passageways, while retaining traditional Rajput features such as chhatris and intricate carvings.
  - Local reinterpretation of Mughal motifs, murals:** Inspired from Mughal as well as symbolic themes like **ragamala and raslila**.
  - Integration of Defence and aesthetics:** It integrates advanced fortification strategies adapted to regional topography with aesthetics in form of chhatris, ornamental domes, and arched windows.
  - Architecture:** Mandala form of symmetrical planning with central, open-to-sky courtyard.

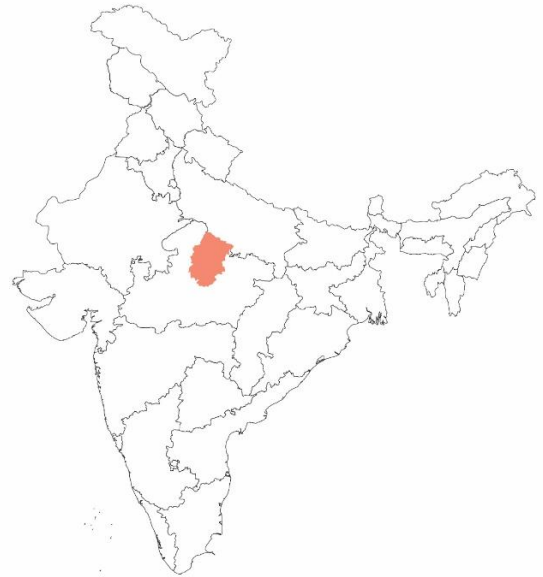
#### About Bundelas

- Bundelas belonged to **Gaharwar tribe of Rajputs**. **Raja Pancham** founded Bundela Kingdom (Last quarter of 12<sup>th</sup> century A.D).
- And made **Garhkundar their capital**, when Chandela power was in process of decline.

### 8.1.6. KANGER VALLEY NATIONAL PARK (NP) (BASTAR, CHHATTISGARH)

- Location:** Part of **Deccan peninsula - Eastern Highlands**
- Established:** Designated as NP in **1982** under Wildlife Protection Act, 1972.
- Key Features:**
  - Major River flowing through NP:** Kanger River.
  - Located on banks of Kholaba River** (A tributary of the Godavari River).
  - Diverse topography:** Low flatlands, gentle slopes, steep inclines, plateaus, deep gorges, valleys, and winding stream courses etc.

#### Bundelkhand Region



#### Garhkundar Fort



#### Raja Mahal Orchha



- **Vegetation:** It supports **distinct vegetation types** in close vicinity of each other viz., Tropical Moist Deciduous, Tropical Dry Deciduous and Tropical Semi-Evergreen Forests.
  - > It forms a **natural transition zone (ecotone region)** between **Sal** and **teak** forests in **Peninsular India**.
- **Geomorphological features:**
  - > **Karst Topography:** Include **subterranean (underground) limestone caves** with magnificent Speleothems.
  - > It is home to three exceptional caves i.e. **Kutumbasar, Kailash and Dandak** which are famous for their amazing **geological structures of Stalactites and stalagmites**.
- **Other attractions:** Tirathgarh waterfall, Kanger Dhara waterfall (Formed by a **tectonic event**)
- **Major fauna:** Panthers, striped hyenas and Dholes; **Eastern Hill Myna** (State Bird of Chhattisgarh), **giant squirrel** (a species found only in this region) etc.
  - > **High degree of endemism:** The limestone caves are home to 5 spider species that can only be found in this NP.

## 8.2. NEWS IN SHORTS

### 8.2.1. VIKRAMSHILA UNIVERSITY

A decade after Nalanda University came up in the foothills of Rajgir, work is on to revive another ancient centre of learning in Bihar i.e. Vikramshila.

#### About Vikramshila University

- **Founded:** By **Pala king Dharmapala (8th-9th Century AD)**, it thrived alongside Nalanda.
  - He also founded **Somapur Mahavihara in modern Bangladesh**.
- Known for **Vajrayana/Tantrayana Buddhism**, occult studies, and theological disciplines.
- Scholars from Tibet came to study here. Many manuscripts were **written in Sanskrit and also translated into Tibetan**.
- **Atisha Dipankar (980-1054)**, a Buddhist in the Pala kingdom was an adhyaksha (head of the university) here.
- Destroyed in late 12th century by **Bakhtiyar Khalji, a military commander of Qutubuddin Aibak**.

### 8.2.2. GEET GAWAI

The Indian Prime Minister was welcomed with a traditional Bihari cultural performance **Geet Gawai** during his state visit to Mauritius.

#### About Geet Gawai

- It is a **pre-wedding ceremony** that combines rituals, prayer, songs, music and dance.
- It is also inscribed on **UNESCO's Representative List of the Intangible Cultural Heritage of Humanity in December 2016**.
- Performed mainly by **Bhojpuri-speaking communities** having Indian descent in Mauritius.
  - **Participants:** Female family members and neighbors
- **Main-Musical Instrument:** Dholak (a two-headed drum).
- It **extends to public performances** and presently **men also participate**.

### 8.2.3. JNANPITH AWARD

Vinod Kumar Shukla is selected for 59th Jnanpith Award. It is recognized as the highest literary award in India.

#### About Jnanpith Award



- The Jnanpith Award has been presented annually by **Bharatiya Jnanpith since 1965** for outstanding contributions to Indian literature.
  - **Bharatiya Jnanpith**, established in **1944**, is one of the **premier literary organizations**.
- Jnanpith Award, **considered the highest literary award in India**, given annually for the best creative literary output to writers in any of the **22 languages recognized by the Constitution of India**.
  - From 2013, works in English language were also considered

- Eligibility for the award is restricted to Indian citizens.

#### 8.2.4. INDIA'S TRADITIONAL NEW YEAR FESTIVALS

Various traditional New Year festivals are being celebrated across different parts of India.

Traditional New Year festivals celebrated across India	
 <b>Chaitra Sukladi</b>	<ul style="list-style-type: none"> <li>⊕ Marks the <b>beginning of the Hindu New Year</b>, based on the lunar calendar.</li> <li>⊕ The Vikram Samvat calendar used in North India also begins from Chaitra Sukladi.</li> </ul>
 <b>Ugadi</b>	<ul style="list-style-type: none"> <li>⊕ Celebrated in Andhra Pradesh, Telangana, and Karnataka as the Telugu New Year.</li> <li>⊕ The word "<b>Yugadi</b>" comes from "Yug" (age) and "Adi" (beginning).</li> </ul>
 <b>Gudi Padwa</b>	<ul style="list-style-type: none"> <li>⊕ Primarily observed in Maharashtra, Goa etc.</li> </ul>
 <b>Cheti Chand</b>	<ul style="list-style-type: none"> <li>⊕ <b>Marks the beginning of the New Year</b> for Sindhi community</li> <li>⊕ It, also known as Jhulelal Jayanti, is a religious festival celebrated by Sindhi</li> </ul>
 <b>Sajibu Cheiraoba</b>	<ul style="list-style-type: none"> <li>⊕ Sajibu Nongma Panba Cheiraoba marks the Meitei New Year, celebrated in Manipur.</li> <li>⊕ Falling on the <b>first lunar day of the Sajibu month (March/April)</b>.</li> </ul>

 <b>SMART QUIZ</b>	<p>You can scan this QR code to practice the Smart Quiz of Culture at our open test online platform for testing your understanding and recalling of the concepts.</p>	
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# 9. ETHICS




## 9.1. PERSUASION

### Introduction

With the advent of the social media and new-age technologies like AI, along with the exponential rise in the reach of the smartphones, a large section of the societies are facing a looming threat of disinformation pandemic. Persuasion as a social tool offers a proactive approach to countering disinformation by influencing beliefs, attitudes, and behaviors.

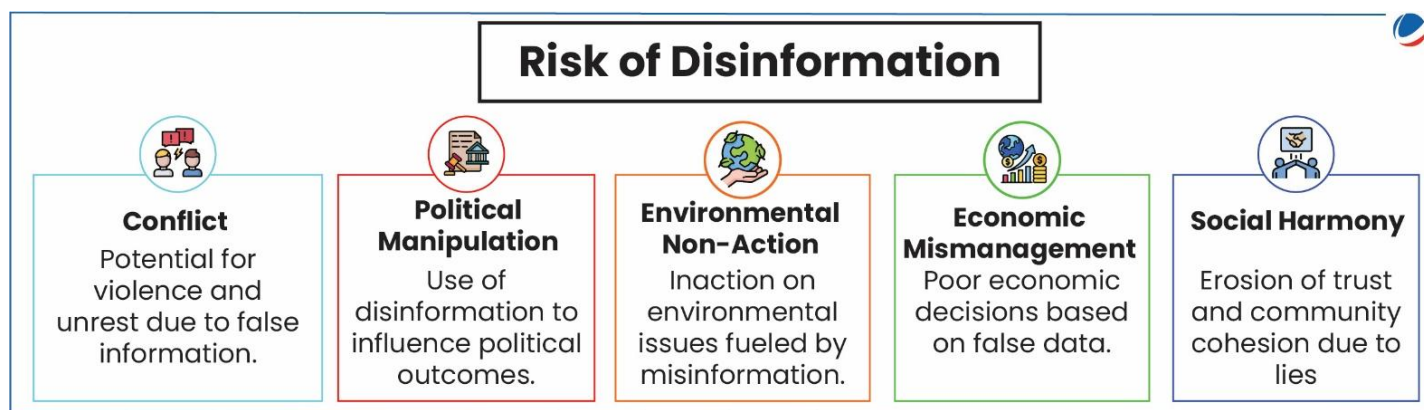
### Persuasion as a Concept

- Persuasion is the **deliberate effort to shape beliefs or actions of others through argument, emotion, or trust**, distinct from coercion or manipulation.
- Features:** Mostly **intentional, explicit and verbal**, based on ideas of perceived friendship through similarities in language and interests.

Modes of Persuasion		
 <b>Ethos (Appeal to credibility)</b> <b>E.g.,</b> Researchers citing their qualifications and previous work before presenting new findings.	 <b>Pathos (Appeal to emotions)</b> <b>E.g.,</b> Use of national symbols or historical events to stir pride and unity.	 <b>Logos (Appeal to logic)</b> <b>E.g.,</b> Showing lung cancer rates to discourage smoking in anti-tobacco campaigns.

### Factors affecting Persuasion

- Source:** Credibility, charisma, expertise, authority, etc., of the source.
  - e.g.,** Dr. Randeep Guleria, former Director AIIMS (Delhi), communicating about COVID-19 measures.
- Message content:** Relevance of the message to the audience, clarity and unambiguity of the message, etc.
  - e.g.,** Swachh Bharat Abhiyan using clear and relevant messages about sanitation and its impact on health and dignity.
- Audience characteristics:** Existing beliefs and information the audience, cultural background, etc.
  - e.g.,** Tailoring financial literacy programs to different demographics - simplified messages for rural areas, more sophisticated content for urban professionals.
- Reciprocity:** Offering something of value before making a request.
  - e.g.,** 'Give It Up' campaign for LPG Subsidy followed by PM Ujjwala Yojana.
- Social proof:** Demonstrating that others have already adopted the belief or behaviour.
  - e.g.,** 'Aadarsh Gram Yojana' developing some villages as model village to inspire and motivate neighboring villages to adopt similar development practices.
- Timing and context:** Environment in which message is delivered, current issues, etc.
  - e.g.,** Launch of "Vocal for Local" campaign during the pandemic when concerns about economic self-reliance were high.



## How Persuasion Can Work Against Disinformation?

- **Building trust and reduce resistance:** Persuasive communication focuses on establishing common ground, using credible messengers (like community leaders or peers), and showing empathy. This softens resistance and increases openness to correction.
  - **Example:** In vaccine hesitancy, using local doctors or religious leaders to communicate the importance of vaccines can be more persuasive.
- **Use of narratives to counter-narratives:** Rather than relying only on statistics, persuasive responses use stories, visuals, and emotional appeals to engage the audience on the same level.
  - **Example:** Sharing stories of people harmed by misinformation (like someone refusing COVID treatment and later regretting it) can be more impactful than citing scientific studies alone.
- **Promotes Critical Thinking Without Confrontation:** Persuasion involves **Socratic questioning**, offering alternative explanations, and encouraging people to evaluate sources themselves, which promotes reflection over defensiveness.
  - **Example:** Deradicalization programs use **dialogue-based interventions**, asking open-ended questions about inconsistencies in ideology — leading the individual to rethink their beliefs themselves.
- **Sustained engagement over time:** Repeated exposure to persuasive, respectful messaging can erode false beliefs gradually by building relationships and trust.
  - This is particularly important because one-off fact-checks are rarely enough; **disinformation is often sticky and emotionally charged**.

“People are generally better persuaded by the reasons which they have themselves discovered than by those which have come into the mind of others.”

— Blaise Pascal



### Check your Ethical Aptitude

You are a District Magistrate in a rural district of India where a false WhatsApp rumor has recently surfaced, claiming that a particular community is poisoning the local water supply to harm others. This disinformation has led to rising tensions, with some villagers refusing to drink water and others threatening violence against the accused community. The situation is escalating rapidly, and there is a risk of communal violence.

**Based on the above case study, answer the following questions:**

- Identify the ethical and administrative challenges you face in this situation. How would you prioritize your actions to address the crisis?
- Using the principles of persuasion (ethos, pathos, and logos), design a strategy to counter the disinformation and restore trust among the villagers.
- What long-term measures would you propose to prevent such incidents in your district, keeping in mind the role of education and community engagement?

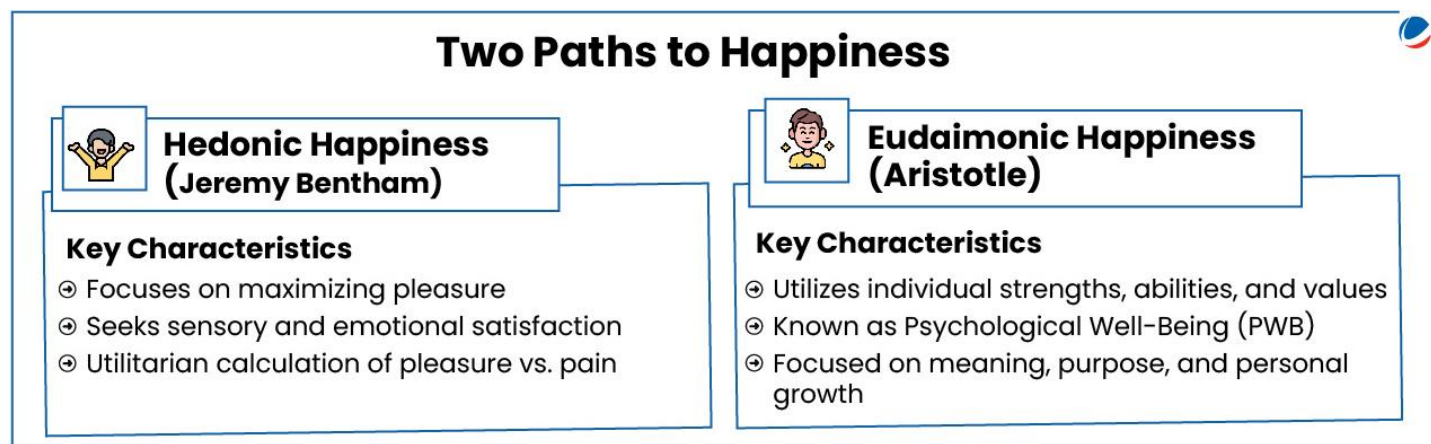
## 9.2. HAPPINESS

### Introduction

“**Happiness is a choice that requires effort at times**”- **Aeschylus**. The quote becomes significant in the backdrop of India being ranked **118th among 147** countries in **World Happiness Report 2025** where it ranks lower than its neighbours such as Nepal and Pakistan.

## Happiness

**Happiness** is generally understood as “**subjective enjoyment of life as a whole**” reflecting degree to which an individual perceives his/her life favourably. Scholars generally recognize two fundamental types:-



## The Pursuit of Happiness: A Philosophical Quest through Eastern and Western Wisdom

Conception of happiness has been a playground for philosophical inquiry, manifesting in diverse traditions:

Indian Perspectives	Western Perspective
<b>Carvaka ethics:</b> Cārvāka School says, <b>kāma</b> is the supreme end and artha is the means to fulfil this end. <b>Quote:</b> “ <i>Yavat jivet sukham jivet—As long as you live, live happily</i> ”.	<b>Epicureanism (Moderate Hedonism):</b> Freedom from physical pain and mental anxiety. <b>E.g. Strikes balance between necessary and unnecessary pleasures.</b>
<b>Bhagavad Gita: (Nishkama Karma):</b> You have a right to perform your prescribed duty, but you are not entitled to the fruits of action. <b>Quote:</b> “ <i>karmany evadhikaras te ma phalesu kadacana</i> ” -Chapter 2, Verse, 47	<b>Kant (Deontological perspective):</b> Following “Duty for Duty sake”, i.e., moral duty leads to true happiness.
<b>Buddhism: (Middle Path):</b> It finds fulfillment in experience of living, rather than arriving. There is no path to happiness, happiness is the path-Buddha	<b>Locke (Pursuit of happiness is the foundation of morality and civilization):</b> If we had <b>no desire for happiness</b> , Locke suggests, we would have remained content with <b>simple pleasures like eating and sleeping</b> . But the desire for <b>happiness pushes us onward, to greater and higher pleasures</b> .
<b>Bhakti Tradition (Happiness through devotion and offerings):</b> Physical and spiritual happiness is a state of feeling (emotion) and/or a happy mind, characterized by pleasure, excitement, satisfaction, pleasure, and intense love.	<b>Utilitarianism:</b> (Maximization of pleasure for greatest number). <b>J.S. Mill</b> calls for a <b>qualitative distinction</b> between <b>higher (intellectual, moral, and aesthetic) pleasures</b> and <b>lower (sensory, bodily) pleasures</b> , unlike Bentham
<b>Guru Nanak: (Santokh: Contentment):</b> Contentment is eternal Happiness.	<b>Stoicism: (Controlling the controllable):</b> There is only one way to happiness and that is to cease worrying about things which are beyond the power of our will. <b>Quote:</b> “ <i>You have power over your mind — not outside events</i> ”- <b>Marcus Aurelius</b> .
<b>Transcendental Perspective:</b> Individual transcends worldly limitations and enters into divine world which gives “ <b>Ananda</b> ”, blissful state of happiness. According to Upanishadic tradition, <b>Sat-Chit-Ananda</b> refers to the three attributes of the ultimate reality, <b>Brahman: Sat (existence/being), Chit (consciousness/awareness), and Ananda (bliss/joy)</b>	<b>Christian Theology: (St Augustine):</b> Real happiness lies in ultimate union with God which can be achieved through faith and divine grace

## Obstacles to Happiness in Contemporary Life

### External Factors

- **Negative Social Comparisons:** Unrealistic standards of (e.g. body, beauty) lead to reduction in one's self-worth and happiness.
- **Lack of Social Support Systems:** 19% of young adults across world reported having no one that they could count for social support (2023).
- **Financial Stress and Insecurity:** E.g. Poverty acts as a cognitive tax.
- **Exposure to Harmful Substances:** E.g. Addiction to Drug Abuse affects mental health.

### Internal Factors

- **Self-Doubt and low self-esteem:** E.g. Negative self-perception of oneself leads to anxiety, depression and lack of gratitude etc.
- **Not living in the Present Moment: Persistent pessimism, overthinking, living in the Past or Future** due to unresolved trauma, what may go wrong?
- **Excessive Screen Time:** Increased screen time and reduced free play is making young people **'The Anxious Generation'**. (Economic Survey 2023-24)

### How Civil Servants Can Promote Happiness Among Citizens

*"The happiness of society is the end of government."* — John Adams. Civil Servants can play an important role in fostering citizen's happiness and well-being by adoption of good governance, inclusive policies and empathetic administration by:

- **Adoption of People-Centric Governance and efficient service delivery:** E.g. **Gram Panchayat Development Plan**
- **Transparent & Accountability: Reducing corruption through e-governance,** right to Information, Social Audit etc.
- **Promoting Mental & Emotional Well-Being.** E.g. Tele-Manas (Toll Free Mental Health Helpline). **Work-Life Balance** by provisions of flexible work hours, etc.
- **Social Harmony & Community Building:** E.g. interfaith dialogues to curb communal tensions.
- **Making Happiness an component of Policy:** E.g. Gross National Happiness (Bhutan), Happiness Minister

### Conclusion

Happiness, while often considered elusive, can be fostered through intentional practices and strategies that enhance overall well-being. To cultivate happiness in one's life, individuals are encouraged to engage in activities and adopt habits that align with both hedonic and eudaimonic aspects of happiness.

#### Case Study

XYZ District has witnessed rapid economic transformation over the last decade, marked by substantial investments in industries, technological advancements, and urbanization. The per capita income has increased significantly, and the region has become a hub for business and trade. Government initiatives have led to improved healthcare, education, and digital connectivity. However, despite these positive trends, studies indicate an alarming increase in stress, anxiety disorders, depression, social isolation, and other mental health issues among residents, particularly among youth. The pressure to meet societal expectations, fear of failure, and a lack of emotional resilience are contributing to a growing mental health crisis.

- a) As a District Magistrate, what policy interventions can be undertaken to address rising unhappiness despite economic growth? Discuss with reference to governance, public policy, and community development.
- b) Happiness is an essential component of human development. Critically analyse the role of government in fostering happiness as a policy goal. Should happiness be given equal importance as economic growth in policy frameworks?

## 9.3. PHILANTHROPY: A MORAL IMPERATIVE FOR SOCIAL GOOD

### Introduction

"Service to others is the rent you pay for your room here on earth." – Muhammad Ali. This sentiment is reflected in India's growing philanthropic landscape. According to the **India Philanthropy Report 2025**, philanthropic funding in India is rising primarily driven by corporate social responsibility (CSR) spending, contributions from ultra-high-net-worth individuals (UHNIs), and a rising culture of giving among the middle class. **Philanthropy has been a part of many cultures from the ancient times to the modern era.** Let's see what it really means in present context.

### Philanthropy in modern context

The word philanthropy literally means '**love of mankind**'. It embodies the benevolent practice of **voluntarily donating financial resources** to various type of institutions (such as educational, social welfare, scientific etc.) to promote wellbeing and happiness of one's fellow-men.

- Unlike charity, which provides immediate relief to individuals, philanthropy aims for large-scale, long-term and **social impact** changes which can uplift entire communities.

### Philosophical Basis of Philanthropy

#### Indian Perspective

- **Chanakya's Arthashastra:** Donate 1/6th revenue for public welfare.
- **Vivekananda's Daridra Narayana:** Serving poor is worshipping God.
- **Gandhiji's Trusteeship Theory:** Wealthy must act as merely trustees of societal wealth.
- **Religious:-**
  - **Hinduism:** Concepts of daana (giving) and dakshina (alms)
  - **Islam:** zakaat (prescribed offerings ) & sadaqaat (voluntary offerings)
  - **Buddhism:** bhiksha (alms)
  - **Sikhism:** langar (community kitchens).

#### Western Perspective

- **Consequentialist View (Virtue ethics):** Generosity and compassion are important virtues.
- **Kantian Ethics (Moral Obligation):** It is our duty to be beneficent.
- **Rawl's Theory (Justice as fairness):** Prioritization of the most disadvantaged sections.
- **Utilitarianism:** maximize well-being for greatest number.
- **Libertarianism:** They emphasize moral superiority of philanthropy as compared to government-provided assistance.

### Multifaceted aspects of Philanthropy

Philanthropic Ethics	Customary	Entrepreneurial	Spiritual/Effective Altruism
<b>Definition</b>	It focuses on benevolence by showing adequate concern.	Well-conceived, sustainable social projects that create opportunities for upward social mobility.	Long-term initiatives aimed at addressing institutional voids. It is inspired by cultural values and religious principles.
<b>Objectives</b>	Ameliorative	Transformational	Developmental
<b>Strategy</b>	Opportunity Driven	Change Driven	Needs and Result Driven
<b>Project</b>	Responsive	Proactive	Supportive
<b>Investment</b>	Subjective	Objective	Mandatory and Discretionary
<b>Engagement</b>	Limited Engagement	Extensive Engagement	Holistic Engagement
<b>Major Areas of Focus</b>	Community cohesion, charity initiatives	Individualistic approach, Equal access to opportunities	Responsive Capitalism, Legacy, developmental goals

## Significance of philanthropy as a development tool

- **Bridging Funding Gaps:** Supplement critical budgetary support given by governments.
- **Addressing Development Gaps:** Such as poverty alleviation, education, and healthcare access.
  - E.g. **Azim Premji Foundation** enhances rural public education.
- **Catalyzing Innovation:** Tech-driven initiatives like **digital literacy programs/healthcare startups**.
  - E.g. **Bill & Melinda Gates Foundation** focus on sanitation innovations aligning with **Swachh Bharat Mission**.

"Philanthropy is not about giving money but about solving problems."



— Bill Gates

## Ethical challenges in Philanthropy

- **Elite capture of social agenda:** Experts argue that large donors may influence policy decisions thereby amplifying voices of the wealthy. Moreover, it is often used for tax evasion & money laundering activities.
- **Corporate Dilemma:** Responsibility of businesses is to increase profits and philanthropy goes against shareholder's assets.
- **Welfare Replacement:** It may reduce government's accountability for welfare spending thereby shifting public responsibility to private actors.
- **Regional and Geographical Inequality:** Urban-centric donations (**Maharashtra & Karnataka get maximum CSR funds, whereas Bihar & Odisha lag far behind**)
  - **Cultural & Religious Biases:** Donors may favour causes which are in sync with personal beliefs.
- **Accountability and Transparency Deficits:** Miniscule amount of NGOs which receives foreign funding's file returns. There have been also restrictions on NGOs giving rise to debate of balancing sovereignty concerns versus development needs.

"I don't believe in charity, and I don't believe in legacy. Nobody is truly altruistic; we all give because it aligns with what we value, what we stand for. The **problem** with **traditional charity** is that it's often about **feeling good** rather than **creating real change**. What actually works is building sustainable, scalable solutions that empower people to help themselves."



— Nikhil Kamath, Zerodha

## Conclusion

Philanthropy should have foundations laid on ethical considerations of promoting an egalitarian society characterised by equity and justice. . Philanthropy's potential to reach to the bottom rung of the society, where hundreds of millions of our citizens live, where neither the state nor the markets can reach, should be rightly utilized to reach that very last citizen.

The next generation of generosity must shift from Corporate Social Responsibility donations to conviction-led investment, broad-based participation enabling democratized giving beyond elite circles and must be used as a tool to complement justice and bringing in systemic reforms rather than merely a temporary relief leading to effective altruism.

"Philanthropy is commendable, but it must not cause the philanthropist to overlook the **circumstances** of **economic injustice** which make **philanthropy necessary**."



— Martin Luther King Jr.

### Case Study

A wealthy industrialist, Mr. X, donates ₹50 crore to build schools in rural areas, gaining public praise. Later, it's revealed he evaded taxes worth ₹30 crore and used the donation to improve his company's image while claiming tax benefits. Critics argue his philanthropy is a tool for personal gain, while supporters say the schools still benefit society.

- A. "Philanthropy driven by tax benefits is not charity but smart accounting." Critically examine this statement. How can Gandhi's "trusteeship" guide ethical corporate philanthropy in modern India, balancing profit and social good?
- B. "The increasing reliance of governments on private philanthropy for social welfare raises concerns about the erosion of state responsibility." Examine this statement in the context of India's development challenges.



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# 10. SCHEMES IN NEWS

## 10.1. RASHTRIYA GOKUL MISSION

### Why in the news?

The Union Cabinet, has approved the Revised Rashtriya Gokul Mission (RGM) to boost growth in livestock sector, with an additional outlay of Rs.1000 crore during 15th Finance Commission cycle from 2021-22 to 2025-26.

Objectives	Features
<ul style="list-style-type: none"> <li>• Increase bovine productivity and milk production sustainably using advanced technologies.</li> <li>• <b>Genetic Improvement</b> by Promoting the use of <b>high genetic merit bulls</b> for breeding.</li> <li>• Expansion of <b>Artificial Insemination (AI)</b> coverage by <b>strengthening the breeding network</b>. Ensure <b>doorstep delivery</b> of AI services to farmers.</li> <li>• <b>Indigenous Breed Promotion</b> by encouraging rearing and conservation of <b>indigenous cattle and buffaloes</b> using <b>scientific and holistic approaches</b>.</li> </ul>	<p><b>About RGM</b></p> <ul style="list-style-type: none"> <li>• Launched in <b>2014</b> under the <b>National Programme for Bovine Breeding and Dairy Development</b>.</li> <li>• <b>Ministry:</b> Ministry of <b>Fisheries, Animal Husbandry and Dairying</b>.</li> <li>• <b>Implementation:</b> Department of <b>Animal Husbandry and Dairying</b>.</li> <li>• <b>Funding: 100% grant by Central Government</b>, with few exceptions. <ul style="list-style-type: none"> <li>○ It will be implemented as a <b>Central Sector Component</b> with an additional outlay of Rs.1000 crore (earlier Rs. 2400 crore) making the total outlay of <b>Rs.3400 crore (2021-22 to 2025-26)</b>.</li> </ul> </li> </ul> <p><b>New Components added in Revised Mission</b></p> <ul style="list-style-type: none"> <li>• <b>Heifer Rearing Centres:</b> The government will provide a one-time <b>35% capital subsidy</b> to establish Heifer Rearing Centres, supporting 30 facilities that can house 15,000 heifers in total. <ul style="list-style-type: none"> <li>○ Heifer is any young, female, domestic bovine that has not produced offspring.</li> </ul> </li> <li>• <b>Support for high-genetic-merit in vitro fertilization (IVF) heifers:</b> The government will offer a 3% interest rate reduction on loans for farmers purchasing high-genetic-merit IVF heifers.</li> </ul> <p><b>Existing Components of RGM</b></p> <ul style="list-style-type: none"> <li>• <b>Availability of High genetic Merit Germplasm via Bull Production Programme</b> through <b>Progeny Testing and Pedigree Selection</b>. <ul style="list-style-type: none"> <li>○ Implementation of IVF Technology.</li> </ul> </li> <li>• <b>Extension of Artificial Insemination (AI) Network</b> via establishment of Multi-Purpose AI technicians in Rural India (MAITRIs) to meet shortage of AI technicians in the country. <ul style="list-style-type: none"> <li>○ Implementation of National Digital Livestock Mission that <b>will enable inputs of all reporting, including disease and outbreak</b>.</li> </ul> </li> <li>• <b>Development and Conservation of indigenous breeds</b> via assistance to Gaushalas, Gosadans and Pinjarapoles which are maintaining elite animals of indigenous breeds.</li> <li>• <b>Increasing awareness via Nationwide AI Programme</b> to ensure free of cost AI at the farmer's doorstep. <ul style="list-style-type: none"> <li>○ Awards to Farmer (<b>Gopal Ratna/ Kamdhenu</b>).</li> </ul> </li> <li>• <b>Skill Development</b> via training of professionals and existing AI workers.</li> <li>• <b>Research, development and innovation</b> in bovine Breeding</li> </ul> <p><b>Initiatives under RGM</b></p> <ul style="list-style-type: none"> <li>• <b>For Indigenous Bovines:</b> Awards for encouraging farmers/breeder societies to rear Indigenous breeds of Bovines: Gopal Ratna awards, Kamdhenu awards. <ul style="list-style-type: none"> <li>○ Establishment of <b>Gokul Grams</b>.</li> <li>○ Establishment of <b>National Kamdhenu Breeding Centers:</b> To act as repository of <b>indigenous germplasm</b> of all indigenous breeds (Andhra Pradesh and Madhya Pradesh).</li> </ul> </li> </ul>

- **e-Pashu Haat - Nakul Prajnan Bazaar:** An e-market portal connecting breeders and farmers, for quality disease-free bovine germplasm.
- **Advanced Reproductive Technology:** To improve availability of disease-free female bovines.

**Impact of RGM:**

- **Milk production has increased by 63.55% in the last ten years**, along with the availability of milk per person, which was 307 grams per day in 2013-14, has increased to 471 grams per day in 2023-24.
- **Productivity has also increased by 26.34% in the last ten years.**

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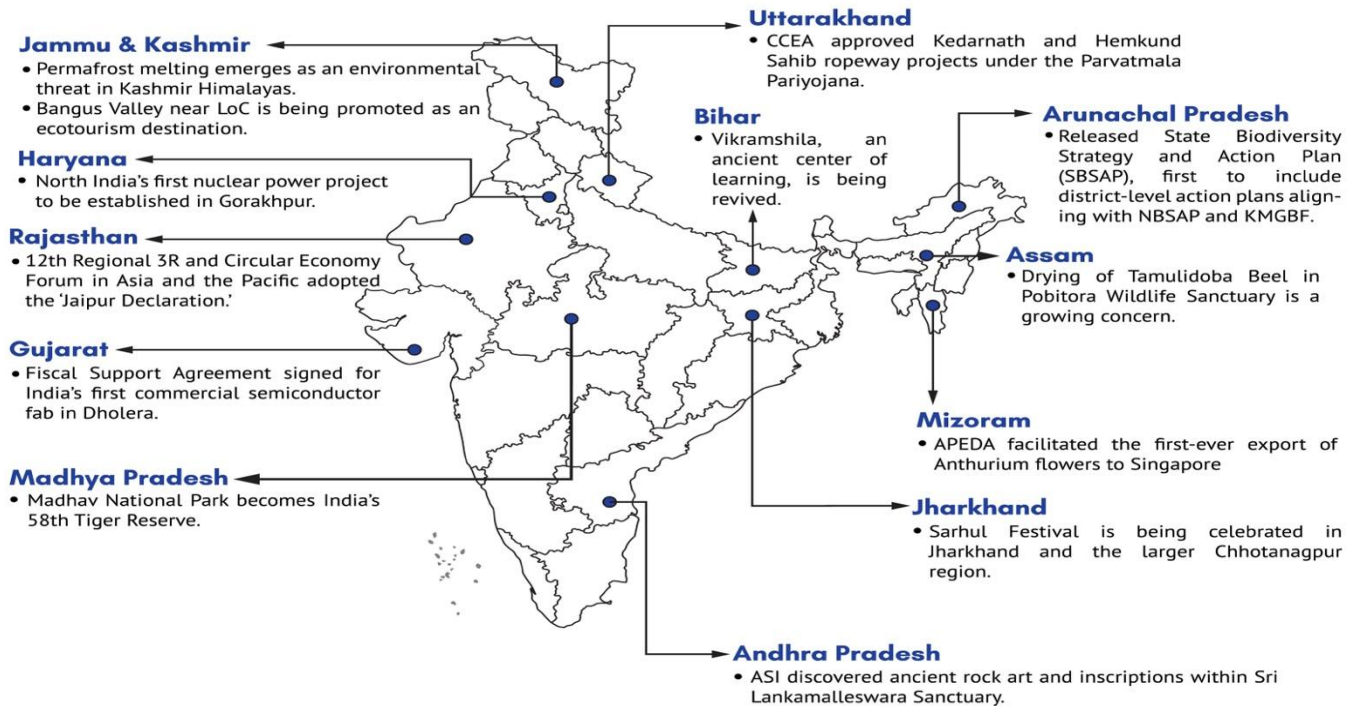
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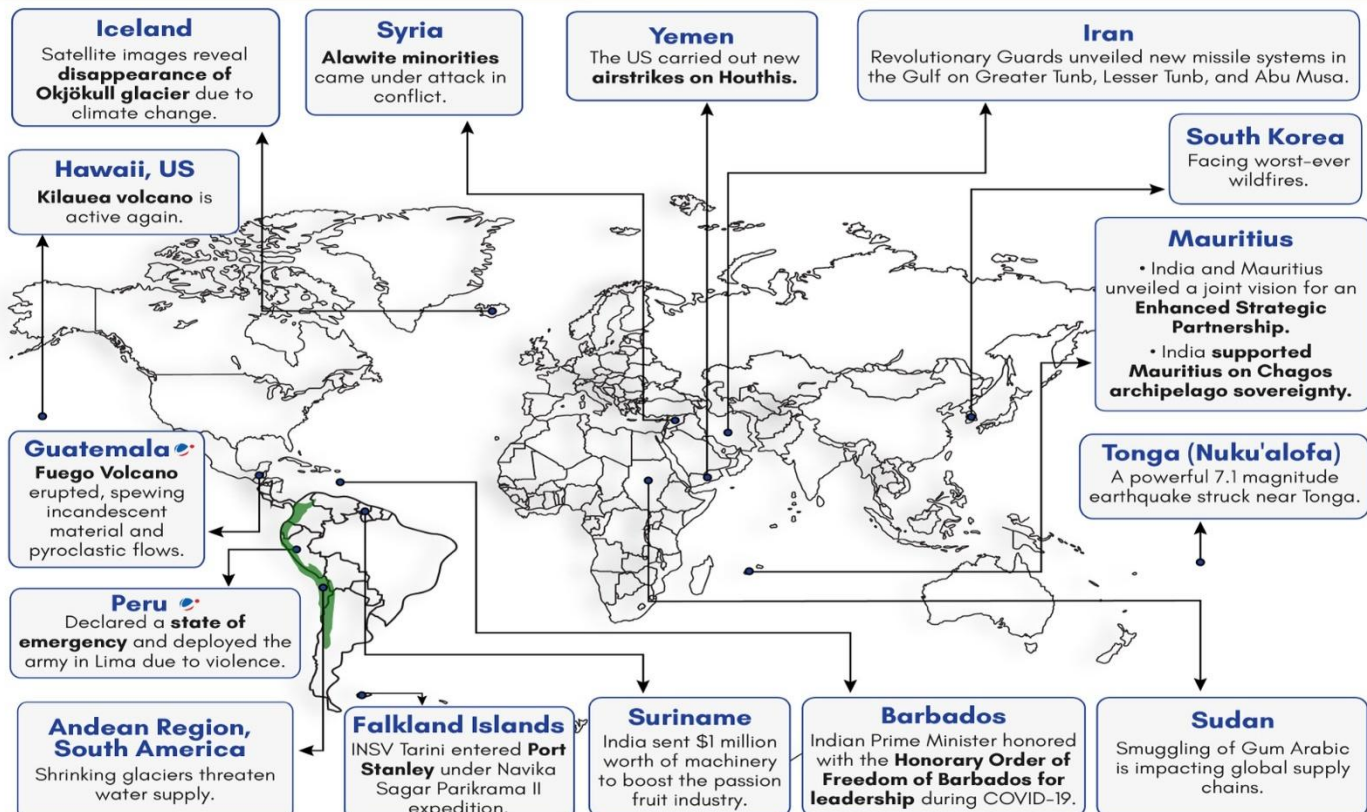
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# 11. PLACES IN NEWS



## India






## World



## 12. PERSONALITIES IN NEWS

Personality	About	Ethical Values exhibited by the Personality
 <p><b>Shree Harichand Thakur</b></p>	<p>Shree Harichand Thakur Jayanti was observed.</p> <p><b>About Harichand Thakur</b></p> <ul style="list-style-type: none"> <li>Born in <b>Namasudra</b> (untouchable community) in Bengal in Orakandi located in present-day Bangladesh.</li> <li>He <b>founded the Matua Sect</b> in Bengal.</li> </ul> <p><b>Key Contributions</b></p> <ul style="list-style-type: none"> <li><b>Upliftment of subaltern:</b> He accepted the path of religious reformation to promote compassion, justice. <ul style="list-style-type: none"> <li>Led the untouchability movement called the <b>Chandal movement</b>.</li> </ul> </li> <li><b>Harichand's doctrine:</b> It is based on three basic principles—truth, love, sanctity.</li> <li><b>Social Reform:</b> Matua Sect believes that <b>male and female are equal</b>, discourage <b>early marriage</b>, allow <b>Widow remarriage</b>.</li> <li><b>Education:</b> Built an <b>English medium high school</b> at Orakandi for the people of lower caste.</li> </ul>	<p><b>Equality and Compassion</b></p> <ul style="list-style-type: none"> <li>He fought against caste-based discrimination and promoted a doctrine rooted in truth, love, and sanctity.</li> <li>His reforms uplifted the marginalized through education and spiritual inclusion.</li> </ul>
 <p><b>Mata Karma</b></p>	<p>The <b>Department of Posts</b> released a <b>stamp</b> on <b>Mata Karma's 1009th birth anniversary</b>.</p> <p><b>About Mata Karma</b></p> <ul style="list-style-type: none"> <li>A <b>Bhakti saint and social reformer</b> from the <b>Sahu Teli community</b>, she was known for her <b>devotion and social contributions</b>.</li> </ul> <p><b>Key Contributions</b></p> <ul style="list-style-type: none"> <li><b>Devotion:</b> Lord Krishna is believed to have accepted her <b>khichdi</b> in Puri. <ul style="list-style-type: none"> <li>Since then, the <b>1st offering of Mata Karmabai's khichdi is dedicated to Lord Jagannath at Puri</b>.</li> </ul> </li> <li><b>Social Reform:</b> Fought <b>untouchability</b>, <b>conservatism</b>, and <b>empowered women</b>.</li> </ul>	<p><b>Devotion and Social Justice</b></p> <ul style="list-style-type: none"> <li>Her unwavering devotion and challenge to caste orthodoxy reflected her commitment to inclusive spirituality.</li> <li>She empowered women and worked to eliminate untouchability.</li> </ul>

 <p><b>Veer Narayan Singh</b></p>	<p>Eminent Freedom Fighter during 1857 Revolt Veer Narayan Singh was remembered on his punyat-ithi (February 25).</p> <p><b>About Veer Narayan Singh</b></p> <ul style="list-style-type: none"> <li>• He was a landlord from <b>Sonakhan, Chhattisgarh</b>.</li> <li>• His ancestors were from the <b>Gond tribe</b> and were residing in Sarangarh. <b>Later on, they</b> changed their affiliation from the Gond to the <b>Binjhwar tribe</b> and moved to Raipur district.</li> </ul> <p><b>Key Contributions</b></p> <ul style="list-style-type: none"> <li>• <b>During the severe famine of 1856</b>, he took out grains from the grain warehouse and distributed them among the poor to save them from hunger. <ul style="list-style-type: none"> <li>▶ British arrested him in 1856 for looting a trader's grain stocks.</li> </ul> </li> <li>• In 1857, he escaped <b>from prison and formed an army of 500 men at Sonakhan</b>.</li> <li>• <b>He spearheaded the 1857 Revolt</b> in Chhattisgarh and is considered as "<b>1st Chhattisgarhi freedom fighter</b>".</li> </ul>	<p><b>Courage and Empathy</b></p> <ul style="list-style-type: none"> <li>• He demonstrated immense courage by revolting against British rule and standing up for the oppressed.</li> <li>• His act of distributing grain to the poor during a famine reflected his deep empathy for the underprivileged.</li> </ul>
 <p><b>Lala Hardayal</b></p>	<p>Recently, his death anniversary was observed.</p> <p><b>About Lala Hardayal</b></p> <ul style="list-style-type: none"> <li>• He was a <b>nationalist revolutionary and freedom fighter</b>.</li> <li>• <b>Early Influence:</b> Arya Samaj, Mazzini, Karl Marx and Mikhail Bakunin.</li> </ul> <p><b>Key Contributions</b></p> <ul style="list-style-type: none"> <li>• He was a <b>founding member of the Ghadar Party</b> established in 1913 and served as its General Secretary.</li> <li>• He mobilized <b>Indians of the diaspora</b> and encouraged them to be <b>part of freedom movement</b>.</li> <li>• He became involved in <b>industrial unionism in USA</b>, where he served as the Secretary of the San Francisco branch of the <b>Industrial Workers of the World</b>.</li> </ul>	<p><b>Nationalism and Intellectual Freedom</b></p> <ul style="list-style-type: none"> <li>• As a revolutionary thinker, he combined political activism with scholarly depth to awaken patriotic consciousness.</li> <li>• His writings and leadership in the Ghadar movement showcased a fearless pursuit of liberty.</li> </ul>

	<ul style="list-style-type: none"> <li>His works include '<b>Social Conquest of Hindu Race</b>', '<b>Forty-Four Months in Germany and Turkey</b>', '<b>The Bodhisatva Doctrine</b>', '<b>Twelve Religions and Modern Life</b>' etc.</li> </ul>	
 <p><b>Govind Ballabh Pant</b></p>	<p>Eminent Freedom fighter and first CM of UP was remembered on his death anniversary (March 07).</p> <p><b>About Govind Ballabh Pant</b></p> <ul style="list-style-type: none"> <li>Born in Khoont village near Almora, Uttarakhand.</li> <li>In 1921, he entered politics and was elected to Legislative Assembly of the United Provinces of Agra and Oudh.</li> </ul> <p><b>Key Contributions</b></p> <ul style="list-style-type: none"> <li>He was appointed by Congress to initially <b>represent Ramprasad Bismill, Ashfaqulla Khan</b>, and other revolutionaries involved in the <b>Kakori case</b>.</li> <li>Took part in <b>Salt March, Quit India Movement</b>, and was arrested in 1930 for planning <b>Civil Disobedience Movement</b>.</li> <li><b>Contributions as CM of UP:</b> Abolition of the zamindari system, passed the Hindu Code Bill, gave the Hindu women the rights of divorce and inheritance, etc.</li> <li><b>Contributions as Home Minister:</b> <b>Reorganisation of States along linguistic lines.</b> <ul style="list-style-type: none"> <li>He was also responsible for the <b>establishment of Hindi as an official language of the central government</b> and a few states.</li> </ul> </li> <li><b>Rewards and Recognition:</b> Received Bharat Ratna (1957).</li> </ul>	<p><b>Justice and Public Service</b></p> <ul style="list-style-type: none"> <li>His legal representation of revolutionaries and active participation in movements for India's independence highlight his value for advocating freedom and justice.</li> <li>His contributions in governance and policy-making exemplify a life dedicated to public service and nation-building, focusing on creating a unified and democratic India.</li> </ul>



**Chandrasekhara  
Venkata Raman**

National Science Day is celebrated to **commemorate the discovery of the 'Raman Effect'** by him.

- **Raman effect:** When light hits a material, it interacts with its molecules and **exchanges energy**. As a result, some scattered light changes **wavelength and color**.
- **Example: Blue color of oceans** (due to sunlight scattering off water molecules) and blue sky (due to sunlight scattering off air molecules).

#### **About CV Raman**

- **Birth:** At Tiruchirappalli, Tamil Nadu.
- **Founded:** Indian Journal of Physics, Indian Academy of Sciences

#### **Awards:**

- Given **Knighthood** (1929)
- Won **Nobel Prize in Physics in 1930 (for Raman Effect)**
- Awarded **Bharat Ratna in 1954**.

#### **Scientific aptitude and Knowledge**

- As an eminent scientist, he showed exemplary interest in understanding the physical laws of nature.
- His pioneering work on the nature of light is considered a scientific milestone.



**Ammu  
Swaminathan**

Smt. Ammu Swaminathan is among 15 women featured in 'The Life and Contributions of the Women Members of the Constituent Assembly'.

- It is a tribute by the **Ministry of Law & Justice** to their **role in drafting India's Constitution**.

#### **Ammu Swaminathan (1894 - 1978)**

- **Early Life:** Born in Palakkad, Kerala, and fondly called Ammukutty.
- **Political Career:**
  - Arrested in **Quit India Movement (1942)**
  - Elected to the **Constituent Assembly from Madras in 1946**.
- **Key Contributions:**
  - **Defied Caste Norms:** she called herself Shudrachi to challenge upper-caste pride.
  - **Women's Rights:** She was believed to have Co-founded the **Women's India Association (WIA) in 1917** with Annie Besant to fight for economic rights and voting for women.

#### **Gender Equality and Courage**

- She challenged caste hierarchies and patriarchal norms, co-founding WIA to fight for women's rights.
- Her presence in the Constituent Assembly reflected her fearless advocacy for social reform.



**Dr. Ram Manohar Lohia**

Recently, the birth anniversary of Dr. Ram Manohar Lohia is observed.

#### About Dr. Ram Manohar Lohia

- Dr. Lohia was born in Akbarpur, Uttar Pradesh.
- He was a visionary leader, freedom fighter, and champion of social justice.

#### Key Contributions

- **Freedom Struggle:** Participated in **Quit India Movement (1942)**; imprisoned multiple times.
- **Military Career: 1919–1953**
  - ▶ He protested against the Portuguese rule in Goa.
- **Social:** Lohia envisioned **eliminating inequalities** across caste, class, and gender through economic democracy.
- **Political:** Lohia presented a six-point plan for new Socialism, calling for maximum attainable equality, a global standard of living, a world government etc.
- **Literary Works:** The Caste System, Wheel of History, Marx, Gandhi and Socialism etc.

#### Social Justice and Equality

- He strove for a casteless and classless society by advocating economic democracy and gender equity.
- His socialist vision sought to dismantle deeply entrenched inequalities.



**Bijayananda Patnaik**

The Prime Minister remembered former Odisha Chief Minister Bijayananda Patnaik on his birth anniversary.

#### About Bijayananda Patnaik (5 March 1916 – 17 April 1997)

- He was one of the main architects of modern Odisha and is popularly known as Biju Pattnaik

#### Key contributions:

- In 1942, he joined the **Quit India Movement**.
- He was a **Pilot of the Indian Air Force**.
- In 1961 he became the **Chief Minister of Odisha**.
- He established the **Kalinga Foundation** for dissemination of knowledge in Science. He also founded the Kalinga Prize given by UNESCO.
- **Achievement:** The Indonesian Government had honoured him with the **Bhumi Putra (Son of Soil)** title for his role in the Indonesian freedom struggle.

#### Courage and Visionary Leadership

- He displayed exceptional courage by actively participating in the freedom struggle and supporting Indonesia's fight for independence.
- His leadership in promoting science and international cooperation reflected his forward-thinking and service-oriented vision.



**Shri Nanaji Deshmukh**

Union Home Minister addressed the Remembrance Day ceremony on the 15th death anniversary of Bharat Ratna Nanaji Deshmukh.

### Shri Nanaji Deshmukh

- Nanaji Deshmukh was born in **the Hingoli district of Maharashtra**.
- Nanaji founded **Deendayal Research Institute (DRI) in 1972** to validate the philosophy of **Integral Humanism propounded by Pandit Deendayal Upadhyaya**.

### Key Contributions

- He was the initiator of the **sampoorn kranti (total revolution)** a call of Loknayak Jayaprakash Narayan and waged a crusade against the Emergency in 1975.
- He actively participated in **Bhoodan Movement** started by **Acharya Vinoba Bhave**.
- He established **Chitrakoot Gramodya Vishwavidyalaya** (India's first rural university) in Chitrakoot and went on to become its first Chancellor).

### Selfless Service and Social Upliftment

- He dedicated his life to rural development and nation-building, promoting integral humanism and empowering communities.
- His focus on education, self-reliance, and rural welfare reflected his commitment to selfless service.



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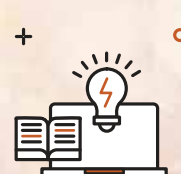
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1  
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