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Polity and Governance

Highlights

- *SC Sets a Deadline for Presidential Decision on Reserved Bills*
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SC Sets a Deadline for Presidential Decision on Reserved Bills

Why in News?

The **Supreme Court (SC) of India,** in the *State of Tamil Nadu vs. Governor of Tamil Nadu,2023* has, for the first time, laid down a 3-month deadline for the **President** to decide on Bills referred by the **Governor** under **Article 201 of the Constitution.**

What is the SC's Verdict on the President's Role in State Bills?

➢ **Article 201:** It states that "when a Bill is reserved by a Governor for the consideration of the President, the President shall either assent to the Bill or withhold assent therefrom."

   ○ The SC noted that **Article 201 provides no specific timeline for Presidential assent**, and such delays can **stall legislative processes**, leaving state Bills in "indefinite and uncertain abeyance."

   ○ It emphasized that inaction violates the **constitutional principle of non-arbitrariness in the exercise of power.**

➢ **Time Limit:** The SC held that the President cannot exercise an **"absolute veto"** by indefinitely delaying assent. A decision must be made **within three months**, and any delay must be reasoned and communicated to the State.

   ○ Withholding assent must be based on sound and specific grounds, not done arbitrarily.

   ○ If the President fails to act within the time limit, States can file **writ petitions** to compel a decision, seeking a Writ of Mandamus from the Court.

   ○ Additionally, the SC stated that under **Article 143,** if a bill is reserved by the Governor on the **grounds of unconstitutionality**, the President ought to **seek the Supreme Court's opinion.**

      ● Although it is **not mandatory,** the reference to the SC in such cases carries high persuasive value.

   ○ The SC clarified that unlike the **Governor**, who must assent to a **State Bill if it is passed again after being returned**. The President is not constitutionally bound to do so under Article 201.

      ● This is because Article 201 applies only in exceptional cases where state legislation has potential national implications.

➢ **References:** The SC referred to the **2016 Office Memorandums issued by the Ministry of Home Affairs**, which prescribed a three-month timeline for decisions on state bills reserved for the President.

   ○ The Court invoked recommendations of the **Sarkaria Commission (1988)** and **Punchhi Commission (2010),** both of which called for time-bound decisions on reserved Bills.

> **What is the Governor's Role in the Passage of State Bills?**
>
> ➢ **Click here to Read: Governors' Role in State Bills**

President of India

Who is a President?

○ **About:** Head of the Indian State and the first citizen of India

○ **Election:** Elected by an electoral college consisting of MPs of both Houses of Parliament and MLAs of the states and Delhi and Puducherry. (but not the nominated members of Rajya Sabha, Lok Sabha and Assemblies and members of Councils)

○ **Constitutional Provisions:** Article 54 - 62

What Powers does President Enjoy?

Legislative Powers:

○ Power to dissolve the Lok Sabha

○ Gives final assent to pass a bill

○ Promulgate ordinances when the Parliament is not in session

○ Power to summon both the Houses of Parliament to meet in a joint sitting

Appointing Power:

○ Appoints the Prime Minister, CJI and other judges of Supreme Court, Governor of the state, Ambassadors to other countries, Attorney General etc.

Military Powers:

○ Commander in chief of all the Indian armed forces.

○ Appoints the Chiefs of the Army, Navy and Air Force

○ Power to declare war or conclude peace with any country on the advice of a council of ministers headed by the PM.

○ Treaties with other countries are signed under his/her name

Pardoning Power (Article 72):

○ May grant pardons if the punishment of the crime is an offence of against union law, granted by the military court or the punishment is that of death

Emergency Powers:

○ Can declare three types of emergencies: nation, state and financial, under Articles 352, 356 & 360

○ Can rule individual states or the whole nation at times of emergency

Important Articles of Indian Constitution

○ **Article 52:** The President of India

○ **Article 53:** The executive power of the President

○ **Article 72:** Powers of the president to grant pardons etc. and to suspend, remit or commute sentences in certain cases

○ **Article 74:** Council of Ministers to aid and advise the President

○ **Article 85:** Sessions of parliaments, prorogations and dissolution

○ **Article 111:** Assent to bills passed by the parliaments

○ **Article 112:** Union Budget (Annual Financial Statement)

○ **Article 123:** Power of President to promulgate ordinances

○ **Article 143:** Power of President to consult the Supreme Court

FORMER PRESIDENTS

Dr. Rajendra Prasad (1950-1962)

Dr. Sarvepalli Radhakrishnan (1962-1967)

Dr. Zakir Husain (1967-1969)

Shri Varahagiri Venkata Giri (1969-1974)

Dr. Fakhruddin Ali Ahmed (1974-1977)

Shri K. R. Narayanan (1997-2002)

Dr Shankar Dayal Sharma (1992-1997)

Shri R Venkataraman (1987-1992)

Giani Zail Singh (1982-1987)

Shri Neelam Sanjiva Reddy (1977-1982)

Dr. A.P.J. Abdul Kalam (2002-2007)

Smt Pratibha Devisingh Patil (2007-2012)

Shri Pranab Mukherjee (2012-2017)

Shri Ram Nath Kovind (2017-2022)

Droupadi Murmu (2022-Present)

INTERESTING FACTS

○ **Rajendra Prasad** was the first President of India. He is also the only President to have served two consecutive terms.

○ **Zakir Hussain** was the third President of India, and the first Muslim President. He was the shortest serving President of India (less than 2 years).

○ So far two Presidents, **Dr. Zakir Hussain** and **Fakhruddin Ali Ahmed** (Fifth President), have died during their term of office.

○ When President **Dr. Zakir Hussain** died in May, 1969, the then Vice-President, **V.V. Giri** was acting as the President.

○ Soon after **V.V. Giri** resigned to contest the election of the President. Then the **Chief Justice of India, M. Hidayatullah** worked as the officiating President from 20 July, 1969 to 24 August, 1969.

What are the Constitutional and Functional Differences between the President and the Governor?

Domain	President	Governor
Legislative Powers	➢ Can give assent, withhold, or return a Bill under **Article 111** (except Money Bill). ➢ If Parliament resends a bill, the President must give assent and cannot use veto powers. ➢ On reserved Bills, may assent, withhold, or return (if not a Money Bill).	➢ Can **give, withhold, return, or reserve Bills** for President (Article 200). ➢ Can reserve Bills for the President (Article 201) for President's consideration.
Ordinance Making Power	➢ Can promulgate Ordinances under Article 123 when Parliament is not in session.	➢ Can promulgate Ordinances under Article 213 when the State Legislature is not in session.
Pardoning Power	➢ Article 72, the President can pardon, reprieve, respite, remit, suspend, and commute. ➢ Applies to **Union laws, court martial, and death sentences.**	➢ Governors under Article 161 can pardon only State law offences, cannot pardon death sentences or Court Martial cases.
Emergency Powers	➢ The President can impose a **National Emergency** under Article 352, a State Emergency (President's Rule) under Article 356, and a **Financial Emergency** under Article 360.	➢ Can recommend **President's Rule under Article 356** in case of constitutional breakdown in the State.
Diplomatic & Military Roles	➢ Supreme Commander of Armed Forces, signs international treaties, and receives foreign envoys.	➢ No such role, ceremonial functions only within the State.
Discretionary Powers	➢ The President exercises limited discretion, mainly in situations such as acting during a hung Parliament, or appointing a Prime Minister when no clear leader emerges. ➢ The President is mostly bound by the advice of the Union Council of Ministers.	➢ The Governor has broader discretionary powers, such as reserving Bills (Article 200), recommending President's Rule, seeking information from the CM, and acting as UT Administrator.

What are the Key SC Judgements Related to the Powers of the Governor and the President?

➢ **President:**
  ○ **S. R. Bommai v. Union of India (1994):** SC ruled that the President's Rule is subject to **judicial review** and cannot be imposed arbitrarily.
  ○ **Kehar Singh v. Union of India (1988):** The SC ruled that the President's pardoning power is **independent of the judiciary**.
    ● However, it can be reviewed to **ensure procedural fairness,** focusing on adherence to constitutional principles and procedural requirements rather than the merits of the decision.
  ○ **R.C. Cooper v. Union of India (1970):** The SC held that the President's satisfaction regarding the necessity of an ordinance is **not immune from judicial review and can be challenged.**
    ● It also held that an ordinance is subject to the same constitutional limitations as an Act of Parliament and cannot violate any fundamental rights or other provisions of the Constitution.

- ➢ **Governor:**
  - ○ **S. R. Bommai v. Union of India (1994):** The SC ruled that the **Governor's recommendation for President's Rule is subject to judicial review** and cannot be imposed arbitrarily.
  - ○ **Shamsher Singh v. State of Punjab (1974):** SC emphasized that the **Governor must act on the advice of the Council of Ministers,** except in situations where the Constitution requires the Governor to act in his discretion.
  - ○ **Rameshwar Prasad v. Union of India (2006)::** The SC declared the dissolution of the Bihar Legislative Assembly unconstitutional, emphasizing that the Governor's powers are **not absolute and must be exercised in accordance with constitutional principles.**
    - ● The judgement reinforced the importance of judicial review in overseeing executive actions,

Custodial Torture and Need for Police Reforms

Why in News?

The **Status of Policing in India Report, 2025** by Lokniti-CSDS and Common Cause (an NGO), based on **inputs from 8,276 police personnel** across 17 States/UTs, reveals the continued **acceptance of custodial torture and coercive methods** within the police.

- ➢ These insights highlight the urgent need for **institutional police reforms** to curb abuse and uphold constitutional rights.

What are the Key Findings of CSDS Survey on Custodial Treatment by Police?

- ➢ **High Acceptance of Custodial Violence: 63%** of police personnel **justified violence against suspects of serious crimes** like rape and murder.
  - ○ Even for minor offences such as theft, **30% supported third-degree methods**.
- ➢ **Institutional Endorsement of Torture: 42%** of police personnel **strongly supported torture in terror cases,** and 28% for history-sheeters.

- ○ **25%** of police personnel **justified mob justice** in cases like **sexual assault or child abduction,** while 22% supported **extra-judicial killings of "dangerous criminals".**
- ○ While **74%** believed that **legal procedures should be followed** even when dealing with dangerous criminals, only **41% reported consistent adherence to arrest protocols**.
  - ● **Kerala recorded the highest compliance, with 94%** affirming that legal norms are always observed during arrests.
- ➢ **Ambivalence Towards Mandatory Reporting: 39%** of police personnel **supported mandatory reporting of custodial torture,** while **41% favoured it only in select cases**, reflecting conditional accountability.
  - ○ **Station-level officers were more supportive of reporting** than seniors.
- ➢ **Reform Readiness: 79%** of police personnel **support human rights training** and **anti-torture mechanisms,** with **over 75% willing to report custodial violence if protected legally**, and **79% supported evidence-based interrogation techniques** indicating strong internal demand for reform and accountability.
- ➢ **Legal Safeguards vs Ground Reality:** Despite legal safeguards under **Article 21** and the SC guidelines in *D.K. Basu vs State of West Bengal, 1997 case*, custodial norms are **routinely violated.**
  - ○ **Magistrates' inaction, unqualified medical checks, and NHRC's limited powers** highlight institutional gaps, while **zero convictions in custodial death cases (2018–2022)** reveal deep impunity.

What is Custodial Torture?
- ➢ **Click Here to Read: Custodial Torture**

What are the International Conventions Against Custodial Torture?
- ➢ **Click Here to Read: International Conventions Against Custodial Torture**

Why is There a Need for Police Reforms in India?

- ➢ **Overburden & Manpower Shortage:** India has only **155.78 police personnel per 100,000 people**, well below the **UN norm of 222**. High vacancy rates at **West Bengal (39.42%)**, **Mizoram (35.06%)**, **Haryana (32%)** worsen the burden.

○ Officers work **16–18 hours a day**, with **83.8% reporting high stress**, affecting efficiency, response time, and case quality.

○ They also handle multiple roles like **VIP security and election duties**, often with **low pay and little rest**, increasing burnout and chances of corruption.

Police Reforms in India

CONSTITUTIONAL STATUS

● Police and Public Order: State subjects (7th Schedule)

NEED FOR REFORM

● Colonial Law
● Custodial Death
● Lack of Accountability
● Political Interference
● Poor Gender Sensitivity
● Communal/Caste Bias
● No Anti-Torture Law

RELATED DATA

● Police-People Ratio: 153 police/100,000 people (Global benchmark: 222 police /100,000 people)
● Custodial Deaths: 175 in 2021-2022 (as per MHA)
● Women's Share: 10.5% of entire force (India Justice Report 2021)
● Infrastructure: 1 in 3 police stations is equipped with CCTV (India Justice Report 2021)

IMPORTANT COMMITTEES/COMMISSION

National Police Commission		Padmanabhalah Committee		Police Act Drafting Committee		Second Administrative Reforms Commission		Police Act Drafting Committee II
1977–81	1998	2000	2002–03	2005	2006	2007	2012-13	2015
	Ribeiro Committee		Malimath Committee		Supreme Court Directions in Pakash Singh vs Unionof India		Justice J.S. Verma committee	

RELATED INITIATIVES

● SMART Policing (pan-India)
● Automated Multimodal Biometric Identification System (AMBIS) (Maharashtra)
● Real Time Visitor Monitoring System (uses AI and blockchain) (Andhra Pradesh)
● CyberDome (Tech R&D Centre) (Kerala)

CHALLENGES WITH POLICING

● Low Police-Population Ratio
● Political Superimposition
● Unsatisfactory Police-Public Relations
● Infra Deficit
● Corruption
● Understaffed/Overburdened

WAY FORWARD

● ↑Police Budget, Resources
● ↑Recruitment Process
● Implement Measures to Reduce Corruption
● ↑Skills of Policemen
● Better Representation (Women, Minorities)

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- **Politicization & Weak Accountability:** Police autonomy is often compromised by political interference with **72% of Delhi police officers** reported facing political pressure in investigations (Status of Policing in India Report).
  - Misuse of laws like **sedition** against journalists, activists, and minorities weakens the **rule of law and public trust**.
  - Excessive force during protests (e.g., **CAA-NRC, farmers' protests, 2023 wrestlers' protest**) and **669 custodial deaths (2017–2022)** reflect growing **militarization** and raise serious **human rights concerns**.
- **Inadequate Training:** Most states lack proper training infrastructure, with a **low proportion of trained personnel** as highlighted by the **CAG**. **Weapon training is outdated**, and police are rarely trained in modern techniques like **cybercrime investigation** or **forensic science**.
  - India has only **0.33 forensic experts per 0.1 million people**, compared to **20–50 in developed countries**, hampering scientific investigations.
  - Limited **gender sensitivity training** further weakens justice delivery in cases of **domestic violence, sexual assault, and trafficking**.
- **Outdated Infrastructure:** Many police stations lack **modern surveillance tools and digital case management systems**. As of 2022, there was **only one computer per 11 police personnel**, with some states having **just one per 30 officers**.
  - Police forces still rely on **outdated weapons and manual record-keeping**, making it difficult to address **cybercrime, terrorism**, and other emerging threats effectively.
- **Public Trust Deficit and Gender Imbalance:** Community policing initiatives like **Janamaithri (Kerala)** and **Mohalla Committees (Maharashtra)** are exceptions rather than the norm, limiting grassroots engagement.
  - **Marginalized communities** like dalits and minorities often view the police as **discriminatory and unapproachable**, reducing trust and cooperation.
  - Women constitute only **11.75%** of the police force (MHA), despite rising crimes against women, **discouraging reporting** and affecting the **sensitivity and effectiveness** of responses to gender-based violence.

SC Verdict on Governors' Powers over State Bills

Why in News?

The **Supreme Court(SC) of India**, in the **State** *of Tamil Nadu vs. Governor of Tamil Nadu,* clarified that **Governors** must act on state bills in a time-bound manner, following the aid and advice of the council of ministers, as per Article 200, without independent discretion.

What is the SC's Verdict on Governors' Role in State Bills?

- **Case Background:** The Tamil Nadu Governor withheld assent to 10 Bills, delaying action under **Article 200**. The state government challenged this, citing constitutional violations and governance disruption.
  - After the Governor withheld assent, the Tamil Nadu Legislative Assembly **re-enacted the Bills and sent them back**. Instead of granting assent or returning them with comments, the Governor referred them to the **President.**
- **SC's Verdict:** SC termed the Tamil Nadu Governor's referral of re-enacted Bills to the President as **"erroneous in law."**
  - The Court ruled that there is **no concept of "absolute veto" or "pocket veto" under Article 200** and stated that governors **cannot indefinitely delay action on bills.**
    - SC noted that **Governors are bound to follow the advice of the Council of Ministers.**
  - SC ruled that Governor must give assent to a bill when a bill is presented to him after **re consultation in state assembly** and he can only refuse assent when the bill is different.
    - The SC prescribed clear timelines for Governors when dealing with Bills with **one month** to withhold assent, **three months** if doing against State Cabinet advice, and **one month for Bills re-presented** after reconsideration.
- **Implications:** The Supreme Court ruling curbs the misuse of **gubernatorial discretion to stall state legislatures,** reaffirming that Governors are constitutional heads, not political actors.

- It emphasizes the primacy of the legislative process and limits executive overreach.
- The judgment sets a precedent for similar cases in states like Kerala, West Bengal, Telangana, and Punjab, where Governors have delayed assent to Bills.

What are the Constitutional Powers of a Governor with Respect To Bills?

➢ **Article 200:** The Governor has significant powers when dealing with Bills passed by the State Legislature. Upon receiving a Bill, the Governor can take one of the following actions:

- **Grant Assent:** The Governor may approve the Bill, allowing it to become law.
- **Withhold Assent:** The Governor has the authority to refuse assent to the Bill.
- **Return for Reconsideration:** The Governor may send the Bill back to the State Legislature for further review and reconsideration.
- **Reserve for the President's Consideration:** In certain cases, the Governor can reserve the Bill for the **President's approval,** especially if the Bill concerns matters of national importance or conflicts with central laws.

Governor Drishti IAS

Eligibility Criteria
- Must be a **citizen of India**
- At least **35 years** of age
- Must **not be a member of (either) house** of Parliament/State Legislature
- Must not hold any **office of profit**

'Dual Capacity'
- **Constitutional head of the state** and **Representative of the Union government**

Appointment and Tenure (Part VI)
- Appointed by President **(Article 153)**
- One person can be appointed as Governor for **2+ States (7th Const. Amendment in 1956)**
- Holds the office at the **Pleasure of the President** (maximum **5 years**)

Ending Tenure before 5 Years
- **Dismissal by President** (on advice of the Council of Ministers headed by PM)
  - Dismissal of governors without a valid reason is not permitted
- On grounds of **acts upheld by courts as unconstitutional** and malafide
- **Resignation** by the governor

Powers (Part VI)
- Article 161: **Pardoning powers**
- Article 164: Power to **appoint the CM and other Ministers**
- Article 176: **Special Address** by Governor
- Article 200: Power to **(withhold) assent/reserve a bill** (Legislative Assembly)
- Article 213: Power to **promulgate Ordinances**

Responsibilities
- **Appoints** – CM, other Ministers, Advocate General of State, Members of State PSC, judges of HC and districts
- Act as **ex-officio chancellor** of state Universities

- **Article 201:** If the Governor reserves a Bill for the President's consideration, the President holds the final say on the matter. The President has the option to:
  - ○ **Grant Assent:** The President can approve the Bill, making it law.
  - ○ **Withhold Assent:** The President may choose to withhold assent to the Bill.
    - For non-Money Bills, if the President withholds assent, the President can direct the **Governor to send the Bill back to the Legislature for reconsideration.**
    - The Legislature is required to act within six months. If the Bill is passed again, it must be resubmitted to the President for final approval.
- **Article 207:** No Money Bill can be introduced in the assembly without the recommendation of the Governor of the State.

> **Note:** The SC in *Rameshwar Prasad case (2006)* ruled that the Governor's powers to withhold assent can be reviewed if exercised arbitrarily.

What are the Key Concerns Related to Governors in India?

- **Impartiality Concerns:** Governors are sometimes seen as acting as **agents of the Centre's ruling party**, raising concerns about their impartiality and fairness in exercising powers.
  - ○ For instance, in 2016, the Governor's actions in Arunachal Pradesh led to the dismissal of the elected government, a move later overturned by the Supreme Court, which reinstated the government.
- **Questionable Use of Article 356:** Governors have sometimes recommended **President's Rule** without a floor test, perceived as politically motivated.
  - ○ For example, in Uttarakhand (2016), the Governor recommended President's Rule just before a **floor test,** indicating potential political motivations.
- **Overreach in State Matters:** Governors have increasingly overreached in administrative matters, bypassing elected state governments and causing governance paralysis.
  - ○ In Delhi (2023), clashes between the Lieutenant Governor and the state government over bureaucratic appointments led the Supreme Court to rule that the elected government controls services.
  - ○ Governors, as **Chancellors of state universities,** also interfere in Vice-Chancellor appointments, often leading to legal battles, as seen in West Bengal (2023), where the Governor's unilateral appointments sparked a standoff with the state government.
- **Lack of Accountability:** Governors are only accountable to the President and can be removed at the **Union government's discretion.**
  - ○ With no impeachment provisions, they can **act without facing direct consequences,** undermining accountability despite holding significant powers.

What are the Key Committees and their Recommendations Related to the Governor?	
Committee	**Recommendation**
Sarkaria Commission (1988)	➤ Governors should not have statutory powers unrelated to their constitutional role. ➤ Governors should be appointed after consulting the Chief Minister. ➤ Governors should not have recent political affiliations. ➤ Governors' role in university governance should be limited, with states having a greater say.
Punchhi Commission (2010)	➤ Governors should act on Bills within a fixed timeframe (six-month limit for reserved Bills). ➤ Stricter safeguards against the misuse of Article 356 (President's Rule).
Venkatachaliah Commission (2002)	➤ Suggested that the appointment of Governors should be handled by a committee consisting of the Prime Minister, Home Minister, Speaker of the Lok Sabha, and the Chief Minister of the relevant state.

Coastal Shipping Bill & Protection of Interest in Aircraft Objects Bill

Why in News?

The Lok Sabha has passed two key legislations- the **Coastal Shipping Bill, 2024** and the **Protection of Interest in Aircraft Objects Bill, 2025** aimed at strengthening the coastal shipping and aviation sector.

What is the Coastal Shipping Bill, 2024?

➢ **About:**

○ It aims to **promote cost-effective and sustainable coastal trade,** by **increasing coastal shipping's freight share** from the **current 5% (vs 40% in the EU)** by **reducing over-reliance on roadways (66%)** and **railways (31%)**, thereby **lowering logistics costs, traffic congestion, and pollution.**

● As per MoEFCC (2021), **transport contributes 10–11% of India's GHG emissions**, with **roads accounting for 90%**, **rail 3%,** and **waterways less than 1%**.

■ Waterways are **more energy efficient than road and rail**, making coastal shipping the most eco-friendly transport mode.

○ It supports **integration with inland waterways** and aligns with the **National Logistics Policy** and **Atma Nirbhar Bharat vision.**

➢ **Key Provisions:**

○ **Dedicated Legal Framework:** The Bill replaces **outdated vessel-centric provisions** under the **Merchant Shipping Act, 1958** with a **forward-looking, standalone legislation** tailored to Indian conditions.

● It establishes a **clear, modern legal structure aligned with global cabotage norms** and **India's Maritime Amrit Kaal Vision 2047** to unlock the economic potential of the **7,500 km long coastline.**

■ **Cabotage** refers to transport of goods/passengers between two ports within the same country.

○ **Simplified Licensing Mechanism:** It **removes the requirement of a general trading license for Indian ships** and introduces a **structured licensing process for foreign vessel**s.

● The **Director General of Shipping** is empowered to **regulate, monitor, and enforce compliance,** ensuring **ease of doing business** while safeguarding national interests.

○ **Strategic Maritime Vision and Multimodal Integration:** The Bill mandates the formulation of a **National Coastal and Inland Shipping Strategic Plan**, to be **revised biennially** by a committee comprising representatives from **States, ports, and maritime boards**.

● It fosters **region-specific growth, integrates coastal shipping with inland waterways**, and promotes **efficient, low-emission multimodal transport.**

○ **Data-Driven Governance and Transparency:** A **National Database for Coastal Shipping** is proposed to facilitate **evidence-based policy, operational coordination, and enhanced transparency**.

● The Bill also e**xpands eligibility for chartering vessels** to NRIs, OCIs, and LLPs to boost private sector involvement.

○ **Cooperative Federalism & Inclusive Governance:** The Bill ensures **active participation of States and UTs** through a multi-stakeholder committee (Clause 8(3)) to guide route planning, infrastructure, and policy, promoting decentralised, inclusive, and locally responsive maritime development.

What is the State of India's Maritime Sector?

➢ **Strategic and Trade Backbone**: India ranks as the **16th largest maritime nation**, handling **95% of trade by volume** and **70% by value**, with **12 major** and **200+ minor ports** positioned along key global shipping routes.

➤ **Expanding Capacity and Fleet**: The cargo-handling capacity of major ports grew by **87%** (2014–24), reaching **1,629.86 million tonnes**, with **819.22 MT handled in FY24**; India operates a fleet of **1,530 registered ships**.

○ India ranks **38 out of 139 countries on World Bank's Logistics Performance Index Report 2023**, indicating improved logistics and trade efficiency.

● **Singapore and Finland** are the most efficient and highest-ranked LPI countries as per the 2023 LPI, from which India can learn.

➤ **Global Ship Recycling Hub**: India is the **3rd largest ship recycler globally**, holding **30% of the global share**, with **Alang** being the world's largest ship-breaking yard.

○ India currently lags in shipbuilding despite its long coastline, but recent initiatives like the **New Shipbuilding and Repair Policy** aim to strengthen domestic capabilities and position India as a global maritime manufacturing hub.

➤ **Policy Support and Export Growth**: Measures like **100% FDI under the automatic route**, **10-year tax holidays**, and infrastructure modernization have driven port development and boosted exports to **USD 451 billion in FY23**.

More About India's Maritime Sector?

➤ **Click Here to Read: Challenges in India's Maritime Sector**

➤ **Click here to Read: Measures can India Take to Strengthen its Maritime Infrastructure**

What is Protection of Interest in Aircraft Objects Bill, 2025?

➤ **Objective:**

○ It aims to **strengthen legal protection for aircraft financiers and lessors** in India by aligning Indian laws with the international conventions.

➤ **Key Provisions:**

○ **Supremacy to International Obligations:** The Bill gives an overriding effect to the **Cape Town Convention** and **Aircraft Protocol**, superseding domestic laws (like the **Insolvency and Bankruptcy Code (IBC)**) in case of conflict.

● It enables **international arbitration mechanisms** for resolving disputes, in alignment with the Cape Town Convention.

■ India signed the **Cape Town Convention** and its **Aircraft Protocol** in **2008**, but in the **absence of parliamentary ratification** and enabling legislation, its provisions were **not enforceable in Indian courts**.

● This resulted in **high-risk premiums for leasing aircraft** to Indian airlines, **legal uncertainties during insolvency cases** like the Go First crisis, and a **poor compliance score** with the Aviation Working Group (AWG).

○ **Scope and Coverage:** The Act applies to **aircraft airframes, engines, helicopters, and other high-value aviation equipment** as defined under the Aircraft Protocol.

○ **Streamlined Repossession Procedures:** The Bill enables aircraft lessors to repossess leased aircraft and equipment in case of default without court intervention, ensuring faster resolution and asset recovery.

○ **Improved Compliance Score:** The Bill enhances India's compliance with the **Cape Town Convention Index (AWG),** making Indian airlines eligible for **8-10% lease cost discounts** under the Convention.

What is the State of the Aviation Sector in India?

➤ India is the **3rd largest domestic aviation market** globally, handling **69% of South Asia's air traffic,** with **passenger numbers reaching around 196.91 million**.

➤ The aviation sector contributes **1.5% to GDP,** supports **7.7 million jobs** (direct and indirect), and generates **USD 53.6 billion in economic output.**

○ **Operational airports** increased from **74 (2014) to 157 (2024)**, with a target of **350- 400 by 2047**.

➤ Aircraft movement rose at a **CAGR** of **3.85%** (FY17–FY24), and **multiple greenfield airports** and **terminals** are under development (**e.g., Bagdogra Civil Enclave, Dehradun terminal).**

Indian Aviation Sector in FY24

MARKET SIZE

Scheduled Airlines: Distance Flown million km: 969.63

Non-scheduled airlines in operation: 103 (FY23 as of Januaray 2023)

Air Passengers traffic (million): 376.43 (FY24)

Freight Handled (MMT): 3,365.65 (FY24)

Number of Aircrafts: 771 (as of December 31, 2023)

Number of Operational Airports: 148 (2023)

More About Aviation Sector:

➤ **Click Here to Read: Boom in India's Aviation Sector**

What are Recent Government Initiatives in India's Maritime and Aviation Sector?

➤ **Maritime Sector:**
- **One Nation-One Port Process (ONOP)**
- **Sagar Ankalan – Logistics Port Performance Index (LPPI) 2023-24**
- **Bharat Global Ports Consortium**
- **MAITRI Platform (Master Application for International Trade and Regulatory Interface)**
- **National Centre of Excellence in Green Port & Shipping (NCoEGPS)**
- **Maritime India Vision 2030**
- **Green Tug Transition Program (GTTP)**

➤ **Aviation Sector:**
- **UDAN Scheme (Ude Desh ka Aam Nagrik).**
- **National Civil Aviation Policy, 2016**
- **Open Sky Agreement**
- **Digi Yatra**

Waqf (Amendment) Act, 2025

Why in News?

The **Waqf (Amendment) Act, 2025** was passed by the **Parliament** and it has received **assent of the President**.

➤ The Act amends the **Waqf Act, 1995**, allowing the government to **regulate Waqf properties** and settle related disputes.

➤ The Act aims to improve **Waqf board efficiency**, update **Waqf definitions**, streamline registration, and boost **use of technology** in record management.

What is Waqf?

➢ **Waqf:** It refers to an **endowment** made by a Muslim for **charitable or religious purposes**, such as building **mosques, schools, hospitals**, or other public institutions. It is **inalienable** i.e., it cannot be sold, gifted, inherited or encumbered.

➢ **Click Here to Read: Waqf**

What is Waqf Board and Waqf Act, 1995?

➢ **Click Here to Read: Waqf Board** and **Waqf Act, 1995**

Note: There are **8.72 lakh** waqf properties, covering an area of more than **38 lakh acres**.

Waqf Estates	Immovable Properties	Movable Properties	Digitized Records
356,350	872,802	16,716	330,008

Evolution of Waqf Law in India
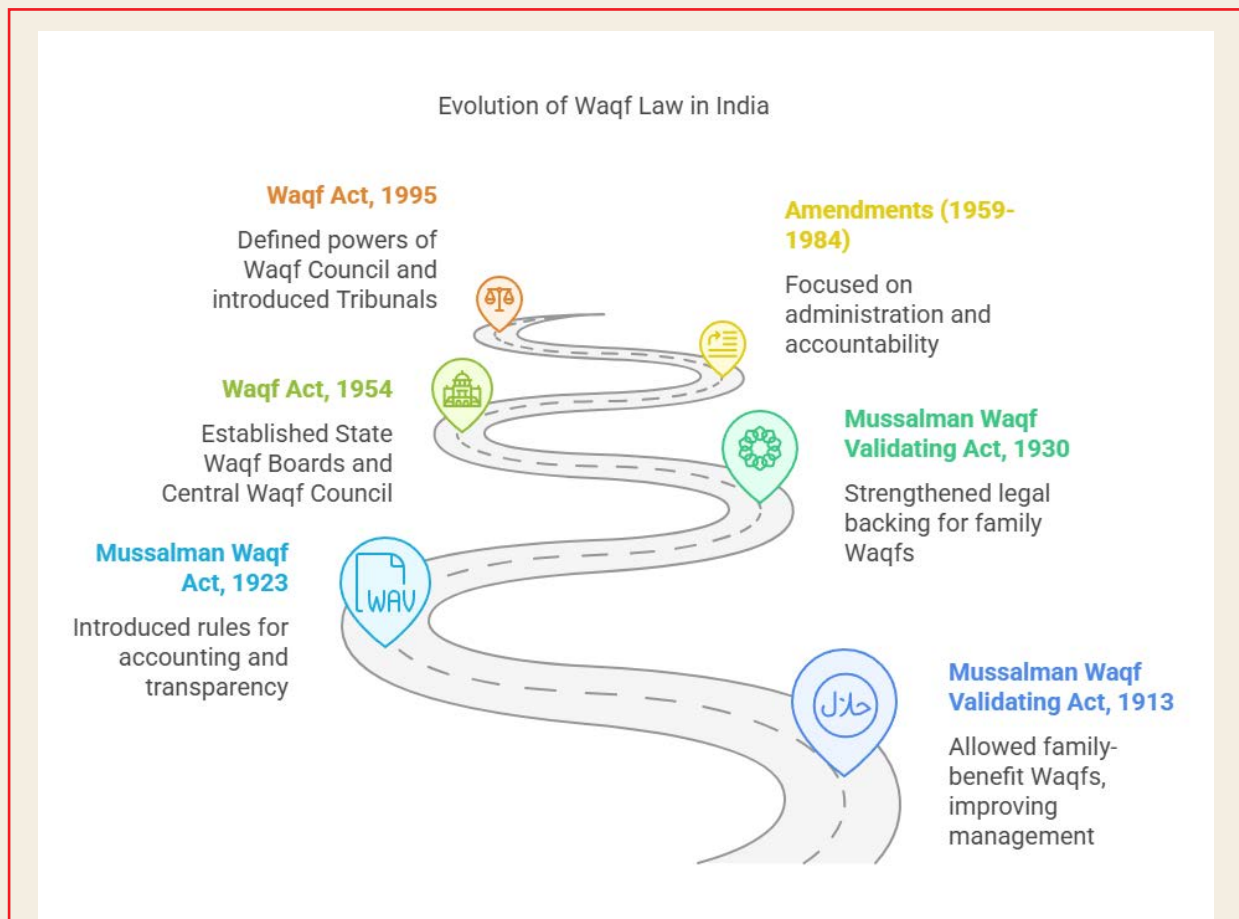
Evolution of Waqf Law in India

Waqf Act, 1995
Defined powers of Waqf Council and introduced Tribunals

Amendments (1959-1984)
Focused on administration and accountability

Waqf Act, 1954
Established State Waqf Boards and Central Waqf Council

Mussalman Waqf Validating Act, 1930
Strengthened legal backing for family Waqfs

Mussalman Waqf Act, 1923
Introduced rules for accounting and transparency

Mussalman Waqf Validating Act, 1913
Allowed family-benefit Waqfs, improving management

What are the Key Provisions of the 2025 Act?

➢ **Separation of Trusts from Waqf:** Muslim-created **trusts** under any law will no longer be considered **Waqf**, ensuring **individuals** retain **full control** over their trusts.

➢ **Eligibility for Waqf Dedication:** Only **practicing Muslims** (for at least five years) can **dedicate their property** to Waqf.
  ○ Properties **already registered** with Waqf Boards will **remain so unless disputed** or identified as government land.

➢ **Women's Rights in Family Waqf:** Women must receive their **inheritance before Waqf dedication**, with special provisions for **widows, divorced women, and orphans.**

➢ **Ending Arbitrary Property Claims: Section 40** of the original Waqf Act (1995) has been **removed**, preventing Waqf Boards from **arbitrarily** declaring properties as Waqf.
  ○ **Section 40** of the Waqf Act (1995) gives the **Waqf Board** the **authority** to decide whether a property is a **Waqf property or not.**

➢ **Waqf Tribunals:** The Waqf tribunals consist of 3 members i.e., a **district judge**, a **state government officer (joint secretary level)**, and an **expert in Muslim law and jurisprudence**.
  ○ Aggrieved parties can **appeal directly** to the concerned **High Court** within 90 days of receiving the Waqf tribunal's order.

➢ **Government Land & Waqf disputes:** An officer **above the rank of Collector** will **investigate** government properties claimed as Waqf to prevent any **unwarranted claims**.

➢ **Reduced Annual Contributions:** Waqf institutions' **mandatory contribution** to Waqf Boards reduced from **7% to 5%** allowing **more funds** to be allocated for **charitable purposes.**

➢ **Annual Audit Reforms:** Waqf institutions earning over **Rs 1 lakh** must undergo **audits** by State-appointed auditors.

➢ **Technology & Central Portal:** A **centralized portal** will automate Waqf property management, improving **efficiency and transparency**.
  ○ **Mutawallis (caretaker of a waqf)** must register property **details** on the central portal**.**

➢ **Diverse Representation:** The **Waqf Boards** will include **two non-Muslim members** for inclusivity, and **among Muslim members, at least two must be women.**
  ○ Representation from **Shia, Sunni, Bohra, Aghakhani, and OBC Muslim** communities is also mandated.

➢ **Application of the Limitation Act:** The **Limitation Act, 1963**, will now apply to **Waqf property claims**, reducing prolonged litigation.
  ○ The **Limitation Act,** sets time **limits for filing cases** to ensure **speedy disposal** and **prevent delays** in legal proceedings.

What was the Need of Waqf (Amendment) Act, 2025?

➢ **Irrevocability of Waqf Properties:** The principle **"once a Waqf, always a Waqf"** ensures Waqf properties **remain permanent**, often causing **complex disputes.**
  ○ E.g., It has sparked controversies, like ownership claims over islands in **Bet Dwarka**, where courts face **legal challenges** in determining ownership.

➢ **Poor Management:** The **Waqf Act, 1995** has failed to **prevent mismanagement and land encroachments**.
  ○ E.g., In **Karnataka** (between 1975 and 2020), 40 Waqf properties were notified, including **farmlands, public spaces, government lands, graveyards, lakes,** and **temples**.

➢ **Lack of Judicial Oversight:** Under the **Waqf Act, 1995, Waqf Tribunal decisions cannot be appealed,** which limits judicial review and **reduces transparency.**

➢ **Misuse of Powers: Section 40** of the **Waqf Act, 1995** has been used to **declare private properties as Waqf**, leading to **legal battles**.
  ○ E.g., In Kerala, around **600 Christian families** protested after the **Waqf Board** claimed their **ancestral lands** leading to **legal disputes**.

What Concerns are Related to the Waqf (Amendment) Act, 2025?

➢ **Increased Government Control:** Critics argue that the Act grants the government the authority to regulate Waqf properties and determine their status, **thereby reducing the autonomy of Waqf Boards.**
  ○ The **deletion of Section 40 of the Act, shifts the power** to determine whether a property is Waqf to government officials.

➢ **Dilution of Muslim Representation:** Critics argue that allowing **non-Muslim officials** on Waqf Boards **violates** the community's **right to manage its religious affairs** under **Article 26**.

➢ **Ambiguity in Defining a "Practising Muslim":** The Act lacks a **clear definition** of **"practising Muslims"** for Waqf property allocation, which may lead to **legal challenges** due to **varied interpretations** by religious scholars.

➢ **Removal of "Waqf by User" Principle:** Critics fear that removing **"Waqf by user,"** which recognizes properties through **long-term religious use**, may lead to many existing sites **losing their Waqf status.**

Concerns of Gorkha Community

Why in News?

The **Ministry of Home Affairs (MHA)** convened a meeting in New Delhi with key representatives of the **Gorkha community,** aimed at addressing their long-pending concerns.

Who are the Gorkhas?

➢ **About:** The **Gorkhas** (also spelled Gurkhas) are a **martial community originating from Nepal**, known for their bravery, loyalty, and fierce fighting skills.
  ○ The Gorkhas trace their name from the Gorkha Kingdom in western Nepal. **Prithvi Narayan Shah (1743–75)**, a Gorkha king, unified Nepal and expanded the Gorkha power.

➢ **Ethnicity:** Gorkhas are not a single ethnic group but include several ethnicities like Gurungs, Magars, Rais, Limbus, and others from the hilly regions of Nepal.

➢ **Gorkha Regiments:** Their reputation as fierce warriors led them to serve in various armies especially the **British**, **Indian**, and **Nepalese** armies.
  ○ After the **Anglo-Nepal War (1814-1816),** also known as the Gorkha War**,** the British recruited them Gorkha into the British Army.
  ○ The Gorkha regiment has been part of the Indian Army since 1815, following the Anglo-Nepal War.

What are the Concerns of Gorkhas?

➢ **Demand for Gorkhaland:** The demand for a **separate state of Gorkhaland** encompassing **Darjeeling, Terai, and Dooars** has been at the core of Gorkha identity politics since the 1980s.
  ○ Gorkha leaders believe that statehood would provide **political recognition, cultural autonomy, and administrative empowerment.**
  ○ Gorkhas seek constitutional and cultural recognition within India, including protection of their language, customs, and distinct ethnic identity.

➢ **Scheduled Tribe (ST) Status**: Several Gorkha communities such as Rai, Limbu, Gurung, Tamang, and others have been demanding **ST status** for decades.
  ○ This recognition would enable social justice, educational opportunities, and affirmative action benefits.
  ○ Despite repeated assurances by the Centre, the process has seen no meaningful progress.

➢ **Agnipath scheme:** India's **Agnipath scheme**, which offers only four years of service with no pension unless retained, raising fears of job insecurity among Nepali Gorkhas.
  ○ Nepal views this as a violation of the **1947 tripartite agreement** that ensured permanent service and pension benefits.

➢ **Geopolitical Tensions:** Additionally, geopolitical tensions have emerged, with reports (like **Observer Research Foundation**) suggesting China's interest in recruiting Gorkhas. Diplomatic resolution remains pending, with hopes resting on high-level talks between India and Nepal.

Read more: 1947 Tripartite Agreement on Gurkha soldiers

Delay in Decisions of Anti-Defection Cases

Why in News?

A **Supreme Court(SC) Bench** has asserted that the judiciary is not "powerless" if a Legislative Speaker delays deciding **anti-defection petitions under the Tenth Schedule (anti-defection law) of the Constitution.**

➢ The remark came while hearing on pleas filed by a state political party, who sought **judicial intervention** against prolonged inaction by the state Assembly Speaker on **disqualification petitions** against **Members of Legislative Assembly (MLAs)** who defected to the ruling party.

What is the Anti-defection Law?

➢ **About:** The **Anti-Defection Law (ADL)** was introduced in 1985 through the **52nd Amendment Act**, adding the **Tenth Schedule to the Constitution**. It aims to curb opportunistic political defections by legislatures (**Members of Parliament (MPs)** and MLAs) to promote party discipline, and ensure stable governments.

➢ Grounds for Disqualification:

○ **For Members of Political Parties**: If a member **voluntarily gives up** their party membership.

● If a member **votes or abstains** contrary to the **party's whip** without prior permission and the act is not condoned within 15 days.

○ **For Independent Members**: Disqualified if they **join a political party** after the election.

○ **For Nominated Members**: Disqualified if they **join a political party after six months** from taking their seat.

➢ **Exception:** The **ADL exempts** the **Presiding Officer or Speaker** from disqualification if they voluntarily give up their **party membership or rejoin it after ceasing to hold office.** This provision is intended to ensure the **dignity and impartiality of the role.**

○ A member is not disqualified if their **party merges with another** and at least two-thirds of its members agree to the merger.

➢ **Role of the Speaker**: Under the Tenth Schedule, the Speaker acts as a **quasi-judicial authority** to decide on disqualification of defecting legislators.

○ The law does not **specify a deadline within which the Speaker must decide defection cases,** leading to long delays in some instances.

➢ **Judicial Empowerment:** Under **Article 142,** the SC can pass any **order necessary for complete justice,** including compelling constitutional authorities to act within a reasonable period.

○ In the *L. Chandra Kumar vs. Union of India and Others (1997)*, the SC ruled that **judicial remedies are available against tribunal orders.** Since the Speaker functions as a tribunal in disqualification cases, the SC can issue directions, just as it does for **other constitutional tribunals** like the **Central Administrative Tribunal (CAT).**

Judicial Pronouncements Regarding Anti-Defection

➢ In *Kihoto Hollohan vs. Zachillhu (1992),* the SC upheld the Presiding Officer's authority in defection cases, ruling it **not unconstitutional** and subject to **judicial review.**

➢ In *Ravi S. Naik vs. Union of India (1994)*, the SC held that "voluntarily giving up membership" does not require a formal resignation and can be inferred from a legislator's conduct.

➢ In *Keisham Meghachandra Singh vs. Speaker, Manipur Legislative Assembly (2020)*, the SC ruled that the **Speaker must decide defection cases within a reasonable time** (preferably within 3 months).

How Does the Delay in Disqualification Affect Governance?

➢ **Democratic Undermining**: Delay enables defectors to continue in office, potentially distorting the popular mandate. This undermines the purpose of the Tenth Schedule, rendering it functionally ineffective.

➢ **Political Morality**: Erodes public trust in democratic institutions and promotes a culture of political opportunism and **horse trading (buying and selling of political support).**

➢ **Governance Paralysis**: Affects policymaking and weakens opposition voices when defectors align with the ruling party.

○ **Case Study: Maharashtra (2022)** delay in disqualification proceedings by the Speaker allowed power shifts and instability.

➢ **Electoral Accountability**: Delay in decision-making stalls **re-elections and deprives voters of their democratic right** to choose representatives aligned with their mandate.

➢ **Exploited by Ruling Parties:** Delay in action often benefits ruling party interests, especially when the Speaker belongs to the same party.

○ Allows ruling parties to consolidate power through engineered defections.

Economic Scenario

Highlights

- Prawn Aquaculture in India
- Periodic Labour Force Survey 2024
- Debt Metrics
- Climate-Driven Economic Losses in Asia- Pacific
- 10th Anniversary of Pradhan Mantri Mudra Yojana
- Urban Transport in India
- Reforming Indian Railways
- FAO Report on Plant Genetic Resources for Food and Agriculture
- Decline in India's Cotton Production

Prawn Aquaculture in India

Why in News?

India's **aquaculture** sector plays a key role in the country's nutrition and economy, making it the **world's third-largest aquaculture producer** and **second-largest in prawn production.**

➢ India's prawn production has seen a **17% annual growth**, contributing to both domestic consumption and exports.

What is Aquaculture?

➢ **Definition of Aquaculture:**
  - ❍ Aquaculture refers to the cultivation and management of aquatic organisms, including **plants, animals, and microorganisms** for **commercial, recreational, and scientific purposes.**
  - ❍ It is considered the aquatic counterpart of agriculture, focusing on **rearing marine and freshwater species** to supplement natural populations.
➢ **Global Growth:**
  - ❍ Aquaculture is among the fastest-growing food production sectors worldwide.
  - ❍ It currently supplies **over 50%** of the seafood consumed globally.
➢ **Leading Producers:**
  - ❍ **China dominates global aquaculture,** accounting for nearly **60%** of total production. Other major producers include **Indonesia, India, and Vietnam.**

What is the State of Prawn Aquaculture in India?

➢ **About:** Prawns, with their **high protein and low fat content**, are increasingly in demand both domestically and internationally
  - ❍ A premium variety, the **black tiger prawn (Penaeus monodon)**, is highly valued for its size and quality.
  - ❍ These prawns **require salinity levels of 10–25 grams/litre**, compared to seawater which has 35 grams/litre.
  - ❍ **Andhra Pradesh is the largest contributor** to prawn production in India followed by **West Bengal, Tamil Nadu, Odisha, and Gujarat.**
    - In **coastal Andhra Pradesh**, brackish groundwater is blended with freshwater from rivers and canals.
➢ **Innovative Practices by Farmers:** Siva Rama Rudraraju from Andhra Pradesh pioneered the use of **smaller ponds to improve yield** and reduce pathogen risks.
  - ❍ **Smaller ponds** help **contain economic losses** during disease outbreaks.
  - ❍ Each cycle lasts 4–6 months, after which ponds are dried and cleaned.
➢ **Disease Control in Prawn Aquaculture:** Bacterial infections like **Vibrio harveyi** and **viral outbreaks** such as **white spot syndrome** can cause up to 25% annual losses in yield.
  - ❍ **Control Measures:**
    - Farmers **cover ponds with plastic net**s to prevent crow-borne contamination.
    - **Probiotics** such as **Bacillus bacteria** are added to outcompete harmful pathogens without harming prawns.

- **ICAR-CIBA** in Chennai has developed 'specific pathogen free' broodstock, reared in biosecure environments and certified to be disease-free.
- **Phage therapy** uses bacteriophage viruses that specifically target **Vibrio bacteria** without harming other organisms.

Government's Initiatives Related to Seafood Production
➢ **Pradhan Mantri Matsya Sampada Yojana**
➢ **Fisheries and Aquaculture Infrastructure Development Fund (FIDF)**
➢ **Marine Products Export Development Authority**
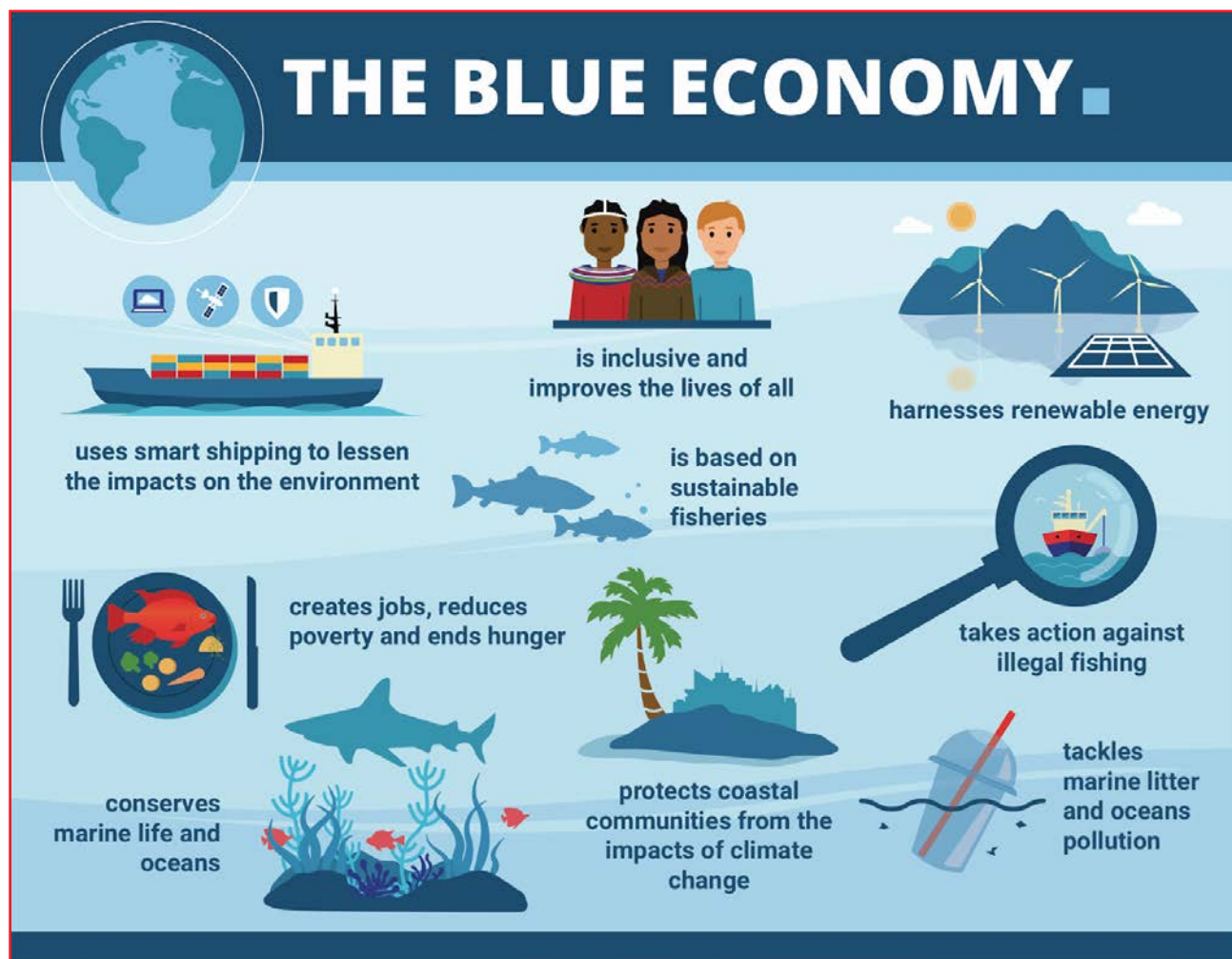
Periodic Labour Force Survey 2024

Why in News?

The **Ministry of Statistics and Programme Implementation (MoSPI)** released the **Periodic Labour Force Survey (PLFS) 2024**. This data provides crucial insights into India's evolving labour market dynamics across both rural and urban sectors.

What is the Periodic Labour Force Survey (PLFS)?

ABOUT

The PLFS was launched by the National Statistics Office (NSO) in 2017 with the aim of generating labour force statistics at more frequent intervals.

OBJECTIVES OF PLFS

- To estimate key employment and unemployment indicators such as **Worker Population Ratio (WPR), Labour Force Participation Rate (LFPR), and Unemployment Rate (UR)** at three-month intervals for urban areas using the Current Weekly Status(CWS) approach.

- To estimate the same indicators annually for both rural and urban areas, using both **Usual Status (Principal activity status (ps) + Subsidiary economic activity status (ss)) and CWS** approaches.

INDICATORS

LFPR: The percentage of persons in the labour force (employed or seeking employment) in the total population.
- LFPR = (Number of Employed + Number of Unemployed) / Total Population × 100.

WPR: The percentage of employed persons in the total population.
- WPR = (Number of Employed Persons) / Total Population × 100.

UR: The percentage of unemployed persons among the total labour force.
- UR = (Number of Unemployed Persons) / (Number of Employed + Number of Unemployed) × 100.

ACTIVITY STATUS

- **Usual Status (ps+ss):** This is based on the activity status over the last 365 days prior to the survey date. It considers: **ps** (the activity in which a person spent the majority of their time) and **ss** (any secondary economic activity performed for at least 30 days in the past year).
- **CWS:** This approach captures the activity status over the 7 days preceding the survey date.

What are the Key Findings of the PLFS 2024?

➢ **Labour Force Indicators in Current Weekly Status(CWS):**

○ **Labour Force Participation Rate (LFPR):** Urban **LFPR** rose for males (74.3% to 75.6%) and slightly for females (25.5% to 25.8%), raising overall urban LFPR to 51.0%. All-India LFPR remained stable at 56.2%.

○ **Worker Population Ratio (WPR): Urban WPR** rose slightly from **47.0%** to 47.6% and all-India WPR was nearly unchanged at 53.5%.

○ **Unemployment Rate (UR):** Rural unemployment fell slightly to 4.2%. Urban male UR rose, female UR declined, keeping overall urban UR rate at 6.7%. **All-India UR dipped from 5.0% to 4.9%.**

LFPR, WPR and UR (in per cent) in Current Weekly Status (CWS) from PLFS conducted during January 2023 – December 2023 and January 2024 – December 2024 for persons of age 15 years and above

all-India

Indicator	Rural			Urban			Rural + Urban		
	male	female	person	male	female	person	male	female	person
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
January 2023 – December 2023									
LFPR	78.3	39.6	58.8	74.3	25.5	50.3	77.0	35.4	56.2
WPR	74.6	38.0	56.2	69.9	23.2	47.0	73.2	33.7	53.4
UR	4.6	3.8	4.3	6.0	8.9	6.7	5.0	4.9	5.0
January 2024 – December 2024									
LFPR	79.2	38.6	58.6	75.6	25.8	51.0	78.1	34.7	56.2
WPR	75.7	37.1	56.1	71.0	23.7	47.6	74.2	33.0	53.5
UR	4.3	3.9	4.2	6.1	8.2	6.7	4.9	4.9	4.9

➢ **Labour Force Indicators in Principal and Subsidiary Status(PS+SS):**

○ **LFPR:** Remained largely stable nationally, with a slight decline from 59.8% to 59.6%.

○ **WPR:** All-India WPR declined slightly from 58.0% to 57.7%, indicating a minor drop in employment.

○ **UR:** All-India UR rose slightly from 3.1% to 3.2%, with trends varying across sectors.

LFPR, WPR and UR (in per cent) in usual status (ps+ss) from PLFS conducted during January 2023 – December 2023 and January 2024 – December 2024 for persons of age 15 years and above

all-India

Indicator	Rural			Urban			Rural + Urban		
	male	female	person	male	female	person	male	female	person
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
January 2023 – December 2023									
LFPR	79.8	47.3	63.4	74.9	27.2	51.4	78.3	41.3	59.8
WPR	77.7	46.4	61.9	71.6	25.2	48.8	75.8	40.1	58.0
UR	2.7	1.9	2.4	4.4	7.5	5.2	3.2	3.0	3.1
January 2024 – December 2024									
LFPR	80.6	45.8	62.9	76.2	27.6	52.2	79.2	40.3	59.6
WPR	78.4	44.8	61.4	72.8	25.8	49.6	76.6	39.0	57.7
UR	2.8	2.1	2.5	4.4	6.7	5.0	3.3	3.1	3.2

What are the Concerns Regarding India's Labour Force?

➤ **Gender Gaps: Female LFPR remains much lower than male**, with urban female unemployment at **8.2%.** Only 3% of employed women aged over 25 years hold advanced degrees, revealing **underutilization of educated women** and a **mismatch between skills and job** opportunities.

➤ **Stagnation in Employment:** WPR and LFPR show **minimal year-on-year change**, indicating sluggish job creation.
  ○ **Employment growth is not proportional to economic growth**, indicating jobless or low-quality job growth.

➤ **Youth Unemployment:** A large proportion of the unemployed workforce consists of youth, especially those with secondary or higher education. According to the **International Labour Organization (ILO)**, global youth unemployment was 13.3% in 2023. In contrast, India's youth unemployment rate stood at 10.2% in 2023–24.

➤ **Low Productivity:** According to the **ILO**, India has the 2nd-longest average **workweek globally at 46.7 hours,** with 51% working over 49 hours, just behind Bhutan.
  ○ Despite this, India's labour productivity remains low, with a **Gross Domestic Product (GDP) per working hour of just USD 8**, placing it **133rd globally as of 2023.**

➤ **Rural Employment Dependence:** A large portion of the rural workforce remains engaged in **low-productivity or subsistence work**, raising concerns about underemployment and the prevalence of **informal, insecure jobs** over quality, skill-intensive employment.

What are India's Initiatives Related to Employment?
➢ **Support for Marginalised Individuals for Livelihood and Enterprise (SMILE)**
➢ **PM-DAKSH (Pradhan Mantri Dakshta Aur Kushalta Sampann Hitgrahi)**
➢ **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**
➢ **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**
➢ **Start Up India Scheme**
➢ **Rozgar Mela**
➢ **Indira Gandhi Urban Employment Guarantee Scheme- Rajasthan.**

Debt Metrics

Why in News?

Household debt in India rose from **36.6% of GDP** to **42.9%** between June-2021 and June 2024, signaling a macroeconomic shift and underscoring the need to examine key debt metrics such as **Debt-to-GDP ratio, public debt, and internal vs external debt.**

What are the Key Debt Metrics?

➢ **Debt-to-GDP Ratio:**
  ○ It is the ratio of a **country's total debt** to its **Gross Domestic Product (GDP).**
  ○ It indicates the **country's ability to repay its debt**. A h**igh ratio suggests a potential risk to fiscal sustainability**, while a moderate ratio is manageable if economic growth is strong.
  ○ **India's Context**: For the central government, the debt-to-GDP ratio is estimated to be **57.1% in 2024-25** and **56.1% in 2025-26.**
    ● Government aims to bring it down to **50 ± 1% by 2030–31.**
    ● **State governments** account for nearly **one-third of total public debt** and contributed to o**ver 50% of the rise in overall public debt** between 2014-15 and 2019-20.

➢ **Public Debt:**
  ○ **About: Public debt** refers to the **total liabilities incurred by the government** to finance its developmental and fiscal needs.
    ● It is repaid from the **Consolidated Fund of India** and includes **both internal and external borrowings.**
  ○ **Constitutional Basis**: As per **Article 292** of the Constitution, the Union government defines public debt as liabilities contracted against the **Consolidated Fund of India** within such limits, if any, as may be fixed by Parliament by law.
  ○ **Classification**:
    ● **Debt under the Consolidated Fund of India** (includes market borrowings like G-Secs and T-Bills).
    ● **Public Account Liabilities** (like provident funds, small savings, etc.).

➢ **Internal vs External Debt**:
  ○ **Internal Debt** refers to public loans raised **within the country**, primarily from domestic sources like individuals, banks, and financial institutions. It is denominated in Indian Rupees.
    ● It forms over **93%** of the **centre's public debt** and is divided into **marketable** (G-Secs, T-Bills) and **non-marketable** (special securities, etc.).
  ○ **External debt** refers to the obligations of the country to **foreign governments**, **international institutions**, or **foreign investors**, usually denominated in foreign currencies.
    ● It includes loans from foreign sources and multilateral institutions.
    ● The **external debt to GDP ratio** stood at **19.4%** as of September 2024.

Key Provisions Related to Debt Management in India:

➢ **Article 292 & 293:**
  ○ **Article 292**: Allows the **Union government to borrow money** on the security of the **Consolidated Fund of India,** within limits set by Parliament.

- **Article 293**: Enables **State governments to borrow money domestically** upon the security of the Consolidated Fund of the State, with prior Centre approval if they owe existing loans to the Union.

> **RBI Act, 1934**: **RBI Act, 1934** authorizes the **Reserve Bank of India** to **manage public debt o**n behalf of the Central Government.

> **FRBM Act, 2003**: The **FRBM Act, 2003** aims to **institutionalize fiscal discipline, reduce fiscal deficits, and ensure long-term macroeconomic stability** by setting targets for deficits, enhancing transparency, and ensuring timely fiscal reporting.

Factor	Effect on Public Debt	Explanation
Fiscal Deficit Increase	Increase	A higher fiscal deficit requires borrowing to meet the gap between revenue and expenditure.
Revenue Increase (Taxes)	Decrease	Higher revenue reduces the need for borrowing and public debt.
Expenditure Increase (e.g., Welfare Schemes)	Increase	Increased government spending leads to higher borrowing to finance the deficit.
Interest Rate Increase	Increase	Higher interest rates increase the cost of servicing debt, leading to more borrowing or higher debt.
Privatization/ Asset Sales	Decrease	Proceeds from asset sales can reduce the fiscal deficit and thus lower the need for borrowing.
Foreign Borrowing	Increase	Borrowing from foreign sources increases external debt.
Currency Depreciation	Increase	Depreciation increases the cost of repaying foreign-denominated debt, leading to higher overall debt.

Climate-Driven Economic Losses in Asia- Pacific

Why in News?

A **United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)** report titled *"Economic and Social Survey of Asia and the Pacific 2025"* has highlighted that one-third of Asia-Pacific countries face economic losses of at least 6% of **Gross domestic product (GDP)** annually due to climate-related events, which include floods, heatwaves, droughts, and cyclones.

How Does Climate Change Threaten Macroeconomic Stability in Asia-Pacific?

> **Average Annual Loss (AAL):** ESCAP utilized the AAL, which represents the estimated annual economic loss from disasters based on risk assessments that account for hazard frequency, intensity, exposure, and vulnerability.

- Across the observed **30 Asia-Pacific countries,** AAL averages 4.8% of GDP and nearly 11% in Cambodia and at least 7% in Fiji, Myanmar, and Pakistan.

> **Vulnerability of Developing Economies**: Among the 30 countries analyzed, 11 countries (Afghanistan, Cambodia, Iran, Kazakhstan, Laos, Mongolia, Myanmar, Nepal, Tajikistan, Uzbekistan, and Vietnam) are particularly vulnerable to **climate risks** from a **macroeconomic standpoint**.

- Rapid urbanization and weak infrastructure, especially in coastal areas, heighten climate risks, causing high losses.

- Despite contributing **60%** to global economic growth in 2024, many Asia-Pacific nations remain poorly equipped to handle climate shocks.

> **Sectoral Exposure**: Agriculture may see up to a **14% reduction in rice yields** by 2050, impacting food security and farmer incomes in countries like India.

○ Countries reliant on coal and oil (like Indonesia, **India**, and China) face major economic disruptions due to the global transition to renewable energy, with job losses and revenue declines projected.

○ **Fishing stock depletion** could reduce fish stocks by up to 30% in tropical regions by 2050.

> **What is UNESCAP?**
> ➤ **Click here to Read:** UNESCAP

What are the Major Climate Change Impacts on India's Economy?

➤ **India's Economic Impact:** According to the **Asian Development Bank (ADB),** India could face a **24.7% GDP loss by 2070** due to climate-induced economic impacts.

➤ **Key Drivers of Economic Losses:**

○ **Extreme Heat:** India is already warming, unusual heat spells are expected to become more frequent and widespread.

● By 2030, India could account for **34 million of the projected 80 million global job losses** due to **heat stress**-induced productivity declines (World Bank, 2022).

● Additionally, 4.5% of India's GDP could be at risk due to lost labor hours from extreme heat and humidity conditions.

○ **Agricultural Decline:** Rising heat and erratic rains are reducing rice and wheat yields. According to the **World Bank**, under 2°C warming by the 2050s, India may need to import **more than twice the amount** of food grain compared to a scenario without climate change.

○ **Rising Sea Levels:** India's 7,500 km coastline is increasingly vulnerable to rising sea levels, with **32% affected by erosion from 1990 to 2018.**

● Coastal cities like Mumbai and Kolkata face heightened flood risks, and the Sundarbans may shrink by up to 80% by 2100.

○ **Extreme Weather Events:** India ranks 6th among the top 10 countries most affected by extreme weather events from 1993 to 2023, according to **Germanwatch's Climate Risk Index.**

● India witnessed over 400 extreme events, resulting in **USD 180 billion** in economic losses and at least 80,000 deaths during this period.

What Strategies Can Asia-Pacific Adopt to Curb Climate-Driven Economic Losses?

➤ **Embrace Circular Economy:** Asia-Pacific Countries should promote **circular economy** systems where waste is reused in other sectors, cutting emissions and reducing resource use.

○ India should focus on **Zero Waste Cities** by encouraging **Waste-to-Wealth initiatives** to minimize waste and resource consumption.

➤ **Foster Green Innovation:** Encourage climate-tech startups in areas like **carbon capture,** and renewable energy production and storage.

○ India can foster climate innovation through the **Atal Innovation Mission** and Start-up India by supporting climate-tech ventures. Further funding from the **Green Climate Fund (GCF)** can help scale these green solutions.

➤ **Climate-Resilient Infrastructure:** Invest in flood-proof and heat-resistant infrastructure to protect urban areas from climate shocks.

○ India can align the **Smart Cities Mission** with the **National Action Plan on Climate Change (NAPCC)** to integrate climate adaptation and mitigation.

○ Developing climate-resilient **Special Economic Zones (SEZs)** with green infrastructure can attract low-carbon industries, inspired by models like **Masdar City in the UAE.**

➤ **Green Taxonomy:** India can develop a **green taxonomy** to channel investments into sustainable sectors and align it with the NAPCC to strengthen green financing.

➤ **Global Climate Funds:** Financial tools like the **Loss and Damage Fund (LDF)** support Asia-Pacific nations by funding climate resilience, better farming practices, and renewable energy transitions. Scaling up the LDF is crucial for impactful adaptation.

10th Anniversary of Pradhan Mantri Mudra Yojana

Why in News?

On **8th April 2025**, the **Pradhan Mantri Mudra Yojana (PMMY)** completed **10 years** since its launch in **2015**. It has been pivotal in providing **collateral-free financial support** to **micro and small enterprises (MSEs)** across India.

What are the Key Achievements of PMMY?

➢ **Credit Outreach:** Since 2015, over **Rs 32.61 lakh crore** has been **disbursed** through **52 crore loans,** including **100+ million first-time borrowers**.
  ○ **MSME** lending rose from **Rs 8.5 lakh crore (FY14)** to **Rs 27.25 lakh crore (FY24),** with its share in **bank credit growing from 15.8% to nearly 20%.**

➢ **Inclusive Financial Access:** Women constitute **68%** of PMMY beneficiaries. From FY16 to FY25, per woman loan disbursement rose at a **CAGR** of 13% and deposits at 14%.
  ○ **Half** of the PMMY accounts **are held by SC, ST, and OBC** entrepreneurs, and 11% by minorities, as per SBI.

➢ **Pandemic Support:** A **2% interest-subvention** on **Shishu loans** under **Atma Nirbhar Bharat** helped **prevent defaults** and protect livelihoods during **Covid-19.**

➢ **Maturing Credit Demand:** More borrowers are moving from **small Shishu loans (declined from 92% to 63%)** to higher Kishor (rose from 5.9% to 44.7%) and Tarun categories.

➢ **Regional Reach:** Tamil Nadu, UP, and Karnataka lead in total PMMY disbursals, Tripura, Odisha, and Tamil Nadu top in per capita loans.
  ○ **J&K** leads UTs in loan disbursal, while **Bihar and West Bengal** reflect **untapped potential.**

Decade of Pradhan Mantri Mudra Yojana

Cumulative Outreach to **52 crore** MSE Borrower Accounts with Credit Support of ₹32.61 lakh crore

Empowering Women with **68%** Loan Accounts belonging to Women Beneficiaries.

Addressing the Credit Needs of Weaker Sections with **50%** of the Loan Accounts belonging to SC/ST/OBC

What is Pradhan Mantri Mudra Yojana (PMMY)?

➢ **About:** MUDRA (Micro Units Development and Refinance Agency) is a **flagship scheme** of the Government of India, launched in **2015** to provide **affordable, collateral-free institutional credit** through **Member Lending Institutions (MLIs).**

➢ **Key Features:**
  ○ **Type:** Central Sector Scheme
  ○ **Funding Provision:** Loans are extended through **Member Lending Institutions (MLIs)** such as **Scheduled Commercial Banks**, **RRBs**, **NBFCs**, and **MFIs**.
  ○ **Refinancing:** Managed by **MUDRA Ltd.** (Micro Units Development & Refinance Agency), which refinances MLIs but does **not lend directly** to borrowers.
  ○ **Credit Guarantee:** Provided via the **Credit Guarantee Fund for Micro Units (CGFMU)**, set up in **2015**.

➢ **Other Benefits:**
  ○ No processing fees, **no collateral**, easy access to credit, and **flexible repayment** terms.
  ○ **MUDRA Card,** a **debit card** issued against the loan account to meet **working capital** needs.

➢ **Loan Categories:**

Shishu
Covering Loans Upto ₹ 50,000/-

Kishore
Covering Loans Above ₹ 50,000/- And Upto ₹ 5 Lakh

Tarun
Covering Loans Above ₹ 5 Lakh And Upto ₹ 10 Lakh

TarunPlus
Covering Loans Above ₹ 10 Lakh And Upto ₹ 20 Lakh

Urban Transport in India

Why in News?

Bengaluru's Namma Metro has become the costliest metro service in India after a steep fare hike in February 2025. The move has raised concerns over the **urban transport** affordability. Without fair pricing, public transport risks losing commuter trust.

What are the Concerns Regarding Urban Transport Systems?

➢ **Affordability:** Rising **fares in metro** (Bengaluru's Rs 90 fare for more than 30 km) and bus services are making daily commuting increasingly expensive for low- and middle-income groups.

- Additionally, surge pricing by mobility apps during peak hours or bad weather makes travel costly, undermining the **National Urban Transport Policy (NUTP) 2006** and **Smart Cities Mission** that emphasize affordable and accessible mobility for all.

➤ **Weak Non-Motorised Transport (NMT) Infrastructure:** Most Indian cities lack safe and accessible infrastructure for NMT like pedestrian zones (pedestrian fatalities >40% in Delhi, Kolkata, Bengaluru) and cycling tracks.

- Where such paths exist, they are often **encroached, poorly designed, or badly maintained,** making them unsafe and unusable.

- Land use and transport planning are poorly integrated, with weak **Transit-Oriented Development (TOD) implementation.**

➤ **Congestion:** Indian cities face severe traffic congestion, private vehicles, despite serving under **20% of commuters, occupy 90% of road space.** This mismatch, along with stagnant road infrastructure, leads to long commutes and reduced productivity.

➤ **Environmental Impact:** In 2020, India's transport sector accounted for **14% of total energy-related CO_2 emissions**. Vehicles remain the largest source of **Particulate Matter (PM2. 5)** and **NOx emissions** in cities like Delhi, causing severe health issues and environmental damage, thereby undermining efforts to achieve **India's Net Zero target by 2070.**

- Lack of clean fuel policies and **slow adoption of electric mobility** worsen the crisis.

➤ **Inadequate Public Transport Systems:** Only **63 of 458 cities with population >1 lakh have a formal bus service**. India has just 1.2 buses per 1,000 people compared to global benchmarks of 5-8 (NITI Aayog, 2018).

- Most cities lack well-connected **transit networks,** with metro services missing peri-urban areas, while unregulated informal modes like auto- and e-rickshaws raise security concerns.

➤ **Financial and Capacity Constraints: Urban Local Bodies (ULBs)** lack financial autonomy and rely heavily on state or central funding.

- Their limited ability to raise resources through tools like land value capture, congestion pricing, or **green bonds** hinders affordable and sustainable transport projects.

What Can Be Done for Sustainable and Inclusive Urban Mobility?

➤ **Investment in NMT:** Nearly 50% of urban trips in Indian cities are under 5 km, according to the **Ministry of Housing and Urban Affairs**, making them ideal for NMT.

- Dedicated lanes and safe infrastructure for walking and cycling can promote affordable and sustainable urban mobility.

➤ **Adopt Best Practices**: Cities like **Kochi** (Most Sustainable Transport System), **Bhubaneswar** (Best Public Transport), and **Srinagar** (Best Non-Motorized Transport) showcase replicable models. Recognizing and scaling these practices will accelerate transformation.

➤ **Affordable Public Transport Access:** Promote **subsidized fare structures** (e.g., monthly passes) and leverage **non-fare revenue sources** (such as advertisements and retail leasing at stations) to reduce the financial burden on commuters.

➤ **Clean Transport:** Promote clean mobility through **FAME II**, **PM e-Bus Sewa**, and provide subsidies or tax cuts on EVs to accelerate the adoption of electric buses and green commuting.

➤ **Empower ULBs:** Enable ULBs to leverage land value capture, congestion pricing, green bonds, and parking charges under **MoHUA's Value Capture Finance (VCF) Policy 2017** to address financing challenges and support sustainable mobility services.

➤ **Integrated Public Transport Systems:** Fund integrated public transport systems focused on moving people, not vehicles. Encourage multimodal transport, seamless ticketing, real-time tracking, and TOD under **Transit Oriented Development Policy, 2017** to reduce private vehicle use.

- Strengthen **Unified Metropolitan Transport Authorities (UMTAs)** for coordinated mobility planning aligned with **Smart Cities** and **AMRUT** goals.

> **What is Transit-Oriented Development?**
> ➤ **Click here to Read: Transit-Oriented Development**

What are the Initiatives Related to Urban Mobility in India?

➢ **Atal Mission for Rejuvenation and Urban Transformation (AMRUT).**
➢ **Bharatmala Pariyojana.**
➢ **Faster Adoption and Manufacturing of Electric Vehicles (FAME) – I & II**
➢ **Metro Rail Policy (2017).**
➢ **Urban Infrastructure Development Fund (UIDF)**
➢ **Multimodal Transport Hub**
➢ **National Electric Mobility Mission Plan**

Reforming Indian Railways

Why in News?

The **Comptroller and Auditor General's (CAG)** audit report on the Ministry of Railways highlighted the various **concerns** in the functioning of Indian Railways.

What are Key Facts About Indian Railways?

➢ **About:** India has the **4th largest railway network** in the world, with over **65,000 km** of route length.
  ○ In 2022, Indian Railways carried **8 billion passengers**, **1.4 billion tons of freight**, and is expected to contribute to **40%** of global rail activity by **2050**.
➢ **Infrastructure Spending:** The government plans to invest **USD 750 billion by 2030**, as part of a broader **USD 1.4 trillion investment target (2019–2023)** in infrastructure.
  ○ **100% FDI allowed** in the railway sector, encouraging global participation.
➢ **Innovation:** **KAVACH**, India's own **Train Collision Avoidance System,** will be deployed over **37,000 km** of railway lines.
  ○ **15,000 km** of tracks will be converted into **automatic signaling zones**, enhancing safety and efficiency.
  ○ **Vande Bharat trains** feature quick acceleration, automatic doors, CCTV, **bio-toilets**, GPS info systems, and onboard infotainment.
➢ **Financial Performance:** In 2023–24, Indian Railways earned **USD 32.18 billion** in traffic revenue, **99.8%** of its total income, showing **strong efficiency** and public reliance.

➢ **Future Plans:**
  ○ **High-Speed Rail**: Mumbai–Ahmedabad **bullet train** and other semi-high speed trains.
  ○ **Signaling & Telecom**: Plans to upgrade around 15,000 km to **automatic signaling** and 37,000 km with **KAVACH.**
  ○ **Digitalization**: Railway puts emphasis on predictive maintenance, asset management, and **GPS info systems**.
  ○ **Intermodal Transport**: Integration of **rail, road, and ports** for smoother logistics.
➢ **Net Zero Carbon Emissions Target:** Indian Railways aims for **net zero carbon emissions by 2030.** As a start, it plans to run **35 hydrogen trains** under the **Hydrogen for Heritage program.**

What is the Significance of Indian Railways?

➢ **Lifeline for the Nation:** Indian Railways is the **backbone** of India's transport, providing **affordable, reliable** travel and boosting economic integration nationwide.
➢ **Industrial Expansion:** It enables the **transport of essential commodities** like coal, iron ore, cement, and agricultural products, ensuring **uninterrupted industrial operations.**
  ○ **Dedicated Freight Corridors (DFCs) lowers logistics costs**, making Indian manufacturing more **competitive** in the global market.
➢ **Employment:** With over **1.2 million employees**, it is the **9th-largest employer in the world.**
➢ **Regional Development:** Railways play a pivotal role in linking **rural regions** to urban markets, improving access to **education, healthcare,** and **jobs** in underdeveloped regions.
➢ **Green Transport:** The use of **energy-efficient locomotives**, **green bio-toilets**, and **electrified routes** reflects the commitment to **environmental responsibility.**
➢ **National Security:** Strategic rail links in sensitive areas like the **North-East** bolster **national security** and rapid mobilization.

What Concerns are Associated with Indian Railways?

➢ **High Operating Ratio:** The **operating ratio (OR)** for 2024–2025 is estimated at Rs **98.2**—slightly better than **Rs 98.7 in 2023–2024**, but worse than Rs 97.8 in 2016.

○ A higher OR (amount **spent to earn Rs 100**) leaves **less resources for capex** and makes the Railways more dependent on **budgetary** support and **Extra-Budgetary Resources (EBRs).**

➤ **Slow Infrastructure Development:** Among the DFCs (proposed in 2005), **only** the **eastern DFC** is fully **operational** and **western DFC** nears **completion**.

○ The **east coast, east-west**, and **north-south** sub-corridor DFC remain in the **planning stage**.

○ The Mumbai-Ahmedabad bullet train project has been **delayed from 2023 to 2028** due to land acquisition issues.

➤ **Inadequate Safety Technologies:** While Kavach can prevent collisions through automated braking and alerts, its **limited rollout** reduces its overall impact.

○ As of February 2024, it had been installed on only **1,465 route km**—just **2%** of the total railway network.

➤ **Slow Journeys:** Mail and express trains continue to run at an **average speed** of just **50–51 kmph**, falling short of the goals set under **Mission Raftar.**

○ Mission Raftaar (2016–17 Budget) aims to **double freight train speeds** and raise **passenger train** speeds by **25 kmph within 5 years.**

What Recommendations Have Various Committees Made to Improve Railways?

➤ **Rakesh Mohan Committee (2010):** Emphasized development of **long-distance and inter-city transport**, including **High-Speed Rail corridors**.

○ Establishment of **National Transport Infrastructure Finance**, ensuring **neutrality** regarding **mobility, sustainability,** and **inclusion goals**.

➤ **Kakodkar Committee (2012):** Called for establishing a **statutory Railway Safety Authority**.

○ Proposed a **non-lapsable Rashtriya Rail Sanraksha Kosh (RRSK)** of **Rs 1 lakh crore** over 5 years for safety-related projects.

➤ **Bibek Debroy Committee (2014):** Recommended creation of a **Railway Infrastructure Authority** as an **advisory body** to help the government make informed decisions on issues like promoting **competition, efficiency, and economy.**

○ Suggested **outsourcing of non-core activities** (e.g., schools, hospitals) to increase efficiency and reduce operational load on Indian Railways.

FAO Report on Plant Genetic Resources for Food and Agriculture

Why in News?

The **Food and Agriculture Organization (FAO)** has released the **3ʳᵈ Report on the State of the World's Plant Genetic Resources for Food and Agriculture (SoW3)** after the **20ᵗʰ Session of the Commission on Genetic Resources for Food and Agriculture (CGRFA-20)** held in **Rome, Italy**.

➤ The report highlighted that although **around 6,000 plant species** are cultivated globally, 60% of the world's crop production is concentrated in just 9 crops.

Note: The **State of the World's Plant Genetic Resources for Food and Agriculture (SoW-PGRFA) Report**, published by **FAO** under the **CGRFA,** is a periodic global assessment of **plant genetic resources**, focusing on their **conservation, sustainable use, and role in food security**.

What are the Key Highlights of the FAO's Report on World's Plant Genetic Resources?

➤ **Global Crop Dependency:** 60% of global crop production relies on just **9 crops- sugarcane, maize, rice, wheat, potatoes, soybeans, oil palm fruit, sugar beet,** and **cassava.**

○ Despite the cultivation of **6,000 plant species**, **crop diversity is declining**, posing risks to global food security.

➤ **Threat to FV/LR:** In India, over **50% of Farmers Varieties and Landraces (FV/LRs)** across five **agro ecological zones** are under threat. The 2016 **Seed Hub Initiative** has boosted pulse production by promoting **high-yielding varieties (HYVs)**.

○ **FV/LRs** are traditional crops adapted to local conditions, enhancing **biodiversity, food security, and climate resilience**. They offer greater resistance to **pests, diseases, and drought** than commercial hybrids, e.g., **Kala Namak Rice, Chapati Wheat, and Rajnigandha Cotton**.

○ Globally, **6% of FV/LR diversity** is at risk, with losses exceeding **18%** in some regions. **Southern Africa, the Caribbean, and Western Asia** are the most affected.

➢ **Conservation Scenario: 42% of plant taxa** face threats in **in-situ conservation,** while **ex-situ efforts** face **financial, political, and infrastructural constraints,** along with skill shortages.

➢ **Crop Diversity and climate change:**
  ○ **Extreme weather events accelerate genetic diversity loss,** while many countries **lack disaster impact assessment mechanisms.**
  ○ **Post-disaster germplasm distribution** i.e. the **supply of plant genetic material for cultivation and conservation** faces challenges due to **poor seed adaptability to local soil.**

Commission on Genetic Resources for Food and Agriculture (CGRFA)

➢ **Establishment:** Founded by the **Food and Agriculture Organization (FAO)** in **1983** to **address issues** related to **genetic resources for food and agriculture (GRFA).**

➢ **Objective:** Serves as the **only permanent intergovernmental body** dedicated to the **conservation and sustainable use of biological diversity in agriculture.**

➢ **Membership:** 179 countries (as of January 2023), including **India,** along with the **European Union.**

➢ **Major Achievements of CGRFA:**
  ○ **International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) (2001):** Facilitated its adoption, recognizing farmers' contributions to crop diversity and establishing a **global framework** for assessing plant genetic materials for breeders, farmers, and researchers.
  ○ **Animal Genetic Resources (AnGR) and the Global Plan of Action (GPA):** Initiated work on AnGR in 1997, leading to the first-ever *Report on the* **State of the World's Animal Genetic Resources** and culminating in the adoption of the **GPA in 2007.**

Decline in India's Cotton Production

Why in News?

India, once the world's largest **cotton** producer and exporter, is facing a significant decline in cotton production, primarily due to the lack of technological advancements and policy inaction.

What are the Reasons for Decline in India's Cotton Production?

➢ **Initial Growth: Hybrid Cotton Varieties** developed by Indian scientists like C.T. Patel and B.H. Katarki in the 1970s, has significantly improved yields.
  ○ **Bt (*Bacillus thuringiensis*) cotton,** introduced in 2002–03, used genes from bacterium *Bacillus thuringiensis* to protect against pests like the **American bollworm.**
    ● By 2013–14, it covered over **95% of India's cotton area,** doubling yields to 566 kg per hectare (kg/ha). This helped India become the world's top cotton producer by 2015–16 and a major exporter.

➢ **Stagnation after Success:** Despite the success of **Bt** and **Bollgard-II technologies,** India has not approved any **new genetically modified (GM) crops cotton variants since 2006.**
  ○ Indigenous innovations, such as **whitefly-** and **pink bollworm**-resistant cotton developed by Indian institutions, remain stuck in regulatory limbo.
  ○ The 2010 moratorium on **Bt brinjal,** despite **Genetic Engineering Appraisal Committee (GEAC)** clearance, set a precedent for halting field trials of other GM crops, preventing the introduction of new technologies to improve cotton production.

➢ **Infestation:** The decline in cotton production in India is primarily due to the increased infestation of the pink bollworm (PBW). Initially, Bt cotton provided effective pest control, but over time, **PBW developed resistance to Bt proteins.**
  ○ This pest now infests crops as early as **40-45 days after sowing,** damaging bolls and flowers.
  ○ The exclusive cultivation of Bt cotton has contributed to this resistance, leading to significant reductions in both the quality and quantity of cotton lint.

➢ **Impact on Production:** India's cotton production, which reached 39.8 million bales in 2013-14, is expected to drop to 29.5 million bales by 2024-25, with yields falling below 450 kg/ha, far below global leaders like China (1993 kg/ha).

What are the Concerns Regarding Decline in Cotton Production?

➢ **Rising Dependence on Imports:** Cotton imports surged from USD 518.4 million in 2023–24 to USD 1.04 billion in 2024–25, while exports fell from USD 729.4 million to USD 660.5 million.

    ○ Production decline **reversed India's trade position**, with imports surpassing exports, eroding its previous competitive edge in the global cotton market.

➢ **Contradictory Trade and Tech Policies:** Indigenous GM innovations from premier institutions such as **National Botanical Research Institute** have been delayed or ignored.

    ○ While field trials of GM crops are blocked, however **India allowed the import of GM soyameal in 2021.**

    ○ The moratorium on GM crops and lack of regulatory clarity have deterred innovation in the cotton sector. Regulatory decisions have shifted from **scientific risk assessment to public sentiment and legal interventions.**

➢ **Missed Opportunities in Global Markets:** Countries like the US and Brazil, with robust biotech adoption, are capturing the export space once dominated by India.

    ○ Domestic textile industries are now sourcing cotton from abroad, adding to input costs and reducing competitiveness.

➢ **Decline in Cottonseed Oil**: Cottonseed contributes to **edible oil production,** making it the third-largest vegetable oil source in India after mustard and soybean.

    ○ Lower cotton output affects oil production, increasing India's edible oil import dependency.

Note: The Cotton Development Programme under the National Food Security Mission (NFSM) aims to boost cotton production and productivity in major cotton-growing states and has been implemented by the Department of Agriculture & Farmers Welfare since 2014-15.

What Can be Done to Enhance India's Cotton Production?

➢ **Technological Interventions:** Expedite regulatory clearance for pest-resistant and high-yielding GM cotton hybrids (e.g., whitefly-resistant and pink bollworm-resistant varieties).

➢ **Promotion of High-Density Planting System (HDPS):** Expand the adoption of **HDPS across cotton-growing states** to increase plant population per unit area and improve yield.

➢ **Farmer-Centric Extension Services:** Scale platforms like **Cott-Ally** to provide real-time updates on MSP, weather, pest alerts, and procurement logistics.

   ○ Enhance agricultural extension through **Krishi Vigyan Kendras** and the **Cotton Corporation of India** to disseminate best farm practices.

➢ **Post-Harvest and Market Reforms:** Expand **"Kasturi Cotton" branding** with QR-code traceability to ensure quality assurance in global markets.

   ○ Operationalize the five-year **Mission for Cotton Productivity** **(announced in Budget 2025–26)** to enhance yield, ensure sustainability, and promote Extra-Long Staple cotton cultivation (known for their superior quality, softness, and durability), thereby reducing import dependence.

   ○ Encourage investment in spinning, weaving, and garmenting sectors linked with cotton clusters to ensure holistic sectoral growth.

International Relations

Highlights

- US-China Tariff Escalation 2025
- India Ends Trans-Shipment Facility for Bangladesh
- Ottawa Landmine Convention
- India-Sri Lanka Relations
- Shift from Globalism to Regionalism
- Global South as a Peacemaker
- 6th BIMSTEC Summit
- India-Bangladesh Relations
- Soft Power of US and India
- Insurgency in Balochistan

US-China Tariff Escalation 2025

Why in News?

China raised tariffs on US goods from **84% to 125%** in retaliation for US President Donald Trump's hike on **Chinese imports to 145%.** Earlier, President Trump had announced a **90-day suspension of reciprocal tariffs** for most countries, including **India, but notably excluded China.**

- These retaliatory measures between the US and China have heightened concerns over global economic stability.

What Factors Led to the Intensifying Tariffs Between the US and China?

- **US:** A USD 295 billion US trade deficit with China in 2024 remains a major trigger behind US tariff hikes.
  - The US sees such deficits as a sign of **losing in global trade,** viewing China's surplus as both **unfair and strategically risky**.
  - The US accuses China of **intellectual property** theft and forced technology transfers that distort fair competition, and has raised tariffs to protect its domestic industries.
- **China:** China responded after the US tariffs on Chinese imports had increased to 145%. This measure is part of an ongoing trade dispute between the two countries.
- **Supply Chain Security:** Both nations aim to **reduce mutual dependence**, especially in critical goods like **Semiconductors**, **Rare Earth Metals**, and **Electric vehicles (EVs)** components.
  - The US is reducing reliance on China, moves like the **CHIPS Act** and partnerships with India (**India-US COMPACT Initiative**) and Vietnam aim to de-risk and diversify supply chains.
- **Geopolitical Rivalry:** US-China tensions go beyond trade, rooted in strategic conflicts over **Taiwan,** the **South China Sea**, and tech dominance (**Artificial Intelligence**, **Quantum**).
- **Tariff Evasion via Third Countries:** Chinese firms reroute goods through nations like Vietnam and Malaysia to bypass US tariffs.
  - This has led to broader trade tensions beyond China, as the US seeks to prevent backdoor access to its markets through regional intermediaries.

What are the Risks of Full-Scale Trade War Between the US and China?

- **Recession Risks:** The US and China jointly account for about **43% of global GDP** (**International Monetary Fund (IMF) 2024** estimate).
  - Simultaneous slowdowns or recessions would drag down global growth. **The World Trade Organisation (WTO)** warns the US-China trade war could slash global **GDP by up to 7%.**
  - Uncertainty around tariffs is also **dampening investment and causing market volatility**.

○ A tariff-heavy regime risks pushing up the **prices of everyday goods,** fuelling inflation and potentially curbing consumer spending, raising the threat of a **global recession.**

➤ **Product Dumping Risks:** With diminished access to the US market, China may redirect surplus goods like steel and solar panels to other markets at **subsidized prices.**

○ This could undercut local industries in regions like the **EU, UK, and India,** affecting employment and wages, increasing **trade litigation and protectionism.**

➤ **Weaponization of Strategic Tools:** China's control over rare earths like **gallium, germanium, and lithium** could escalate the US-China conflict into a **tech cold war**, threatening global supply chains.

○ For India, this risks disrupting the **Make in India push**, especially in electronics and renewables.

➤ **Disruption to Global Supply Chains:** Countries dependent on Chinese manufacturing (e.g., ASEAN, EU) or US-designed technologies (e.g., software, chips) would face cross-border economic shocks.

○ Reshoring and near-shoring efforts are expensive and time-consuming.

➤ **Geopolitical Polarization**: Decoupling may force countries to choose sides, **undermining multilateralism** and fragmenting global economic governance.

What are the Implications of the US-China Trade War on India?

➤ **Supply Chain Disruptions:** Electronics, auto parts, and pharmaceuticals in India heavily rely on Chinese components.

○ Rising costs or delayed shipments due to tariffs may **make gadgets, vehicles, costlier or harder to source in India.**

➤ **Pharmaceutical Sector at Risk:** Around 70% of **Active Pharmaceutical Ingredients (APIs)** used in Indian medicines are imported from China.

○ Tariff-linked cost hikes or supply bottlenecks could raise drug prices and impact India's healthcare and pharma exports.

➤ **GDP and Inflation Effects:** Weaker global demand could slow India's GDP growth, as seen earlier when it fell from **8.3% in 2017–18 to 4.2% in 2019–20**, with the **US-China trade war in 2018** being a major cause

○ Inflation could rise due to costlier imports, affecting household spending and business costs.

➤ **Export Opportunities:** As the US imposes steep tariffs on China, Indian sectors such as **textiles, and leather** have an opportunity to become more competitive and capture a larger share of the US market.

What Can be Done to Reduce the Impact of US-China Trade Conflict?

➤ **Global Actions:** The WTO's **Appellate Body** has been paralyzed since 2019. Reviving it through consensus-building among **G20 and Quad** countries is vital to mediate large-scale tariff disputes legally.

○ South countries must reduce **overdependence on the US-China axis** by investing in **South-South trade corridors** (e.g., India- Africa - ASEAN)

○ If Europe strengthens ties with Asia, **global trade could decentralize from US dominance in the long term.**

○ Forums like **Asia-Pacific Economic Cooperation** and **BRICS** must prioritize economic **de-escalation and cooperation over unilateralism.**

➤ **National Actions:** India should fast-track **India-EU Free Trade Agreement (FTA)**, **India-UK FTA**, and **India-GCC FTA** to ensure India's exports are shielded from US-China trade war linked supply shocks.

○ Strengthen **Production Linked Incentive Schemes** and **Make in India** in semiconductors, electronics, APIs, and solar modules to curb overdependence on Chinese imports.

○ Position India as a preferred **China+1 destination** to attract supply chains looking to exit China by easing land, labor, logistics, and compliance under PM Gati Shakti and Invest India platforms.

○ Use platforms like **Quad, BRICS, G20, and Shanghai Cooperation Organisation (SCO)** to push for **non-politicization of supply chains** and protect developing country trade rights.

○ Establish a **National Trade Watchdog** to monitor tariff shifts, rerouted goods, and early warning systems for Indian exporters.

India Ends Trans-Shipment Facility for Bangladesh

Why in News?

India has ended the **2020 transshipment facility** that allowed **Bangladeshi exports** to pass through its ports and airports. This decision comes after **Bangladesh's remarks in China,** where **it described Northeast India as 'landlocked'** and positioned **itself as the 'guardian of the ocean' for the region,** as well as a **strategic gateway for China's influence in Northeast India.**

Note: The transshipment facility for Bangladesh, introduced by India in 2020, allowed Bangladeshi exporters to use Indian **Land Customs Stations (LCSs)** to transport goods to third countries like **Bhutan, Nepal, and Myanmar.**

➢ This arrangement aimed to streamline trade flows, reduce logistical costs, and benefit **Bangladesh's readymade garment (RMG) sector** by cutting transit costs and time.

Why did India Withdraw Transshipment Facility for Bangladesh?

➢ **Industry Pushback:** The **Apparel Export Promotion Council (AEPC)** lobbied for the facility's removal.

  ❍ India and Bangladesh are direct competitors in global textile markets, especially in the RMG sector (China ranks 1st, Bangladesh 2nd, and India 6th in global garment exports).

  ❍ Indian exporters argued that the **facility favored Bangladesh**, hurting India's market share and logistics infrastructure.

➢ **Rising Air Freight Costs:** Sharp increases in **freight rates to destinations** like the US and Europe prompted calls to reduce external cargo burden on Indian facilities.

➢ **China Factor**: India's move reflects its strategic unease over China's growing presence near the **Siliguri Corridor (Chicken Neck corridor),** where Bangladesh has invited Chinese investment in the **Lalmonirhat Airbase,** close to India's **northeastern frontier.**

  ○ The Northeast region, known as the **"Seven Sisters,"** is connected to mainland India through the narrow Siliguri Corridor. It shares international borders with **Bangladesh, Bhutan, Myanmar, China and Nepal,** making it highly geopolitically sensitive.

➢ **Implications:**

  ○ **Bangladesh:** In 2024, Bangladesh's USD 50 billion export sector, led by RMG, faces higher costs and delays after India's move, impacting its global competitiveness in textiles.

  ○ **India:** The decision signals growing strain in **India-Bangladesh relations,** particularly as Bangladesh moves closer to China.

    ● Experts also warn the move may conflict with **World Trade Organization (WTO)** **General Agreement on Tariffs and Trade (GATT)** Article V and **Trade Facilitation Agreement (TFA) Article 11,** which ensure freedom of transit for **landlocked nations.**

Read more: **India-Bangladesh Relations**

Ottawa Landmine Convention

Why in News?

NATO members: **Poland, Finland**, and the three **Baltic states (Estonia, Latvia, Lithuania)** are withdrawing from the **1997 Ottawa Convention**, citing **increased security threats from Russia** amid the ongoing **Russia-Ukraine war.**

➢ They fear a **ceasefire may let Russia re-arm** and **endanger their security.**

What is Ottawa Convention 1997?

➢ **About:**

  ○ It is an international agreement that **prohibits the use, production, stockpiling, and transfer** of **anti-personnel landmines.**

    ● Landmines are concealed explosive devices that are activated by proximity or pressure.

    ● **Anti-personnel mines** are specifically designed to cause harm or injury to individuals, including soldiers.

  ○ It obligates signatories to **destroy stockpiles within 4 years**, **clear mined areas**, and **assist victims**.

➢ **Objective**: It aims to **mitigate civilian harm** caused by **landmines**, which remain lethal long after conflicts end.

➢ **Adoption:** Finalized at the **Diplomatic Conference in Oslo** on 18th September 1997 and entered into force on **1st March 1999.**

➢ **Scope:** Bans anti-personnel landmines but **does not apply to anti-vehicle mines** (designed to damage or destroy vehicles).

➢ **Membership:** 164 States countries.

  ○ Major powers like the **US, Russia, and India** are **not parties**.

2008 Convention on Cluster Munitions

➢ The Convention prohibits all use, production, transfer and stockpiling of cluster munitions.

  ○ **Cluster munitions** are weapons that release **many smaller explosives (bomblets) over a large area,** often harming **civilians and creating lasting humanitarian risks.**

➢ It has 112 state parties and 12 signatories. Recently, Lithuania has withdrawn from the **2008 Convention on Cluster Munitions**, which **bans weapons that spread smaller bombs over a wide area.**

  ○ **India, along with the US, Russia, China, Ukraine, and Israel,** has **refrained from signing the treaty**, primarily due to **military and strategic considerations.**

The North Atlantic Treaty Organisation (NATO) in 2024
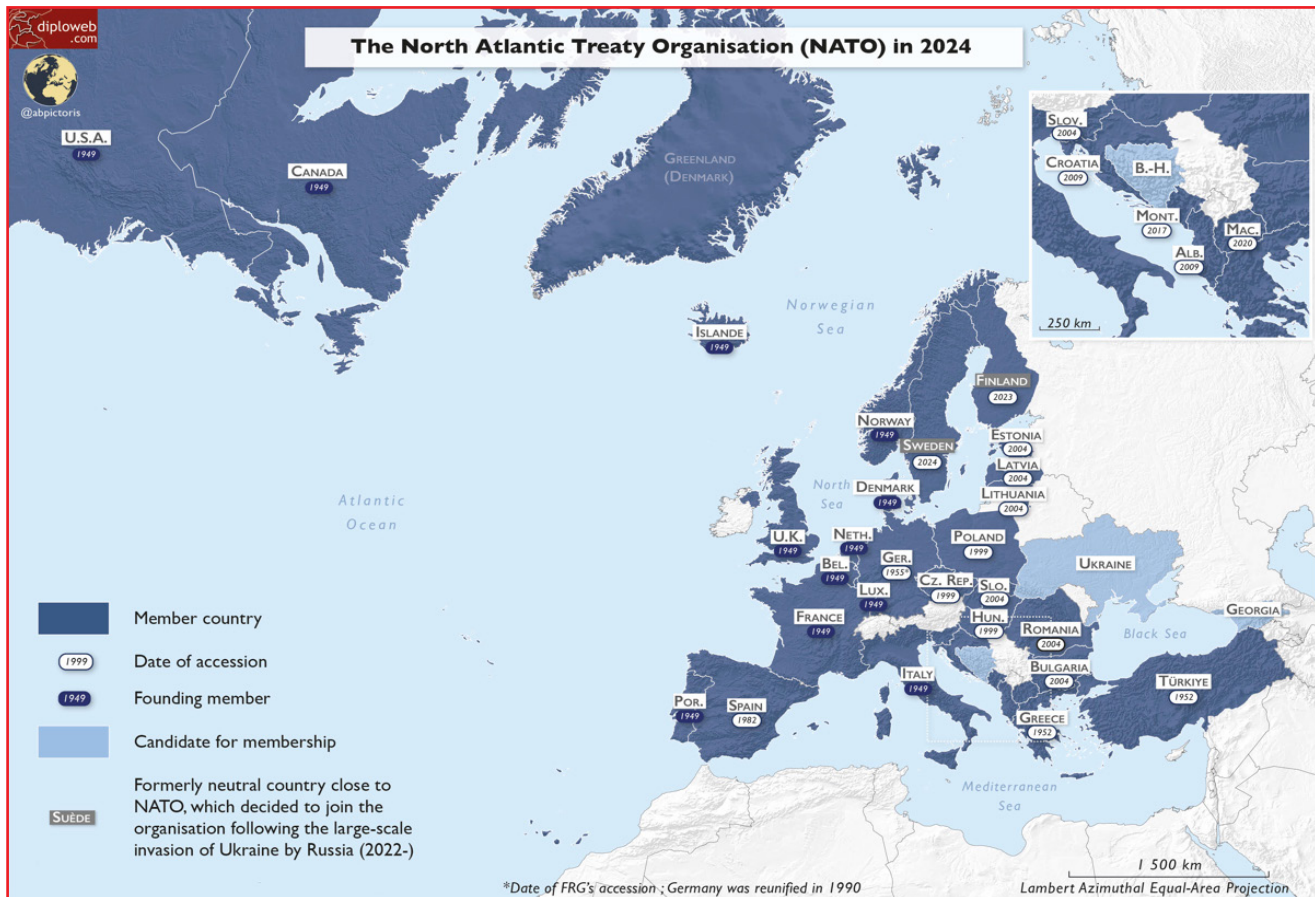
India-Sri Lanka Relations

Why in News?

Prime Minister Narendra Modi's visit to **Sri Lanka** resulted in the signing of 7 memorandums of understanding (MoUs) with the Sri Lankan President. This visit underscores India's commitment to its **'Neighbourhood First Policy'** and aligns with the **'MAHASAGAR' vision** aimed at fostering regional security and growth

What are the Key Highlights of the India-Sri Lanka Bilateral Talks?

➢ **Sri Lanka Mitra Vibhushana:** Prime Minister Narendra Modi was awarded the **'Sri Lanka Mitra Vibhushana'**, the country's highest civilian honour.

    ○ The award includes a citation and a silver medal adorned with **Navarathna** (nine Sri Lankan gems). The medal features a **Pun Kalasa** (symbol of prosperity), **Sun and Moon** (eternity), and a **Dharma Chakra,** reflecting the shared Buddhist heritage.

➢ **Defence Cooperation**: India and Sri Lanka signed a landmark **5-year Defence MoU**, an umbrella agreement aimed at structuring joint exercises, maritime surveillance, and defence industry collaboration.

    ○ Sri Lankan **reaffirmed Sri Lanka's commitment** to ensuring that its territory will not be used against India's interests.

➢ **Energy and Infrastructure**: The two sides agreed on the India-Sri Lanka grid interconnection for electricity trade.

    ○ Additionally, a tripartite MoU involving the **United Arab Emirates** was signed to develop **Trincomalee (Sri Lanka) as an energy hub,** including the construction of a multi-product energy pipeline.

➢ **Development and Finance**: India also converted over **USD 100 million in loans into grants** and reduced interest rates on other loans to support Sri Lanka's debt restructuring.

➢ Prime Minister Narendra Modi launched key projects in Sri Lanka, including the refurbished **Maho-Omanthai railway line** (supported by Indian assistance of USD 91.27 million), the **Sampur Solar Power Project**, and a solar rooftop initiative for 5,000 religious sites in Sri Lanka (with India's credit assistance of USD 17 million), generating 25 MW of green energy.

➢ **Cultural and Religious Diplomacy**: The PM announced that relics of Lord Buddha found in Gujarat's Aravali would be sent to Sri Lanka for exposition during the Vesak Day celebrations in May 2025.

How have Relations Between India and Sri Lanka Been?

➢ **Trade and Commerce:** India is one of Sri Lanka's top trade partners, and vice versa within South Asian Association for Regional Cooperation (SAARC).

    ○ The **1998 Free Trade Agreement (FTA)** boosted bilateral trade to USD 5.5 billion in 2023–24, with India's exports at USD 4.1 billion and Sri Lanka's at USD 1.4 billion.

    ○ India is a key Foreign Direct Investment (FDI) contributor to Sri Lanka, with cumulative investments of USD 2.25 billion till 2023.

➢ **Tourism and Connectivity:** India is the leading source of tourists to Sri Lanka (around 4.16 lakh in 2024 (~20% of 2.05 million total).

    ○ Sri Lanka's adoption of India's UPI and use of the rupee for trade settlement boost **fintech connectivity**.

➢ **Development Cooperation:** India has extended over **USD 7 billion in credit and USD 780 million in grants to Sri Lanka**.

    ○ During Sri Lanka's 2022 crisis, India provided nearly **USD 4 billion in aid,** and India also supported Sri Lanka during the Covid-19 pandemic with vaccines and medical supplies.

➢ **Defence & Security Cooperation:** Key bilateral exercises include SLINEX (Navy) and MITRA SHAKTI (Army), held alternately in both countries.

    ○ India acts as a **'first responder'** for Sri Lanka in the field of Humanitarian Assistance and Disaster Relief, as seen in the **MV XPress Pearl incident (2021),** a container ship fire disaster causing significant environmental damage.

- **Cultural and Civilizational Ties:** Deep-rooted Buddhist and Hindu ties, including the sacred **Jaya Sri Maha Bodhi tree**, highlight strong cultural bonds. India supports temple restoration and religious tourism under its cultural diplomacy efforts.

- **Indian Community:** Sri Lanka hosts around 10,000 People of Indian Origin (PIOs) and about 1.6 million Indian-Origin Tamils (IOTs).

Note: The Jaya Sri Maha Bodhi tree in Sri Lanka is believed to have grown from a branch of the **Bodhi Tree (Bihar)** under which Buddha attained enlightenment. It was brought by **Sanghamitta,** daughter of **Emperor Ashoka.**

Why are India and Sri Lanka Important to Each Other?

- **India's Importance to Sri Lanka:** India has shown strong commitment to Sri Lanka's economic recovery, providing an unprecedented **USD 4 billion** in aid and being the first creditor to assure support for the IMF bailout programme.
  - India is Sri Lanka's **largest trade partner**, **leading FDI source**, and **top tourist contributor**.
  - India extended **grants and concessional loans**; key infrastructure and digital projects (e.g. housing, Kankesanthurai Port, Digital ID).

- **Sri Lanka's Importance to India:** Located near key **Indian Ocean trade routes (Palk Strait)**, Sri Lanka is essential to India's **maritime security and energy lifelines**.
  - Sri Lanka has a central place in **India's 'Neighbourhood First' policy** and **MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions) vision.**
  - Sri Lanka acts as a buffer in countering **Chinese strategic encirclement** through the **Belt and Road Initiative (BRI)** and port developments (e.g., Hambantota).
  - Additionally, Sri Lanka has supported India's candidature for a non-permanent seat at the UN Security Council (2028–29).
  - As an active member of regional platforms like **BIMSTEC, Indian Ocean Rim Association,** Sri Lanka plays a key role in regional cooperation.

What are the Challenges in India-Sri Lanka Relations?

- **Chinese Presence in Sri Lanka: China's BRI** projects, like the **99-year lease of Hambantota Port** (Sri Lanka), raise Indian concerns over strategic encirclement.
  - Frequent visits by **Chinese surveillance ships** near Indian waters highlight geopolitical sensitivities.

- **Katchatheevu Island:** The recurring arrests of Indian fishermen near **Katchatheevu Island** by the Sri Lankan Navy, over alleged maritime boundary violations, continue to remain a pressing issue.
  - Katchatheevu Island, ceded by the Indian administration to Sri Lanka under 1974 Indo-Sri Lankan agreement, which barred fishing in each other's **Exclusive Economic Zones,** however, while the pact permitted limited access for Indian fishermen, differing interpretations of its terms have led to persistent disputes.

- **Ethnic Reconciliation:** The **13ᵗʰ Amendment to the Constitution of Sri Lanka** was enacted in 1987 following the **Indo-Sri Lanka Accord.**
  - It aimed to devolve powers to provincial councils, particularly in Tamil-majority areas. However, Sri Lanka's failure to fully implement this amendment, especially in the Tamil-majority Northern and Eastern Provinces, is seen as a **disregard for Tamil political rights.**
  - Sinhala nationalists oppose devolution, while Tamil groups demand broader autonomy, placing India in a diplomatic bind

- **Domestic Political Sensitivities:** Domestic political narratives significantly influence foreign policy in both India and Sri Lanka. In India, Tamil Nadu plays a crucial role in shaping policy toward Sri Lanka.
  - Conversely, in Sri Lanka, certain political factions, particularly leftist parties, have historically exploited **anti-India sentiments.**

Shift from Globalism to Regionalism

Why in News?

The **Global Order** is shifting from **universalist globalism** to interest-driven **regionalism** and **minilateralism,** as nations increasingly prefer smaller coalitions over multilateral institutions.

How is the World Shifting from Globalism to Regionalism?

➢ **Global Conflicts and Institutional Paralysis:** Ongoing conflicts like the **Russia-Ukraine war** and the **Israel-Gaza crisis** have exposed the limited efficacy of global governance structures.
  ○ **UN Security Council** deadlocks, often due to great power rivalries, have eroded faith in multilateral conflict resolution.

➢ **Rise of Regionalism and minilateralism:** Regionalism is marked by geographically and culturally aligned partnerships, while minilateralism involves smaller, interest-based groups like the **QUAD,** and **I2U2** for focused cooperation.
  ○ The EU evolved from the European Economic Community, and initiatives like **ASEAN**, SAARC, **BIMSTEC**, and **IORA,** reflect regionalism, though with varied success.
  ○ Emerging flexible coalitions like **QUAD, BRICS,** and **IMEC** promote strategic autonomy, faster decision-making, and targeted cooperation in areas such as security, technology, and infrastructure.

➢ **Reassertion of National Sovereignty:** The **Covid-19 pandemic** revealed global supply chain vulnerabilities and unequal vaccine access, reinforcing the idea that national preparedness trumps global solidarity.
  ○ Countries began to prioritize self-reliance, health sovereignty, and economic resilience over global integration.

➢ **Historical Disillusionment:** Developing countries, including India, have criticized the unequal power dynamics in global institutions like the **WTO, IMF,** and **World Bank.** The lack of reforms has led nations to seek alternative platforms like BRICS and AIIB.

➢ **India's Strategic Recalibration:** India is actively engaging in regional initiatives like **BIMSTEC,** and **IORA,** while also strengthening minilateral engagements.
  ○ This reflects a pragmatic shift in foreign policy from idealistic multilateralism to interest-driven regional cooperation and strategic partnerships.

What is India's Role in Regional Integration?

➢ **Anchor of Regional Connectivity:** India plays a central role in promoting cross-border infrastructure and trade corridors like **BBIN (Bangladesh-Bhutan-India-Nepal)** and the **Kaladan Multi-Modal Transit Transport Project** to improve economic and physical connectivity in South Asia.

➢ **Security Provider and Humanitarian Responder:** India's role as a net security provider through naval presence in **the Indian Ocean Region** and disaster relief missions like **Operation Maitri (Nepal)** and **Operation Brahma (Myanmar)** strengthens its strategic credibility and deepens regional trust.

➢ **Trade and Investment Hub:** As the largest economy in South Asia, India **serves as a trade and investment anchor for neighbouring countries**, offering preferential trade arrangements and extending lines of credit and development assistance.
  ○ In 2023, India's trade with ASEAN reached approximately USD 101.9 billion, accounting for 2.86% of total ASEAN trade.

➢ **Shared Cultural and Democratic Values:** India promotes shared cultural and democratic values through initiatives like **the International Buddhist Conclave**, **revival of Nalanda University,** and support to post-conflict democracies, reinforcing its civilizational influence.
  ○ Projects like the **Buddhist Circuit and South Asian University** foster regional cultural ties, enhance mutual understanding, and help counter anti-India narratives in neighboring countries.

What are the Key Challenges to India's Regional Integration Efforts?

➢ **Perception of Hegemony:** Smaller **South Asian nations** often perceive **India's dominance as overbearing**, leading to mistrust and reluctance in embracing India-led initiatives, thereby limiting the effectiveness of regional cooperation.

➢ **Bilateral Political Tensions:** The enduring Kashmir dispute with Pakistan and unresolved border tensions with China, such as the 2020 Galwan Valley standoff, continue to strain India's regional relations.
  ○ These conflicts often trigger military confrontations and diplomatic deadlocks, diverting focus from collaborative regional development initiatives**.**
  ○ Ongoing hostilities and strained ties have weakened SAARC and hindered regional multilateralism.

➢ **Asymmetry in Economic Capabilities:** South Asia's vast economic disparities hinder policy alignment and equitable integration. Intra-regional trade remains low at around 5%, far below ASEAN's 25%.

- ❍ India-Pakistan tensions have stalled SAARC, while initiatives like BBIN and projects like the India-Nepal Pancheshwar Multipurpose Project continue to face significant delays.
- ➤ **China's Strategic Entrenchment:** China's growing presence in South Asia through the **Belt and Road Initiative (BRI)** and infrastructure diplomacy poses a strategic counterweight to India's regional leadership, complicating India's integration agenda

Global South as a Peacemaker

Why in News?

Recent diplomatic breakthroughs, including **Riyadh-brokered truces**, highlight the **growing role of the Global South** as a credible peacemaker, with a **UN-backed mission offering a neutral alternative** to Western-led initiatives in Ukraine.

What is Global South?
➤ American academic **Carl Oglesby** coined the term **"Global South"** in 1969 to denote a set of countries beset by the **"dominance"** of the **Global North** through political and economic exploitation.
➤ The phrase "Global South" refers broadly to the regions of **Latin America, Asia, Africa, and Oceania** separated by **the Brandt line.**
❍ It denotes regions **outside Europe and North America**, mostly low-income and often politically or culturally marginalised.
❍ **China and India** are the leading proponents of the Global South.
➤ **The Brandt line** is a visual representation of the **world's economic divide** between the rich north and the poor south, based on **GDP per capita.**
❍ It was proposed by **Willy Brandt** in the 1970s and encircles the globe at a latitude of roughly **30° North.**
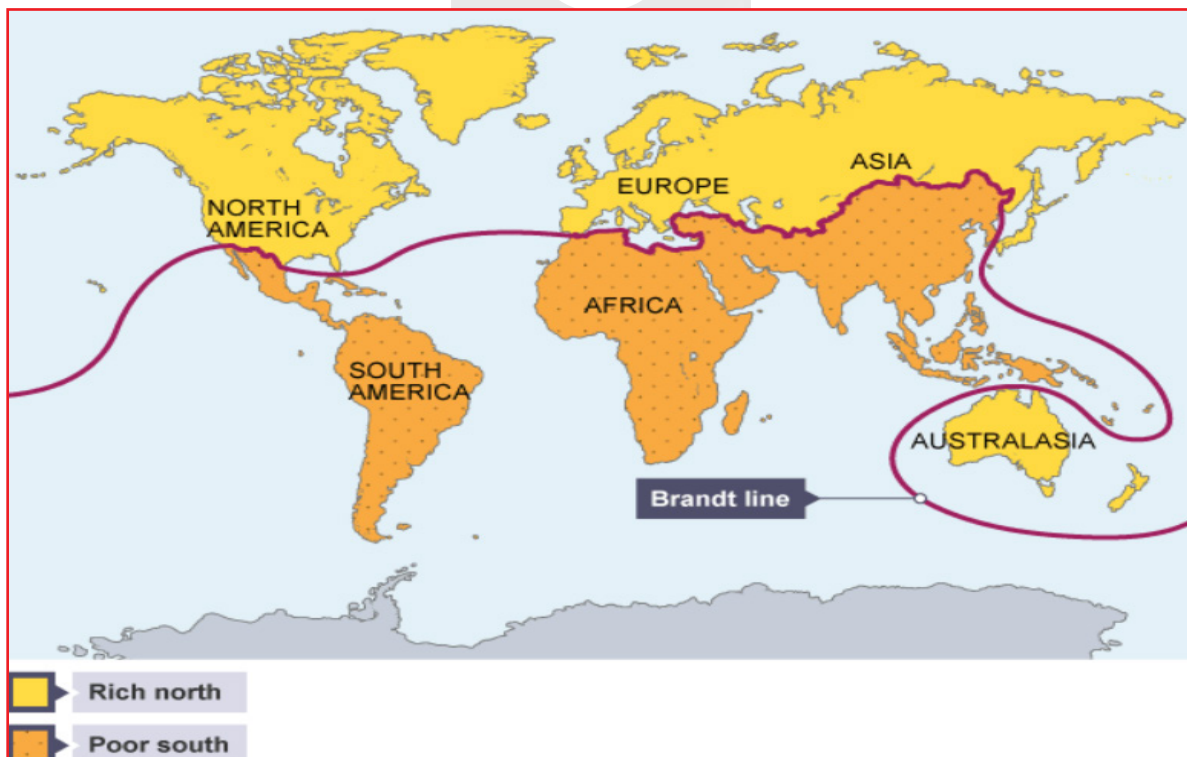
What Role Can the Global South Play as a Peacemaker?

➢ **Neutral Mediator:** The Global South, with its tradition of **non-alignment**, is often viewed as a **credible and impartial interlocutor.**
  ○ **Example**: India's **balanced diplomatic stance in the Russia-Ukraine conflict** has enabled it to engage with both sides.

➢ **Peacekeeping Contributor:** Countries from the Global South are among the **largest contributors to United Nations peacekeeping missions**, lending stability in post-conflict zones.
  ○ **Example**: India's presence in the **Congo and the African Union's peace operations in Somalia.**

➢ **Diplomatic Convenor:** Global South platforms serve as **alternative forums for dialogue and de-escalation**, independent of Western-dominated institutions.
  ○ **Example**: **BRICS** nations calling for ceasefire and negotiations in the Ukraine war.

➢ **Moral Voice for Justice:** Shared **colonial legacies** give Global South countries the **normative legitimacy to advocate for sovereignty, equity, and non-intervention. (** African countries stress sovereign equality in global governance).

➢ **Inclusive Peacebuilding:** By promoting **gender-balanced peace initiatives**, the Global South contributes to more inclusive and sustainable peace processes.
  ○ **Example**: India's deployment of an **all-women UN police unit in Liberia.**

What are the Key Areas of Contention for the Global South as a Peacekeeper?

➢ **Fragile Ceasefire Dynamics:** A Global South-led mission requires a pre-existing and enforceable ceasefire, without which peacekeeping efforts may risk becoming entangled in active conflict zones.

➢ **Ambiguity Over Territorial Boundaries:** Lack of consensus on contested borders, particularly in conflicts like **Russia-Ukraine**, complicates operational deployment and increases the risk of renewed hostilities.

➢ **Dependence on UN Security Council Mandate:** Despite their moral standing, **Global South countries need a UN mandate to secure legal authority and global legitimacy**—challenging in a polarized Security Council.
  ○ While advocating neutrality, these missions **still require Western logistical, financial, and technological assistance,** potentially complicating claims of independence.

➢ **Capacity and Coordination Constraints:** Though rich in peacekeeping experience, many Global South countries face **challenges in coordination, training, funding,** and rapid deployment capacity.

Read more: **United Nations Peacekeeping Paradox**

6th BIMSTEC Summit

Why in News?

The Indian **Prime Minister** participated in the **6th BIMSTEC** Summit, hosted by **Thailand** under **its chairmanship,** with the theme **"BIMSTEC: Prosperous, Resilient, and Open,"** focusing on enhancing regional cooperation and addressing key challenges.

➢ Also, on the sidelines of the summit, India and Thailand announced to elevate their bilateral ties to a **Strategic Partnership.**

What are the Key Highlights of the 6th BIMSTEC Summit?

➢ **Vision 2030 Document:** The Summit adopted the **Summit Declaration and Bangkok Vision 2030**, outlining a roadmap for **regional prosperity** with a focus on **economic integration, resilience to global challenges**, and **collaboration in infrastructure, and technology.**

➢ **KeyAction Plans Announced by India:** India proposed a **21-point Action Plan** and some of the important plan such as:
  ○ **BIMSTEC Centres of Excellence**: India announced establishment of **BIMSTEC Centres of Excellence** in India, focusing on **Disaster Management**, **Sustainable Maritime Transport**, **Traditional Medicine**, and **Research and Training in Agriculture**.

○ Also, initiative for **linking India's UPI with BIMSTEC payment systems**, and operationalizing the **BIMSTEC Energy Centre in Bengaluru**.

● It also proposed a **pilot study on Digital Public Infrastructure (DPI)** to enhance governance and service delivery in BIMSTEC.

○ **BODHI Program**: India introduced **BODHI Program (BIMSTEC for Organized Development of Human Resource Infrastructure)** for **skill development**, providing **training, scholarships, and capacity-building** for various professionals across BIMSTEC nations.

○ **Cancer Care Capacity Building**: India proposed a **capacity-building program** for **cancer care** in the BIMSTEC region.

○ **Chamber of Commerce and Business Summit**: Establishment of BIMSTEC Chamber of Commerce and hosting an annual **BIMSTEC Business Summit** was proposed to promote **regional economic integration** among member nations.

○ **People-to-People Linkages**: India announced initiatives to strengthen cultural and people-to-people ties, including, **BIMSTEC Athletics Meet (2025), First BIMSTEC Games (2027)**, marking the group's 30th anniversary, **BIMSTEC Traditional Music Festival, Young Leaders' Summit and Hackathon** for youth engagement, **Young Professional Visitors Program** to deepen cultural cooperation.

What are the Key Initiatives Announced under the India-Thailand Strategic Partnership?

➤ **Maritime Cooperation**: Collaboration in the **Indo-Pacific** through frameworks like the **ASEAN Outlook on the Indo-Pacific (AOIP)** and India's **Indo-Pacific Oceans Initiative (IPOI)**, with emphasis on maritime security, and regional connectivity via the **India-Myanmar-Thailand Trilateral Highway**.

➤ **Defence and Security**: Expansion of **defence dialogues**, joint military exercises such as **Exercise Maitree**, and cooperation in areas like **counter-terrorism, cybersecurity,** and intelligence sharing.

➤ **Trade and Economic Engagement**: Initiatives to boost **bilateral trade**, enhance **supply chain resilience**, promote **private sector investment**, and explore upgradation of the **Free Trade Agreement (FTA)**.

➤ **Cultural and People-to-People Ties**: Promotion of **educational exchanges**, celebration of **Buddhist cultural linkages**, promotion of **tourism**, and deeper engagement with the **Indian diaspora** in Thailand.

➤ **Science, Technology, and Innovation**: Joint cooperation in fields such as **renewable energy, space technology**, development of **digital public infrastructure**, and innovation in **healthcare and biotechnology**.

➤ **Regional and Multilateral Cooperation**: Strengthening coordinated efforts in regional and international forums such as **BIMSTEC**, the **Association of Southeast Asian Nations (ASEAN)**, the **Indian Ocean Rim Association (IORA)**, and the **United Nations (UN)** to promote a **rules-based international order**.

What is BIMSTEC?

➤ **About**: BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) is a regional organization comprising **7 member** states as Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.

➤ **Objective:** It aims to foster multifaceted **technical and economic cooperation** among countries in the **Bay of Bengal** region.

➤ **Origin**: It was **founded in 1997** with the adoption of the **Bangkok Declaration**.

○ Initially comprising 4 members, it was known as **BIST-EC** (Bangladesh, India, Sri Lanka, and Thailand Economic Cooperation). In 1997, Myanmar joined, and the grouping was renamed **BIMST-EC**.

○ With the inclusion of **Nepal** and **Bhutan** in 2004, the name was further changed to **BIMSTEC**.

➤ **Significance:**

○ BIMSTEC countries, with a population of **1.7 billion (22% of the world's total),** have a **combined GDP of around USD 5.2 trillion (2023)**.

BIMSTEC

Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation

Members: 7
Significance: Hosts 22% of the world population, accounts for 3.8 trillion of GDP

Formation: 6th June 1997 (Bangkok Declaration)
Secretariat: Dhaka, Bangladesh

BHUTAN
- India is Bhutan's largest trade partner
- **Mutually Beneficial Hydropower Cooperation:** Mangdechhu, Kholongchhu, Chukha hydropower Projects
- India's grant assistance to **Gyalsung Project**
- Integration of Bhutan's DrukRen with India's National Knowledge Network

NEPAL
- Shares border with 5 Indian states (Uttarakhand, Uttar Pradesh, West Bengal, Sikkim and Bihar)
- **Bharat Gaurav Tourist Train** connecting India's Ayodhya and Nepal's Janakpur
- **Major Issues:** Territorial Disputes (Kalapani, Limpiyadhura and Lipulekh)
- **Military Exercise:** Surya Kiran (Army)

MYANMAR
- Only Southeast Asian country that **shares a land border with north-eastern India**
- The **2021 coup** returned Myanmar to military rule
- **India's Development Assistance:** India-Myanmar-Thailand Trilateral Highway, Kaladan Multi-Modal Transit Transport (KMMTT), Sittwe port
- **Major Issue:** Rohingya Crisis

SRI LANKA
- India is Sri Lanka's third largest export destination
- India is the first country to **officially back Sri Lanka's debt restructuring programme at IMF**
- **Major Issue:** Fishermen crossing maritime boundary
- **Important Exercises:** Mitra Shakti (Army), SLINEX (Naval)

*New Delhi   *Kathmandu   *Thimphu

*Dhaka

INDIA

*Naypyidaw

*Bangkok

*Colombo

BANGLADESH
- Shares the longest border of over 4,096 km with India
- Largest trading partner in South Asia
- **Water Sharing Agreements:** Kushiyara river (2022), Ganga Water Treaty (1996)
- **Major Issues:** Teesta River Water Dispute
- **Military Exercises:** SAMPRITI-X (Military Training), Bongosagar (Naval)

THAILAND
- Thai language is written in **script derived from Southern Indian Pallava alphabet**
- **Hinduism, Buddhism** – both religions of Indian origin being popular in Thailand
- Convergence of India's 'Act East' policy with Thailand's 'Act West' policy
- **Military Exercises:** MAITREE (Army), SIAM BHARAT (Air Force), Indo-Thai CORPAT (Naval)

Drishti IAS

What is the Significance of BIMSTEC?

➢ **Alignment with Act East Policy**: BIMSTEC aligns with **India's Act East Policy**, enhancing **India's trade and security prominence** in the **Indian Ocean and Indo-Pacific regions.**

➢ **Alternative to SAARC**: It has emerged as a **preferred platform for regional cooperation**, offering a **viable alternative** to **SAARC** in South Asia.

- ➤ **Platform for Regional Cooperation**: It serves as a key platform for fostering **deeper cooperation among South and Southeast Asian countries,** particularly in **security matters** and **Humanitarian Assistance and Disaster Relief (HADR)** management.
  - ❍ It also serves as a platform for regional cooperation to **balance China's growing influence** through the **Belt and Road Initiative (BRI).**
- ➤ **Promotion of Intangible Culture:** India's initiatives, like the **Centre for Bay of Bengal Studies (CBS)** at Nalanda University, aim to preserve the region's intangible cultural heritage, while BIMSTEC fosters **regional collaboration and cultural exchange.**

What are the Challenges Related to BIMSTEC?

- ➤ **Click Here to Read: Challenges**

What are the Suggested Measures for Enhancing BIMSTEC's Effectiveness?

- ➤ **Click Here to Read: Way Forward for BIMSTEC**

India-Bangladesh Relations

Why in News?

Prime Minister Narendra Modi met with Bangladesh's Chief Adviser Muhammad Yunus in Bangkok on the sidelines of the **BIMSTEC (Bay of Bengal Multi-Sectoral Technical and Economic Cooperation) Summit**, this marks their first official interaction since the ouster of **former Prime Minister Sheikh Hasina.**

What are the Key Highlights of India-Bangladesh Relations?

➢ **Defence Cooperation:** Both nations conduct joint military exercises such as **Exercise Sampriti (Army)** and **Exercise Bongosagar (Navy),** Coordinated Patrol (Navy) to enhance defence cooperation.

➢ **Economic and Commercial:** Bangladesh is **India's largest trade partner in South Asia,** while India is its second-largest trade partner in Asia. In FY 2023-24, the total bilateral trade stood at USD 12.9 billion.

- ○ India's exports to Bangladesh stood at USD 11.06 billion and India's imports from Bangladesh were at USD 1.8 billion.
- ○ India's key exports to Bangladesh include **cotton, petroleum products, engineering goods, and chemicals.**
- ○ Major imports from Bangladesh are apparel, textiles, jute goods, and aerospace parts.

➢ **Energy and Connectivity:** The **India-Bangladesh Friendship Pipeline** is the **first cross border energy pipeline** between India and Bangladesh with a capacity to transport 1 **Million Metric Ton Per Annum (MMTPA)** of **High-Speed Diesel (HSD)** to Bangladesh, boosting energy ties.

- ○ Key cross-border projects like the **Akhaura-Agartala rail link**, the **Khulna-Mongla port rail line** and **Maitri Setu** further strengthen connectivity and cooperation.
- ○ The **Maitree Super Thermal Power Project,** developed by **Bangladesh India Friendship Power Company (BIFPCL),** a joint venture between National Thermal Power Corporation and Bangladesh Power Development Board, has been made operational and is supplying power to the Bangladesh grid.

➢ **Multilateral Cooperation:** India and Bangladesh actively collaborate in regional forums like **South Asian Association for Regional Cooperation**, BIMSTEC, and **Indian Ocean Rim Association** to strengthen economic and strategic ties.

What is the Significance of Bangladesh for India?

➢ **Click here to Read: Significance of Bangladesh for India**

What are the Challenges in India-Bangladesh Relations?

➢ **Diplomatic Disconnect:** India's close association with Sheikh Hasina alienated other political actors in Bangladesh.

- ○ Post-Hasina, India lacks deep institutional links with the interim government and broader political spectrum.
- ○ India's decision to host Sheikh Hasina in exile has been perceived in Bangladesh as **political interference**, further exacerbating tensions.

➢ **Growing Chinese Influence:** Bangladesh is a key partner in **China's Belt and Road Initiative (BRI)** and receives significant Chinese investments in infrastructure projects such as ports, roads, energy, telecom, and the **Teesta River Restoration.**

- ○ This growing presence adds a geopolitical dimension to India-Bangladesh bilateral tensions.

➢ **Border Management & Illegal Migration:** Illegal immigration from Bangladesh continues to strain **India's northeastern states,** causing socio-economic and political tensions. The **Rohingya refugee crisis** has further complicated the issue.

- ○ Persistent issues of **cross-border terrorism,** insurgency support, and trafficking remain with Insurgent groups like United Liberation Front of Asom have reportedly operated camps in Border regions.

➢ **Rise of Anti-India Sentiment:** Despite economic ties, public perception has soured due to perceived Indian interference in Bangladesh's internal politics.

- ○ Public protests, slogans like **'Delhi or Dhaka: Dhaka, Dhaka,'** and campaigns such as **'India Out'** reflect deep-rooted mistrust.

Soft Power of US and India

Why in News?

Recent policy shifts under the **President** Trump administration, driven by the "America First" agenda, have led to a **decline in US soft power**, diminishing its global influence and strategic standing.

What is Soft Power?

> **Soft power** was defined by political scientist **Joseph Nye** as the **ability to shape the preferences of others** through **attraction and persuasion rather than hard power.**
>
> ○ It leverages **culture, values, and diplomacy** to influence global affairs.
>
> **Hard power** refers to a nation's ability to influence others through **coercion**, including **military force, economic sanctions**, and other forms of **pressure**.
>
> ○ A successful state balances **hard and soft power, coercion for immediate goals** and influence to shape their long-term attitudes and preferences.
>
> ○ Eg: The US employs hard power in military interventions and soft power through diplomacy and cultural outreach. China blends both, using military assertiveness and initiatives like **BRI** to expand influence.

What are the Reasons for the Declining Soft Power of the USA?

> **Weakening Alliances**: Unilateral actions in global conflicts (e.g. **Russia-Ukraine**), criticism of **North Atlantic Treaty Organization (NATO)** and **AUKUS**, and **shifting policies on allies** like Japan and Canada have strained trust.
>
> ○ The **US's unconditional support for Israel in the Gaza** conflict has strained ties with the **Global South and West Asia**.
>
> ● **E.g.** South Africa has sued Israel at the **ICJ** over alleged genocide.
>
> **Declining Humanitarian Engagement**: Massive funding cuts to **USAID** (down to 17% of programs) and the **closure of institutions** like the US Institute of Peace and Voice of America have **reduced US influence in diplomacy and development.**
>
> ○ The US's rejection of **Diversity, Equity, and Inclusion (DEI) policies** casts doubt on its **global advocacy for democracy, equal representation, and religious freedom.**

> **Unstable Trade and Immigration Policies:** The **US shift to protectionism**, including **"reciprocal tariffs,"** risks economic credibility and trade ties with Canada, Mexico, Australia, and India.
>
> ○ A similar move, the **1930 Smoot-Hawley Tariffs**, worsened the **US economy during the Great Depression.**
>
> ○ Mass deportations, **curbs on legal migration, tighter scrutiny on H-1B** and **Green Card holders,** and a **ban on birthright citizenship** weaken America's image as a land of opportunity and diversity.
>
> **Declining Higher Education Appeal**: **Crackdowns on student protests, deportations of foreign students**, and **funding cuts for universities** are reducing international enrollments, weakening a major pillar of US soft power.

India's Approach to Reciprocity in Foreign Relations

> The **Gujral Doctrine** outlines **5 principles guiding India's foreign relations**, emphasizing that **its strength is linked to regional stability.**
>
> One of its key principles is to **prioritize friendly ties by offering unilateral concessions to smaller neighbors** like Bangladesh, Bhutan, Maldives, Nepal, and Sri Lanka **without expecting reciprocity**, fostering **goodwill and trust** in the region.

What are the Key Elements of India's Soft Power?

> **Cultural Influence: Yoga, Ayurveda**, Bollywood, Indian cuisine, and spiritual traditions like **Hinduism and Buddhism** enhance India's global appeal.
>
> **Historical & Diaspora Connections:** India shares strong cultural ties especially with Asia and Africa; a **35 million-strong global Indian diaspora** strengthens business, politics, and cultural influence.
>
> **Democracy & Global Leadership:** India's democratic model inspires developing nations. **Gandhian ideals of non-violence** influenced global leaders like **Nelson Mandela** and **Martin Luther King Jr.**
>
> ○ India has led the **Non-Aligned Movement (NAM)**

and advocates for the Global South in international forums.

➤ **Economic & Technological Growth:** As a global leader in **IT, digital payments (like UPI and Aadhaar), and pharmaceuticals**, India played a key role during the **Covid-19** pandemic by providing vaccines and medicines through **vaccine diplomacy.**

➤ **Education & Knowledge Exchange:** India attracts students from across the world to its top institutions like **IITs and IIMs**.

○ Through **scholarships and training programs like ITEC**, India helps many developing nations build skills and knowledge.

➤ **India's Humanitarian Aid:** India provides global disaster relief and financial aid, including **Operation Brahma (2025 Myanmar-Thailand earthquake)** and financial assistance to **Sri Lanka**.

○ It supports **CDRI** and aids infrastructure and capacity-building in developing nations.

➤ **Multilateral Diplomacy:** India plays an active role in the **UN, WHO, BRICS**, and **G20**, India **promotes multilateral solutions over unilateral actions in global affairs.**

What are the Challenges to India's Soft Power Diplomacy?

➤ **Institutional Gaps:** As per the **Committee on External Affairs Report (2022-23)**, India's soft power efforts remain **fragmented** due to **poor coordination** among institutions like **ICCR, AYUSH, and Tourism**. The **ICCR lacks a clear mandate and strategic direction**, while the **MEA has yet to assess India's soft power assets comprehensively**.

➤ **Limited Multilateral Diplomacy:** India has **yet to fully leverage multilateral platforms** like **UNESCO, BRICS, SAARC, and G20 f**or advancing its soft power diplomacy.

○ Also, **limited engagement in Track 2 (non-governmental) and Track 3 (people-to-people) diplomacy** has restricted its global influence.

➤ **Limited Financial Resources:** Unlike countries such as China and the US, India allocates **minimal funding for soft power initiatives**.

○ This financial constraint **limits India's ability to expand** its cultural and diplomatic outreach globally.

➤ **Lack of Formal Study:** India's approach to soft power remains **sporadic**, as it lacks a **formal study** on global best practices.

○ While countries like **China (Confucius Institutes), the UK (British Council), and France (Alliance Française)** have systematically promoted their culture and languages, India has yet to adopt a structured model for cultural diplomacy.

➤ **Underutilized Diaspora:** Despite having one of the world's largest diasporas, India **lacks a structured mechanism** to effectively engage overseas Indians in shaping international perceptions.

○ While **Pravasi Bharatiya Divas** and **diaspora awards** exist, more **needs to be done to integrate** them into foreign policy.

➤ **Passive Approach to Public Diplomacy:** While India enjoys natural soft power appeal through its culture, it has **not proactively translated these assets into strategic influence**.

○ Unlike China, which actively invests in global media and education, India has **yet to fully capitalize on its cultural and diplomatic strengths**.

Insurgency in Balochistan

Why in News?

Balochistan province of Pakistan is witnessing a resurgence of **insurgency and unrest**. The recent **train hijacking** by **Balochistan Liberation Army (BLA)** militants, demanding the release of their comrades, highlights the deteriorating security situation in the region.

Balochistan and History of Insurgency

➢ **Geography: Balochistan** is Pakistan's southwestern province that borders **Afghanistan, Iran, Punjab and Sindh** (provinces of Pakistan), and the **Arabian Sea**.

➢ **Demography:** It covers **44% of the country's total land area** but is home to only **5% of its population**, predominantly inhabited by the **Baloch**, a **Sunni Muslim ethnic group**, who also have significant communities in **Iran and Afghanistan**.

   ❍ It is the **largest and least populated province,** rich in **natural resources** such as **natural gas, coal, gold, and copper**, but remains **highly impoverished**, with 70% of its population classified as multidimensionally poor.

➢ **History of Insurgency:** At the time of **Partition of India (1947)**, Balochistan comprised 4 princely states: **Kharan, Makaran, Las Bela, and Kalat**, with Kalat opting for **independence** while the others joined Pakistan.

   ❍ Though **Jinnah initially accepted Kalat's sovereignty**, British pressure led to its **forced annexation in 1948** after isolating it strategically. Allegations of the Khan's intent to join India further accelerated Pakistan's actions.

   ❍ Resistance to Pakistani rule **intensified** over the years. The **first major rebellion** broke out in **1954** following Pakistan's **One-Unit policy**, which merged Balochistan with West Pakistan in 1955, **deepening resentment.**

- ○ In **1958,** Khan of Kalat, **Nawab Nauroz Khan**, declared independence but was tricked into surrendering and imprisoned.
- ○ A **third rebellion in 1963** sought the **withdrawal of Pakistani troops** and recognition of **Balochistan as a province (**materialised in 1970**).**
- ○ Inspired by **Bangladesh's 1971 independence**, Baloch leaders demanded autonomy, but the **Pakistan President dismissed the Balochistan government in 1973**, triggering a **4-year insurgency**.
- ○ The **fifth wave of conflict** began in the **mid-2000s**, triggered by alleged **military excesses**. The insurgency continues, fueled by grievances over **resource exploitation and political marginalization**, with no resolution in sight.

➢ **Amnesty International** reports that over **10,000 Baloch have disappeared in Pakistan since 2011**.

What is Balochistan Liberation Army?

PAKISTAN
Balochistan

What it is

- The Balochistan Liberation Army (**BLA**), **active since 2011**, is the most prominent of the many separatist groups in Pakistan's Balochistan province
- **Majeed Brigade** is the BLA's dedicated suicide squad

The context

- Balochistan is the country's largest province. It has oil and other natural resources, but the ethnic Baloch are Pakistan's **poorest and most under-represented** people
- Till 1947, Balochistan comprised multiple chiefdoms.
- Ahmed Yar Khan, the chief of Kalat, was the most powerful. He was **forced to accede to Pakistan in 1948**, after Pakistan invaded Kalat
- This triggered an insurgency which remains ongoing due to **'unjust' behavior of Pakistan govt towards Balochs**

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What are the Reasons for Conflict in Balochistan?

➢ **Historical Grievances:** Balochistan's **forced annexation by Pakistan in 1948** and the **dismissal of its provincial government in 1973** deepened its alienation.

- ○ The region lacks effective grievance redressal mechanisms, with **Punjabi elites dominating bureaucracy** and **sidelining Baloch representation**.

➢ **Economic Exploitation:** Despite abundant **natural resources** like **gas, gold, and iron**, Balochistan remains **impoverished**, with locals confined to **low-skilled jobs** due to **poor education and infrastructure**. It has **Pakistan's lowest literacy rate** and **worst Gender Parity Index (GPI)**.

- ○ The Baloch nationalists view Chinese investments such as **Gwadar Port and CPEC** as benefiting **Pakistan's elite** while **marginalizing locals**, fearing **demographic changes** and further exploitation.

➢ **Human Rights Violations & Militarization:** Enforced disappearances, **extra-judicial killings**, and **fake encounters** are frequently used as **counter-insurgency tactics**.

- ○ The **Commission of Inquiry on Enforced Disappearances** constituted by Pakistan in **2011** recorded **2,752 cases**, while civil society groups claim **over 7,000 disappearances (2002–2024)**.

➢ **Religious Extremism:** Balochistan faces **militant recruitment** by groups like **Al-Qaeda, Tehrik-e-Taliban Pakistan (TTP)**, and **sectarian outfits**, with the **Hazara Shia** community frequently targeted by sectarian violence.

➢ **Geopolitical Factors:** Pakistan has **alleged foreign support for militancy and separatist tendencies** in Balochistan, citing **instability in Afghanistan** and certain **terror groups from Iran as contributing factors.**

What is India's Stand on Balochistan Issue?

➢ **India's Cautious Approach:** India denies involvement in **Balochistan's affairs** and rejects **Pakistan's allegations** of supporting Baloch militants, urging **Pakistan to address its internal issues** instead of blaming others.

➢ **Diplomatic Stance:** India's stance on Balochistan is shaped by **geopolitical considerations, regional stability,** and its complex ties with Pakistan. **India** continues to **raise the issue of minority rights** and related concerns in Balochistan, **in alignment with its democratic and secular values.**

- ○ In 2016, the Prime Minister raised **Balochistan's human rights situation** in his **Independence Day speech**.

➢ **Regional Stability:** The unrest in Balochistan, coupled with **China's CPEC involvement**, poses security challenges in South Asia.

- ○ India balances its strategic interests while advocating for Baloch rights within international norms.

■ ■ ■

Social Issues

Highlights

- *Feminisation of Climate Vulnerability*
- *State of Social Protection Report 2025*
- *Trends in Maternal Mortality*
- *Challenges to Transgenders in India*
- *Combating Synthetic Drug Trafficking in India*

Feminisation of Climate Vulnerability

Why in News?

The **Beijing India Report 2024 (India's Report on Beijing+30)**, released to commemorate three decades of the **Beijing Declaration and Platform for Action (1995)**, offers a comprehensive review of **India's progress on gender equality.**

➤ However, it gives **limited attention to the growing intersection between gender inequality and climate change**, a connection that is increasingly relevant, particularly for women in rural and climate-vulnerable communities.

> **What is the Beijing Declaration and Platform for Action, 1995?**
>
> ➤ **Click Here to Read: Beijing Declaration and Platform for Action (1995)**

How Climate Change Disproportionately Affects Women?

➤ **Gender Burden of Water Scarcity:** Globally**,** women and girls are responsible for **water collection in 80% of households.**

- ○ Climate change-induced water scarcity forces them to **travel farther, increasing their workload and limiting time for education and income-generating activities.**
- ○ The WHO reports that **2 billion people use contaminated water,** heightening health risks for women and girls.
- ○ In **India**, women spend about **150 million workdays each year collecting water.**

➤ **Impact on Health and Well-being:** Climate-induced events like **droughts and food insecurity** increase **malnutrition among women,** with **food-insecure women being 1.6 times more likely to suffer from anemia.**

- ○ According to the **National Family Health Survey (NFHS-5)**, 52.2% of pregnant **women** aged 15-49 are affected by **anemia.**
- ○ Extreme **heat raises stillbirths and spreads diseases** like malaria, dengue, and Zika, **worsening maternal and neonatal health.**
- ○ Rising temperatures might result in India experiencing a **23.5% rise in domestic violence cases by 2090,** more than Nepal and Pakistan. The IPCC's Sixth Assessment Report highlights **greater risks of gender-based violence, t**r**afficking, and sexual violence during and post-disasters.**

➤ **Economic Impact:** Extreme weather events like heat stress and erratic rainfall **reduce agricultural productivity,** causing **significant income losses, particularly for women in agriculture**.

- ○ **Climate-induced resource scarcity** (e.g., water, fuel) **increases women's unpaid care work,** projected to rise from **8 to 8.3 hours/day by 2050,** limiting financial independence and **deepening gender inequality.**
- ○ **Job losses** are expected in sectors dependent on the environment (e.g., agriculture, forestry), where **women are overrepresented.**
  - Women are significantly **underrepresented in India's manufacturing sector,** comprising only **15–20% of the workforce.**
- ○ Climate change could push **158.3 million more women and girls into poverty by 2050,** 16 million more than men.

➤ **Migration and Displacement: Rural women** are highly **vulnerable to climate-induced distress migration** due to floods, droughts, and extreme heat, leading to **adverse health outcomes like hysterectomies, infertility, and menstrual disorders.**

- The UN estimates that **80% of people displaced by climate change are women,** making them more susceptible to exploitation and **gender-based violence (GBV) in migration corridors and camps.**
- Displacement also **exacerbates the marginalization of indigenous and forest-dwelling women,** whose livelihoods, dependent on land and natural resources, are increasingly threatened by commercial exploitation and climate degradation.

Climate ⊕ Women

The Nexus

As Mary Robinson, Ireland's former president and the former UN commissioner for human rights, said, "People who are marginalized or poor, women, and indigenous communities are being disproportionately affected by climate impacts."*

Women experience disproportionate impacts due to underlying socioeconomic, political, and legal barriers that limit their choices in the face of climate change.

BARRIERS INCLUDE

- Discriminatory laws that limit female workforce participation.
- Lack of voice in decision-making at the household, local, national, and international levels.
- Limited access to financial resources and often lower pay.
- x2.5 — 2.5 times more unpaid work and care than men.
- Restrictions on land ownership.
- Lack of technology and capacity-building resources.

The Business Case

RISK

Climate impacts hit the poorest hardest and disproportionately affect women.

The gender barriers women face can also limit their adaptive capacity to climate impacts. This directly impacts a company's entire value chain, including through the workforce and local communities.

OPPORTUNITY

Climate resilience solutions with a specific focus on women can unlock multiple business benefits.

- **Drive productivity and innovation,** especially within sectors like agriculture and apparel.
- **Protect raw materials,** especially in agricultural supply chains.
- **Increase financial stability and returns** through solutions and investments that consider climate and gender equality.**
- **Strengthen the resilience of local communities** because women are well connected in their communities.
- **Deliver multiple other co-benefits** including stabilizing livelihoods, improving food security, and making progress toward closing the global gender gap.

Read More: How Does Climate Change Impact Women?

What is the Role of Women in Climate Resilience and Adaptation?

➤ **Traditional Knowledge and Food Security:** Women possess deep-rooted knowledge of sustainable agriculture and local resource management.

○ They preserve climate-resilient seed varieties adapted to local ecosystems, ensuring food security amidst erratic weather.

○ **Example:** In tribal regions, women conserve **native seed banks** to **protect crop diversity and nutrition.**

➤ **Women-Led Climate Initiatives**: Women are increasingly at the forefront of climate adaptation efforts, from sustainable farming to disaster response.

○ Example: In **Odisha's cyclone-prone Ganjam district,** women lead community disaster preparedness, acting as first responders. Their collectives also work on ecosystem conservation and livelihood restoration.

○ Also, urban women focus on waste management, pollution, and health risks from climate change. Rural and indigenous women prioritize preserving **forest-based livelihoods (e.g., Mahua collection),** resolving resource conflicts, and **reducing distress migration caused by climate events.**

➤ **Community-Based Natural Resource Management:** Women play a central role in managing water, forests, and agriculture at the grassroots level.

○ **Example:** In Rajasthan, women participate in building **Johads (traditional stepwells),** helping **conserve water and fight drought.**

➤ **Sustainable Agricultural Practices:** As caregivers and cultivators, women are well-positioned to **promote eco-friendly agricultural techniques** like **crop diversification** and **organic farming.**

○ **Example:** Kavita Mishra, a computer engineer turned sandalwood farmer in Karnataka, showcases a successful model of **sustainable and profitable farming.**

➤ **Renewable Energy and Livelihoods:** Women promote the use of **clean energy to reduce environmental impact** and improve rural livelihoods.

○ **Example:** In Rajasthan, women of the **Dooni cooperative dairy** use **solar energy** to power their operations and run self-help groups.

State of Social Protection Report 2025

Why in News?

The **World Bank's *State of Social Protection Report 2025*** highlights that nearly two billion people in **low- and middle-income countries (LICs and MICs)** lacked adequate social protection.

> **Note:** For the fiscal year 2025, the **World Bank** classifies economies based on their **Gross National Income (GNI) per capita.**
>
> ➤ **Low-income economies (LICs):** GNI per capita of USD 1,145 or less
>
> ➤ **Lower-middle-income economies (LMICs):** GNI per capita between USD 1,146 and USD 4,515 (currently **India** is in **lower-middle-income category**).
>
> ➤ **Upper-middle-income economies (UMICs):** GNI per capita between USD 4,516 and USD 14,005
>
> ➤ **High-income economies (HICs):** GNI per capita of more than USD 14,005.

What is the State of Social Protection?

➤ **Massive Coverage Gaps**: 1.6 billion people in LICs and MICs receive no social protection. Globally, 88% of people living in extreme poverty lack either adequate or any social protection.

○ In LICs and sub-Saharan Africa, this figure is as high as **98% and 97% respectively.** In LMICs, over 30% of individuals are without sufficient coverage.

○ MICs bear the largest burden, with 1.2 billion unprotected people due to **larger populations.** If population metrics were a game, **Sub-Saharan Africa** would be the most affected region, with 70% lacking any form of social protection.

➤ **Inadequate Progress:** Between 2010 and 2022, social protection coverage in LICs and MICs rose from 41% to 51%. Despite this progress, many populations remain uncovered, leaving them vulnerable to economic shocks, climate change, and conflicts.

➤ **Pace Not Aligned with SDGs:** At the current rate, it would take until **2043 to fully** extend social protection coverage to people living in extreme poverty, and until **2045 to reach the poorest 20%**
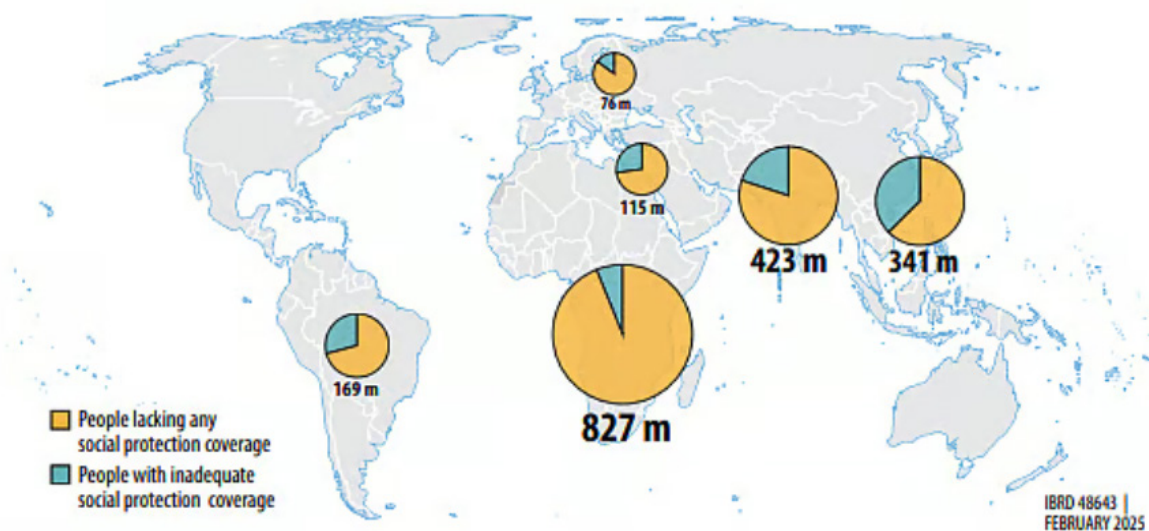
○ The **Sustainable Development Goal (SDG) target 1.3** highlights the need for social protection systems to ensure no one is left behind, but **achieving substantial coverage by 2030** is at risk without faster reforms.

➢ **Funding Constraints:** **High-income countries** spend 5.3 times more of GDP and 85.8 times more per capita than LICs.

○ LICs spend only **0.8% of GDP** on social assistance and **2% in upper-MICs,** highlighting the financial challenges faced by poorer nations

○ Spending is heavily concentrated on **social insurance for formal workers,** neglecting the poor and informal sectors.

○ **Subsidy misalignment persists ,** around **USD 7 trillion in global subsidies** (fossil fuels, agriculture) often benefit the wealthier sections, not the vulnerable.

➢ **External Shocks:** Social protection systems remain unprepared for climate shocks, conflict, and pandemics.

○ Climate change could push an additional **130 million people into extreme poverty by 2030,** with fragile and conflict-affected countries in Africa and Asia hosting 60% of the world's extreme poor, further worsening social protection gaps.

Two billion people in low- and middle-income countries remain uncovered or inadequately covered by social protection

76 m
115 m
423 m
341 m
169 m
827 m

■ People lacking any social protection coverage
■ People with inadequate social protection coverage

IBRD 48643 | FEBRUARY 2025

What is the State of Social Protection in India?

➢ **Coverage:** India's social protection coverage doubled from **24.4% in 2021 to 48.8% in 2024,** according to the **International Labour Organization (ILO)'s** World Social Protection Report (WSPR) 2024–26.

○ According to **India's Ministry of Labour and Employment, 65% of the population (approx. 920 million)** is covered under at least one social protection scheme, either in cash or kind.

➢ **Poverty Reduction through Social Protection:** An estimated 24.8 crore Indians have escaped **multi-dimensional poverty** over the past decade (2013 and 2023).

➢ **Government Initiatives Driving the Transformation:**

○ **Ayushman Bharat (AB-PMJAY):** Over 39.94 crore beneficiaries with health coverage up to USD 5 lakh per family.

○ **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY):** It is one of the largest food security schemes globally. 80.67 crore people received free food grains as of December 2024.

○ **eShram Portal:** A national database of unorganised workers. Over 30.68 crore registrations, 53.68% women, promoting inclusive coverage.

○ **Atal Pension Yojana (APY):** 7.25 crore enrolments, it strengthens retirement security for informal sector workers.
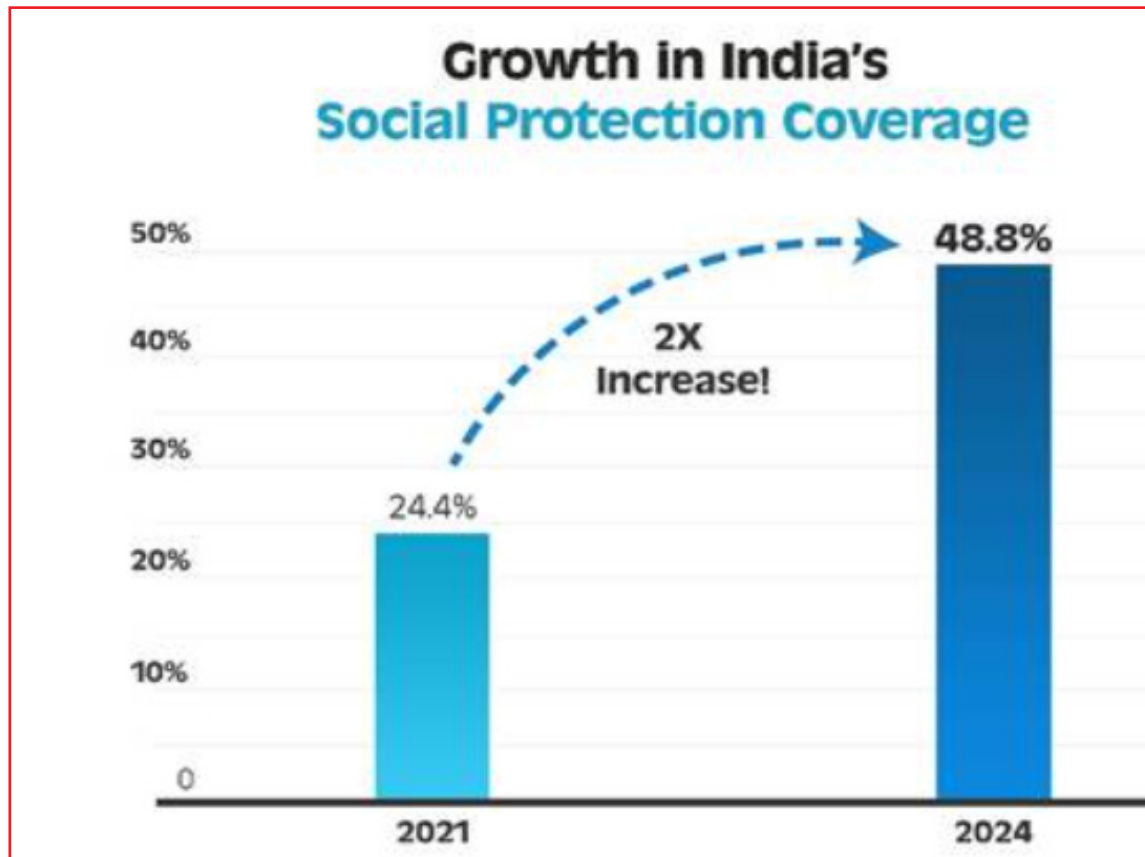
What are the Major Challenges Facing India's Social Protection System?

➤ **Welfare Boards:** Despite being established for worker welfare, the welfare boards have been ineffective. For example, over **Rs 70,000 crore in construction worker welfare cess remains unutilized** (Comptroller and Auditor-General of India, Report 2023).

➤ **Limited Fiscal Capacity:** India spends around **5% of GDP on social protection (excluding health)**, compared to the global average of around **13%** (World Social Protection Report 2024-26, ILO).

➤ **Technological and Administrative Challenges:** Digital tools like eShram have great potential, but face challenges such as low awareness and limited internet access. As a result, only **around 31 crore workers have registered on eShram,** out of an estimated of over 38 crore informal workers.

➤ **Delayed Ratification of Global Standards:** India has not ratified key ILO conventions like the **Social Security (Minimum Standards) Convention, 1952 (No. 102),** limiting the push toward universal norms.

➤ **Administrative Challenge:** Numerous central and state schemes lack **convergence,** leading to **duplication, inefficiencies, and exclusion** of genuine beneficiaries.

○ The absence of a **unified database hampers targeted delivery,** and current systems mainly respond to **emerging categories like gig and platform economy worker**s, rather than proactively addressing evolving workforce challenges.

○ The **Code on Social Security, 2020** aims to universalize welfare but lacks clear implementation guidelines. Definitions of **'gig' and 'platform' workers** are vague, leading to policy ambiguity.

➤ **Demographic Shifts:** India's ageing population will strain pensions and healthcare, as the **support ratio (working-age individuals per senior aged 65 or older)** has declined from 14:1 in 1997 to 10:1 in 2023, and is projected to fall further to 4.6:1 by 2050 and 1.9:1 by 2100.

○ Seniors' consumption share will nearly double, and without early reforms, current social protection systems will be inadequate.

Trends in Maternal Mortality

Why in News?

A report by the **United Nations Maternal Mortality Estimation Inter-Agency Group (MMEIG),** titled **"*Trends in Maternal Mortality: 2000–2023*"**, has flagged India as the second-largest contributor to global maternal deaths after Nigeria.

Note: MMEIG is a group comprising the **World Health Organization (WHO),** the **United Nations Children's Fund (UNICEF)**, the **United Nations Population Fund (UNFPA)**, the **World Bank Group**, United Nations Department of Economic and Social Affairs, Population Division.

What are the Trends in Maternal Mortality?

➤ **India:** In 2023, India recorded 19,000 maternal deaths, accounting for **7.2% of global maternal mortality,** making it the 2ⁿᵈ largest contributor.

○ India was followed by the Democratic Republic of Congo, also at 7.2%, and Pakistan at 4.1%. 1

○ Despite this, India has made strong progress, with the **Maternal Mortality Ratio (MMR)** falling from 384 in 2000 to 103 in 2020, and further down to 80 in 2023, an 86% drop since 1990, surpassing the global average decline of 48%.

➤ **Global MMR**: From an estimated 443,000 deaths in 2000 to 260,000 in 2023, the global MMR declined from 328 to 197 per 100,000 live births, a 40% reduction.

○ Sub-Saharan Africa accounted for **70% of maternal deaths with the highest regional MMR at 454.**

○ Oceania and Central & Southern Asia also reported moderate MMRs of 173 and 112, respectively.

○ Only **Australia and New Zealand had a very low MMR (~3),** demonstrating stark inequalities.

➤ **Slowing Progress**: Annual rate of reduction (ARR) of global MMR dropped from **2.2% (2000–2023)** to just **1.6% (2016–2023).**

○ Achieving **Sustainable Development Goal (SDG) Target 3.1** (reducing global MMR to below 70 per lakh live births by 2030) requires an ARR of 14.8% from 2024 to 2030.

Maternal Death and MMR
➤ **Maternal Death:** Death of a woman during pregnancy or within 42 days of its end, due to pregnancy-related causes (excluding accidental/incidental causes).
➤ **MMR:** It is the number of maternal deaths per 100,000 live births in a given time period.
○ It is a key indicator used to assess the quality of maternal healthcare and access to medical services during pregnancy and childbirth.

What are the Concerns Regarding India's Maternal Mortality Progress?

➤ **High Absolute Number of Maternal Deaths:** Despite reducing its MMR to 80 per 100,000 live births, India still accounted for 7.2% of global maternal deaths, indicating persistent gaps in **maternal healthcare access and quality.**

➤ **Unfair Comparisons in Global Reports:** The Ministry of Health and Family Welfare flagged concerns over **comparing India (145 crore)** with Nigeria (23.26 crore) on maternal deaths, stating that using **absolute numbers without adjusting for population size** can misrepresent India's relative progress.

➤ **Slowing Pace of Progress:** India's MMR declined at 6.36% (2000–2020), higher than the global AAR of 2.07%, yet it is not fast enough to meet the **SDG 3.1 target.**

○ While states like Kerala, Maharashtra, and Tamil Nadu have achieved an MMR below 70, others, such as **Assam (195), Madhya Pradesh (173), Uttar Pradesh (167), and Bihar (118)**, lag behind the national average, reflecting regional disparities. in maternal healthcare.

Maternal Mortality Ratio

States having already achieved the SDG target of MMR below 70/lakh live births by 2030

Gujarat (57)
Jharkhand (56)
Maharashtra (33)
Telangana (43)
Karnataka (69)
Andhra Pradesh (45)
Tamil Nadu (54)
Kerala (19)
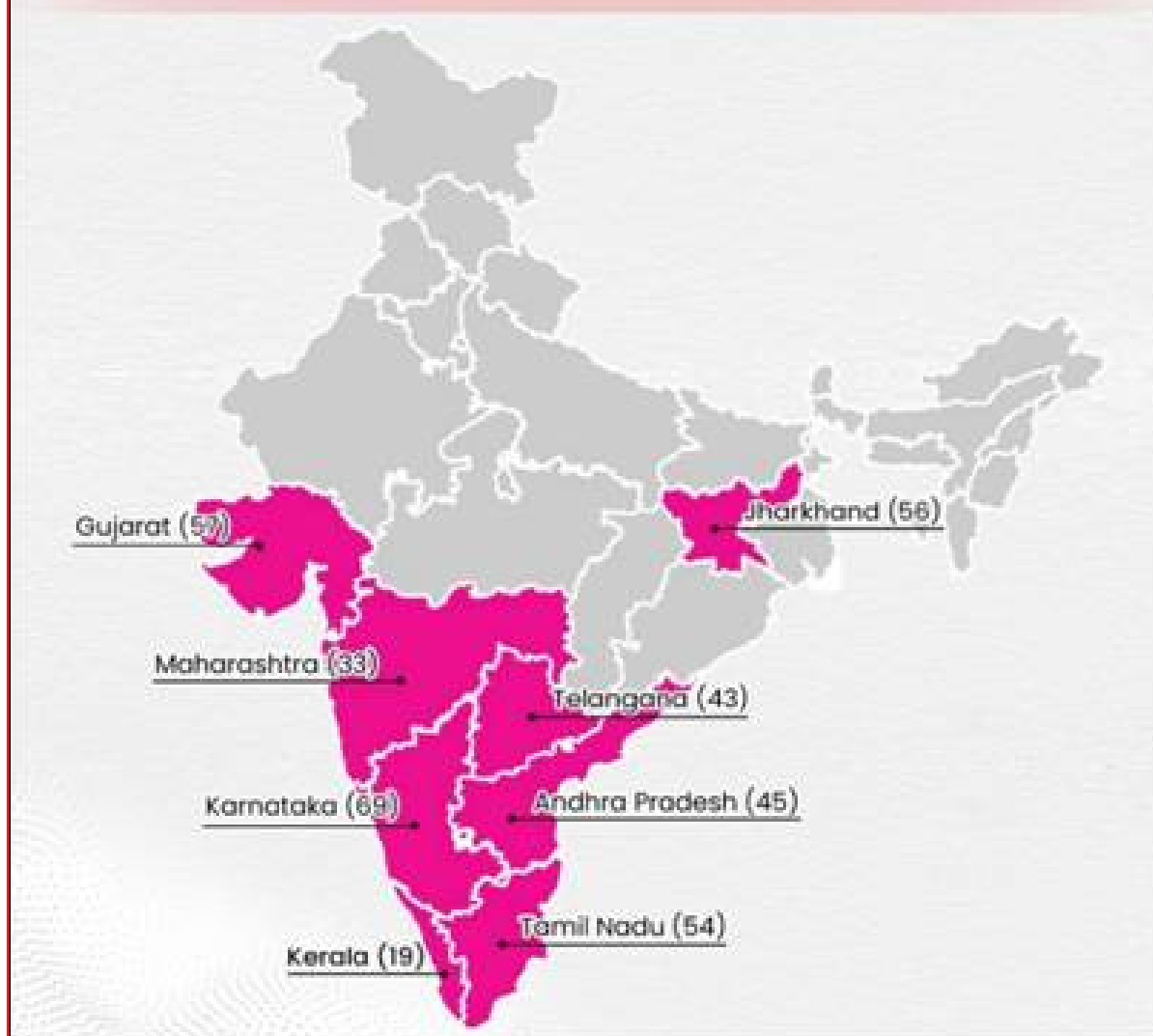
➢ **Challenges in Accessing Skilled Birth Care:** Despite initiatives like the <u>National Health Mission (NHM)</u> and <u>Janani Suraksha Yojana (JSY)</u> , less institutional delivery in rural areas remains a concern due to lack of access to skilled birth attendants and emergency obstetric care.

  ○ Complications such as **postpartum hemorrhage, infections, and hypertensive disorders,** which require timely medical intervention, remain leading causes of maternal deaths in these underserved areas.

- **Non-Communicable Diseases (NCDs)**: India is also seeing an increasing number of indirect maternal deaths, especially due to **NCDs** like diabetes and hypertension.
  - The growing burden of these diseases, coupled with **inadequate prenatal care**, is leading to higher maternal mortality.

India's Initiatives to Reduce Maternal Mortality Ratio

Janani Suraksha Yojana (JSY) – Promotes institutional deliveries for vulnerable women.

PM Matru Vandana Yojana (PMMVY) Offers cash incentives for the first and second girl child

Janani Shishu Suraksha Karyakram (JSSK) – Ensures free delivery services and newborn care

Surakshit Matritva Aashwasan (SUMAN) – Guarantees respectful and quality maternal care

Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) – Free ANC on the 9th of every month; 5.9 crore women have benefited

LaQshya Improves labour room and maternity OT care

Challenges to Transgenders in India

Why in News?

31st March is observed as **International Transgender Day of Visibility** to raise awareness about the discrimination, and violence faced by transgender individuals.

➢ Despite the enactment of the **Transgender Persons (Protection of Rights) Act, 2019**, the community continues to face challenges, highlighting the gap between legal provisions and ground realities.

Who is a Transgender?

➢ **About:** According to **Transgender Persons (Protection of Rights) Act, 2019**, a transgender person is someone **whose gender identity does not align with the gender assigned at birth**.

➢ **Population:** According to the **Census 2011**, they have a population of around **4.8 million.** It includes **trans-person with intersex variations, gender-queer** and people having such socio-cultural identities as **kinnar, hijra, aaravani and jogta.**

➢ **Part of LGBTQIA+:** Transgender individuals are part of the **LGBTQIA+** community, represented by the **"T"** in the acronym.

   ○ **LGBTQIA+** is an acronym that represents **lesbian, gay, bisexual, transgender, queer, intersex, and asexual.**

   ○ The **"+"** represents the many other identities that are **still being explored and understood.**

   ○ The acronym is constantly evolving and may include other terms like **non-binary and pansexual.**

What are the Challenges Faced by Transgenders in India?

➢ **Implementation Gaps:** Despite the 2019 Act mandating timely support for transgender persons, only **65% of ID card** applications had been processed by December 2023, with over 3,200 applications delayed beyond the 30-day legal deadline.

   ○ The **complex certification process** hinders **self-identification** and fails to address issues like **police harassment and family rejection.**

➢ **Social Discrimination:** Transgender individuals in India face widespread rejection, bullying, and discrimination, leading to **poor mental health**- **31% die by suicide, and 50% attempt** it before age 20.

   ○ A **NALSA** survey found **27% were denied care** due to gender identity. **Gender-affirming treatments** cost Rs 2–5 lakh, often **uncovered by insurance**.

   ○ Despite **Ayushman Bharat TG Plus** offering **Rs 5 lakh** annual coverage, **awareness and accessibility are limited**.

➢ **Economic Exclusion**: People face **restricted employment and entrepreneurship opportunities** due to **hiring biases, workplace hostility**, and lack of gender-neutral facilities.

   ○ **92%** face economic exclusion **(NHRC 2018),** with a **48%** unemployment rate **(ILO 2022).** Despite a **2024 circular on joint bank accounts,** financial access remains limited due to poor awareness and institutional gaps.

➢ **Barriers in Education**: Transgenders in India have a **literacy rate of 56.1%,** below the **national average (74%) (2011 Census)**. While states like Maharashtra and Kerala have introduced inclusive measures, a **nationwide gender-sensitive curriculum is lacking.**

What is Transgender Persons (Protection of Rights) Act, 2019?

➢ **About:** The Act aims to **protect the rights of transgender persons** and provide a **legal framework** for their empowerment.

➢ **Key Provisions:**

   ○ **Non-Discrimination:** Prohibits discrimination in education, employment, healthcare, and public services.

   ○ **Self-Identification:** Grants the right to self-perceived gender identity, with certificates issued by district magistrates without medical exams.

   ○ **Medical Care:** Ensures access to gender-affirming treatments and HIV surveillance with insurance coverage.

   ○ **National Council:** Under this act **National Council for Transgender Persons (NCTP)** was established as a **statutory body** in **2020.**

Key Milestones in Transgender Rights Reforms

➢ **Election Commission's Directive (2009):** The registration forms were updated to include an **"others" option,** enabling transgender individuals to avoid male or female identification.

➢ **Supreme Court Ruling (2014):** In the **National Legal Services Authority vs. Union of India case, 2014**, the Supreme Court recognized transgender people as the **"Third Gender,"** framing it as a human rights issue.

➢ **Legislative Efforts (2019):** The **Transgender Persons (Protection of Rights) Act, 2019** was enacted to safeguard the rights of transgender individuals.

What is India's Effort for Transgender Welfare?

➢ **SMILE scheme**

➢ **Garima Greh**

➢ **Ayushman Bharat TG Plus**

➢ **National Portal for Transgender Persons**

➢ **Transgender Pension Scheme:** Transgender individuals are now eligible for the disability pension scheme, with the inclusion of a "transgender" option in the disability form.

➢ **Recognition in Indian Prisons**: In January 2022, the Ministry of Home Affairs sent an advisory to Heads of Prisons in the States/UTs to **ensure privacy, dignity of the third gender inmates.**

➢ **State-Level Efforts:** Maharashtra has established **transgender cells in colleges**, while Kerala provides **university-level reservations and hostel facilities for transgender** persons.

Combating Synthetic Drug Trafficking in India

Why in News?

India is facing a surge in **synthetic drug** trafficking. In response, Haryana's Narcotics Control Bureau has set up an **Anti-Synthetic Narcotics Task Force** to track networks, monitor precursor chemicals, and dismantle hidden labs in the state.

What are Synthetic Drugs?

➢ **About:** Synthetic drugs are fully created in labs using **precursor chemicals** (a compound that participates in a chemical reaction that produces another compound) and do not require any **plant-based components.**

➢ Classification of Drugs:

Category	Source	Examples
Natural Drugs	Directly from plants	Opium poppy (Papaver somniferous), Cannabis, Coca
Semi-Synthetic Drugs	Chemically modified from natural drugs	Morphine, Codeine, Heroin, Cocaine
Synthetic Drugs	Fully lab-manufactured	Amphetamines, ecstasy, diazepam, methaqualone

What are the Concerns Regarding Synthetic Drugs?

➢ **Loopholes from Rapid Innovation:** Synthetic drugs are often slightly modified to create **new psychoactive substances (NPS)** that fall outside the **Narcotic Drugs and Psychotropic Substances Act (NDPS), 1985** purview.

    ○ For instance, **fentanyl analogues** have surfaced faster than Indian agencies can classify them as narcotics, hindering enforcement efforts.

- **Ease of Production:** Unlike plant-based narcotics, synthetic drugs can be produced in **small, concealed labs** using easily available precursor chemicals.
  - This **decentralised model** makes detection and dismantling more difficult.
- **Difficulty in Detection**: Traditional drugs like heroin, cannabis, and poppy husk require **extensive supply chains**, often involving **cross-border smuggling**. However, synthetic drugs are often disguised within **legitimate industrial or pharmaceutical consignments.**
  - Traditional methods like **border checks and sniffer dogs are less effective.**
  - Trafficking networks increasingly rely on the **dark net, cryptocurrencies**, and **blockchain technology** for encrypted financial transaction channels. This makes tracking financial transactions and supply chains significantly more complex.
- **High Potency and Fatality**: Synthetic drugs like fentanyl are **extremely potent**, with even small doses causing fatal overdoses.
  - The **low cost and high availability of synthetic drugs** increase the risk of mass addiction, especially among youth. Indian states are witnessing a rise in drug-induced psychosis, crime, and dropouts from education.
- **Global Synthetic Drug Influence on India:** India faces significant challenges due to the global shift in synthetic drug production to low-risk, high-access regions.

- India, as one of the major producers of **active pharmaceutical ingredients (APIs),** along with China, and being located between the **Golden Crescent** and **Golden Triangle,** struggles to prevent the diversion of legal chemicals into illicit drug manufacturing.
- The rise of **online forums and tutorials** has further complicated law enforcement efforts and public health responses by making it easier for non-experts to synthesize dangerous drugs.

Legal Framework for Drug Enforcement in India

- India's drug law enforcement is rooted in **Article 47** of the Constitution, which mandates the state to prohibit the consumption of intoxicating substances, except for medicinal purposes.
- India's drug control policy is guided by three key legislations **the Drugs and Cosmetics Act, 1940,** the **Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985,** and the **Prevention of Illicit Traffic in NDPS Act, 1988**.
- The responsibility for **drug abuse control is a central function**. The Ministry of Finance, through the **Department of Revenue,** oversees the implementation of the NDPS Act, 1985, and the Prevention of Illicit Traffic in NDPS Act, 1988.
  - To strengthen enforcement, the **Narcotics Control Bureau (NCB)** was established in 1986, as the **central authority** responsible for coordinating actions against drug trafficking and enforcing drug control measures.

Science & Technology

Highlights

- *Ripening Agents Used for Fruits*
- *Need for Local Data Centres*
- *Japan Created 3D-Printed Train Station*
- *GenomeIndia*
- *US to Build Small Modular Reactors in India*
- *HALEU Fuel Cycle as an Alternative to FBRs*
- *Bird Flu*

Ripening Agents Used for Fruits

Ripening of fruits is associated with the **process of senescence or aging in plants**. It involves changes in colour, texture, flavour, sugar content, and acidity, and is **influenced by the ripening hormone ethylene.**

Artificial Fruit Ripening Agents:

➢ **Calcium Carbide:** It releases **toxic acetylene gas** and may contain **phosphorus**, and **arsenic (a carcinogenic substance)**causing severe health issues.
  ○ Its usage has been **banned by FSSAI** under Food Safety and Standards Regulations, 2011.

PLANT HORMONES

HORMONE	FUNCTION	LOCATION
Gibberellins	Increase the speed of seed germination; promote stem elongation; induce early blooming of flowers; increase fruit size	Shoot and root apical meristems; seeds
Auxins	Stimulate stem elongation; control seedling orientation; stimulate root branching; promote fruit development	Apical meristems; immature plant tissue
Ethylene	Increases the speed at which fruit ripens; stimulates leaf dropping and the death of flowers	All parts of the plant including the fruits
Abscisic acid	Inhibits growth and reproduction; inhibits seed germination; stimulates closure of stomata	Leaves; fruits; root tips; seeds
Cytokinins	Cause rapid cell division, in conjunction with auxin; induce seed germination; initiate new branches from lateral buds	Roots and fruits, primarily

➢ **Permitted Substances:**
  ○ **Ethylene Gas:** Approved by FSSAI up to **100 ppm (parts per million)**; triggers natural ripening. It must be applied in **controlled ripening chambers** and **not in direct contact** with fruits.
  ○ **Ethephon:** Releases **ethylene on breakdown** and used for artificial ripening under regulated conditions.
  ○ **Ethereal:** It is an **ethylene-releasing compound** used in **controlled settings**.

Need for Local Data Centres

Why in News?

India contributes around **20%** of the world's <u>digital data</u> but holds **less than 2% of global** <u>data centre capacity</u> in India, highlighting a **major infrastructure gap** to fully utilise available data.

➢ Underutilizing available data goes against the idea that **"data is the new oil,"** which highlights its **growing importance** in today's economy.

What are Data Centers?

➢ **About:** A data center is a **physical facility** that organizations use to **house their critical applications and data.**

➢ **Key Benefits:**

○ Its key components include **routers, switches, firewalls, storage systems, servers**, and **application-delivery controllers**.

➢ **Types:**
  ○ **Enterprise (On-Premises):** Owned & managed by a **single company for full control** (e.g., banks, healthcare for compliance).
  ○ **Public Cloud (Hyperscale):** Run by **cloud service providers** (CSPs) (e.g., Azure, IBM Cloud) for shared, scalable resources.
  ○ **Colocation Facilities:** Companies **rent space** but own their hardware; providers manage power/cooling.
  ○ **Edge Data Centers:** Smaller, **decentralized facilities** closer to users to reduce latency (critical for AI, IoT).

➢ **Core Components:**
  ○ **Network Infrastructure:** This **connects servers** (physical and virtualized), data center services, storage, and external connectivity to end-user locations.
  ○ **Storage Infrastructure:** Storage systems are used to **hold data** that acts as **fuels of the data center.**
  ○ **Computing Resources:** It provides the **processing, memory, local storage, and network connectivity** that drive applications.
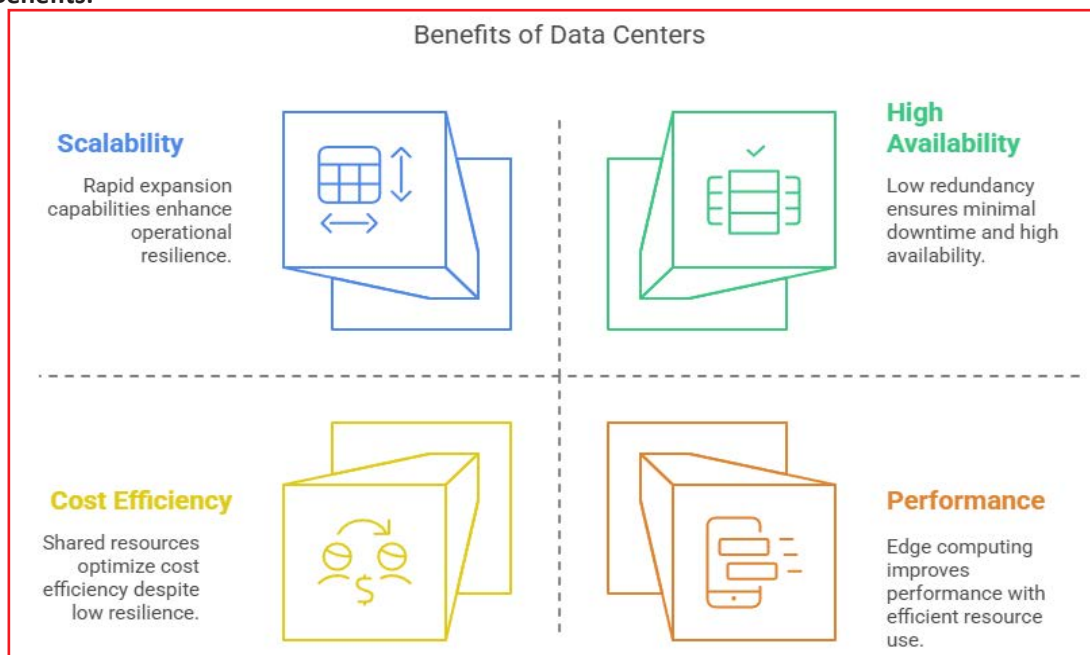
Benefits of Data Centers

Scalability — Rapid expansion capabilities enhance operational resilience.

High Availability — Low redundancy ensures minimal downtime and high availability.

Cost Efficiency — Shared resources optimize cost efficiency despite low resilience.

Performance — Edge computing improves performance with efficient resource use.

Why is Data Called the New Oil?

➤ **Fuel for Modern Economy:** Like **oil in the 20th century**, **data** now powers **modern business**, with firms like **Google, Amazon, and Foursquare** built on user data.

  ○ Businesses turn data into value by **predicting trends, improving operations, and personalizing services** like refining oil into high-value products.

➤ **Data as Strategic Resource:** Nations now treat data as a **geopolitical resource**, regulating its flow (e.g., GDPR, India's DPDP Act, 2023).

➤ **Foundation of Digital Economy:** Powers e-commerce, fintech, cloud computing, and IoT (smart devices, connected cars).

Why Are Local Data Centres Crucial for India?

➤ **India's Digital Footprint:** India tops global digital data generation, with the highest number of users on **Facebook (450 million), WhatsApp (540M), YouTube (490M),** and **Instagram (360M)** requiring **facilities to** their **data locally.**

➤ **Economic Growth:** India could attract **USD 400 billion in investments** by expanding data centres to match its data growth target of **40 GW by 2030.**

  ○ It can boost **e-commerce, fintech, AI, and cloud computing**, key sectors for achieving India's **USD 5 trillion economy goal**.

➤ **Job Creation:** Data centers can create **1–2 million direct jobs** and **3 times more indirect jobs** in construction, logistics, and tech services.

➤ **Data Sovereignty:** Local data centres ensure **sensitive data (financial, health, citizen records)** stays within India, complying with the **Digital Personal Data Protection Act, 2023.**

  ○ Prevents external control over critical data flows, enhancing **national security.**

➤ **AI & Digital Leadership:** Generative AI could add **USD 2.6–4.4 trillion/year** globally.

  ○ Companies like **AWS, Google,** and **Microsoft** are growing their data centers in India positioning the country as a **future AI hub**.

➤ **Competitive Advantage:** While nations like **China (rare earth minerals), Australia (iron ore),** and **Chile (copper**) leverage their natural strengths, India

generates **20%** of global data yet holds **less than 2%** of the world's data centre capacity.

  ○ Local data centers can provide **global data processing and cloud services**, similar to India's IT services success.

➤ **Infrastructure Boost:** India's data center growth will create demand for **800 million sq ft of construction**, boosting real estate, renewable energy, and telecom infrastructure.

What is the Current Status of Data Centres in India?

➤ **Click Here to Read:** Current Status of Data Centres in India

What are the Key Reasons for Growth of Data Centres in India?

➤ **Click Here to Read**: Reasons for Growth of Data Centres in India

What are Key Concerns Related to Local Data Centers in India?

➤ **High Capital Investment:** Building **40 GW** of data center capacity by **2030** needs **USD 400 billion**, but long payback periods of **10–15 years** may deter private investment.

➤ **Trade & Economic Risks:**

  ○ **Reciprocal Trade Barriers:** If India forces foreign firms to store data locally, **other countries** may impose **similar restrictions** on Indian IT firms (e.g., TCS, Infosys).

  ○ **Higher Costs for Consumers:** Compliance costs may lead to **increased prices for cloud services,** streaming, and digital products.

  ○ **Reduced Competition: Smaller tech firms may exit** India due to compliance burdens, leaving only giants (Google, AWS) with resources to adapt.

  ○ **WTO & Legal Disputes:** Could be seen as a protectionist policy, inviting **trade complaints.**

➤ **Operational Challenges:**

  ○ **Unreliable Power Supply:** Frequent power outages require **expensive backup systems (diesel generators, batteries).**

  ○ **Cooling Requirements:** India's **hot climate** increases energy needs for cooling, raising costs.

  ○ **Limited Undersea Cables:** Most international data flows via **foreign-owned cables (e.g., controlled by US/China)**, creating dependency.

➢ **Sustainability Concerns:**
  ○ **Energy-Intensive:** Data centres used **1.5%** of global electricity in **2024** and may reach **3% by 2030.** India's **coal-dependent grid** raises carbon footprint concerns.
  ○ **Water Usage for Cooling:** It conflicts with **agricultural and drinking water needs** in drought-prone regions.
➢ **Cyber Risks:** Large data centers become **high-value targets** for cyberattacks or physical sabotage.

Japan Created 3D-Printed Train Station

Why in News?

Japan has constructed the world's first **3D-printed railway station (Hatsushima Station)**, completed in just **6 hours** using **additive manufacturing (3D printing)** technology.

➢ The station's **3D-printed parts,** made with **special mortar reinforced with concrete**, were **transported by separate trucks to the construction site,** reducing labor needs and on-site construction time, which was then assembled in short time.

What is 3-D Printing Technology?

➢ **About: 3D printing or Additive Manufacturing (AM)**, is a process that creates 3-dimensional objects **by adding material layer by layer** based on a digital design.
  ○ It is the **opposite of traditional (subtractive) manufacturing**, which involves removing material from a solid block through cutting or drilling.
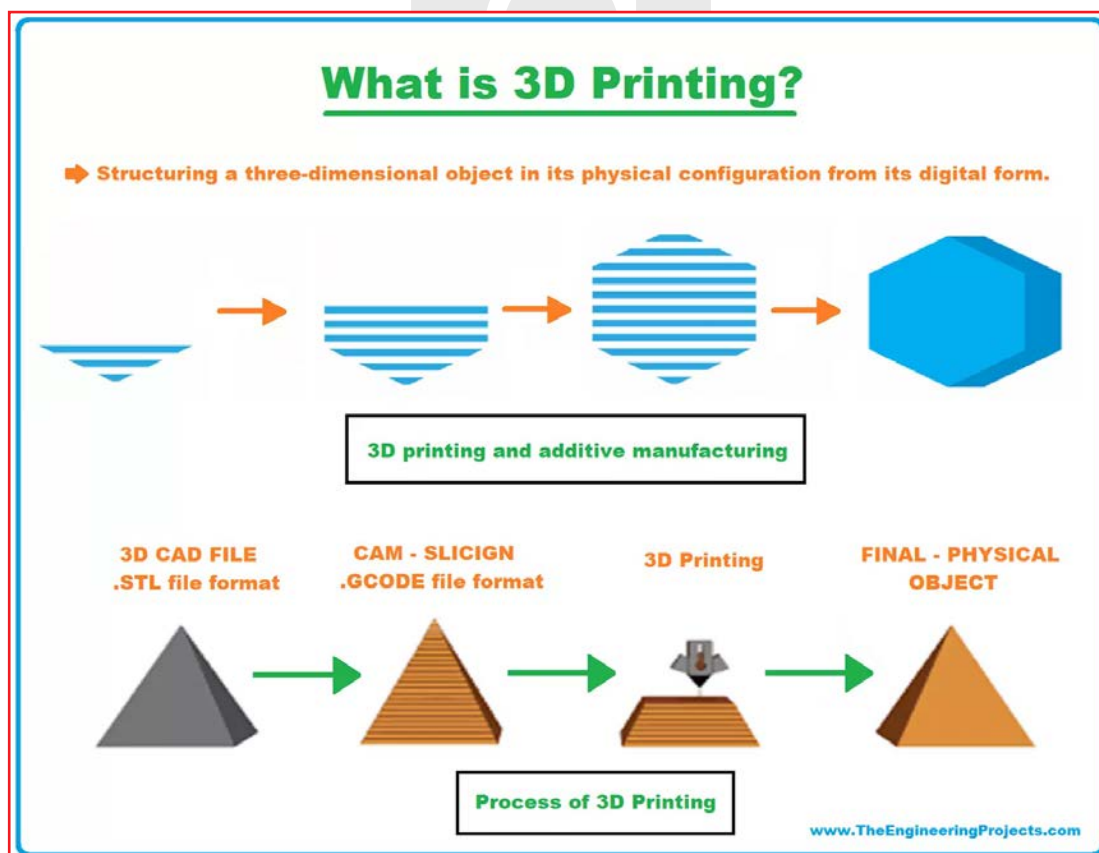
What is 3D Printing?

➡ Structuring a three-dimensional object in its physical configuration from its digital form.

3D printing and additive manufacturing

| 3D CAD FILE .STL file format | CAM - SLICIGN .GCODE file format | 3D Printing | FINAL - PHYSICAL OBJECT |

Process of 3D Printing

www.TheEngineeringProjects.com

- ➢ **Working Mechanism:**
  - ○ **Design & Conversion:** A **digital 3D model** is developed using **computer-aided design (CAD) software** or **3D scanning**. This model is then **sliced into thin layers** and converted into machine-readable G-code instructions.
  - ○ **Printing & Post-Processing:** Material (plastic, metal, etc.) is **deposited layer by layer** by the 3D printer to build the object as per the design. Post-printing, the **object is cleaned, cured, assembled, and tested for precision** and performance.
- ➢ **Materials Used**: It uses a variety of materials including **thermoplastics**, **metals and alloys**, **ceramics**, and **biomaterials** like bioinks for medical applications.
- ➢ **Common Methods of 3D Printing:** Common 3D printing methods include **Material Jetting**, **Directed Energy Deposition (DED)**, and **Sheet Lamination**, which build complex objects layer-by-layer with precision.
- ➢ **Key Applications:**

Sector	Applications
Aerospace & Defence	Landing gears, thrust reverser doors, surveillance drones
Automotive	Engine parts, gearboxes, air inlets
Electronics	RFID devices, wearable tech, soft robotics
Healthcare	Surgical models, implants, customized instruments
Consumer Goods	Jewellery, toys, furniture, apparel, and even food products

What is 4D Printing Technology?

- ➢ **About:** 4D printing is an **advanced form of 3D printing** where objects made using **smart/intelligent materials (like hydrogels, active polymers)** can **change shape, structure, or properties over time** in **response to external stimuli** like heat, light, moisture, or pressure.
  - ○ Unlike static 3D prints, **4D-printed objects can bend, self-assemble, repair, or transform autonomously**, enabling **dynamic and responsive structures** without the need for electronics or human intervention.
- ➢ **Key Applications:**
  - ○ **Medicine**: Adaptive implants like **dissolvable stents and smart devices** that adapt to **body growth or temperature**, used in **life-saving surgeries** and **targeted drug delivery.**
  - ○ **Clothing & Footwear**: Enables **adaptive wearables** that respond to environmental conditions, **military uniforms and sportswear** can adjust ventilation, color, or fit dynamically.
  - ○ **Aerospace & Automotive**: NASA's 4D-printed smart fabrics for astronaut suits and intelligent materials for impact-resistant airbags and cooling aircraft engines.
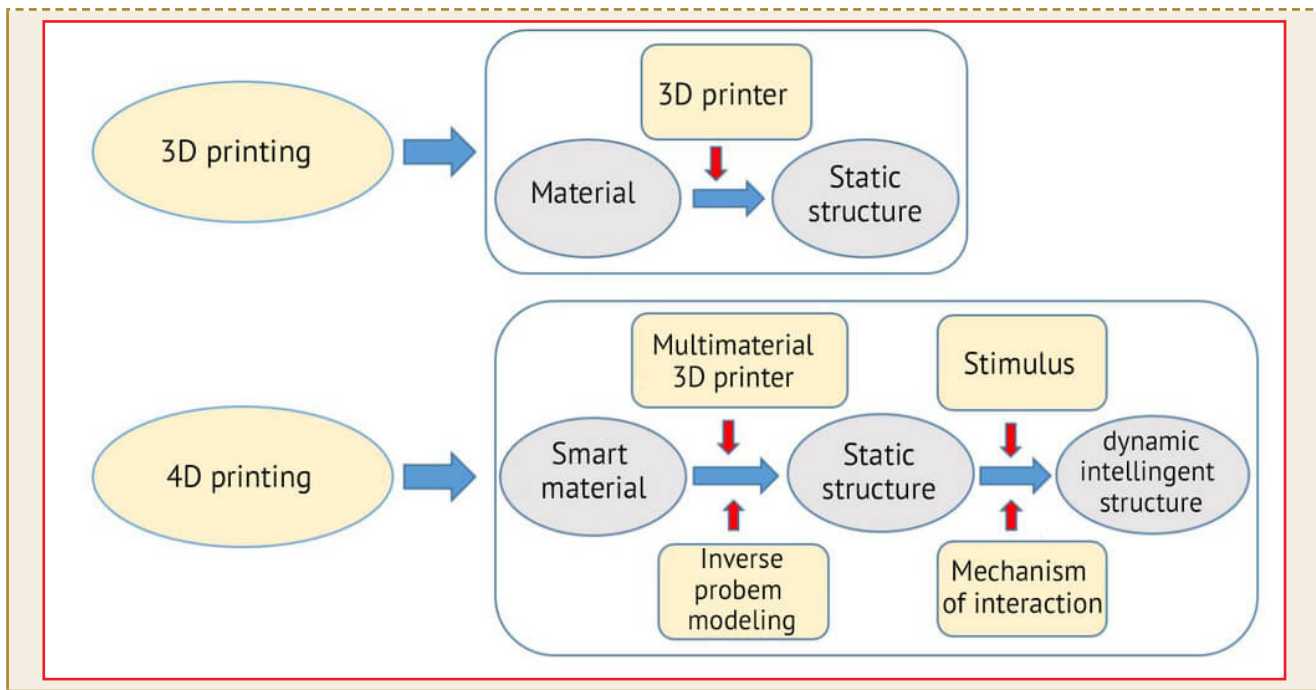
GenomeIndia

Why in News?

Nature Genetics published findings from the **GenomeIndia project,** which **sequenced the whole genomes** of around 10,000 individuals from 85 distinct populations groups (32 tribal and 53 non-tribal), covering major ethnic groups across India.

➤ The study identified 180 million genetic variants, including 130 million on **autosomes (non-sex chromosomes)** and 50 million on **sex chromosomes (X and Y).**

○ Some variants are disease-linked, some are rare, others are unique to India or specific communities.

What is the GenomeIndia Project?

➤ **About:** Launched in 2020 by the **Department of Biotechnology (DBT),** the Genome India Project aims to map the genetic diversity of the Indian population.

○ Over 20 leading institutions, including **Indian Institute of Science's Centre for Brain Research,** Centre for Cellular and Molecular Biology, and National Institute of Biomedical Genomics, collaborated to sequence 10,000 genomes in the project's first phase.

○ The core objective is to build a **comprehensive Indian reference genome**.

➤ **IBDC:** The genome data is stored in the **Indian Biological Data Centre (IBDC)**, which is **India's first national life science data repository,** established at Regional Centre of Biotechnology (RCB), Faridabad with support from DBT and in collaboration with **National Informatics Centre (NIC).**

➤ **Significance:** The initiative addresses the **underrepresentation of Indian genomes in global databases,** thereby enhancing India's standing in international genomics research.

What are the Other Key Genome Sequencing Initiatives?

➢ **IndiGen Programme:** Launched by **Council of Scientific & Industrial Research (CSIR) in 2019,** successfully sequenced the whole genomes of 1029 Indians and identified **55.9 million single nucleotide variants**, of which 18 million (~32%) were unique to Indian genomes.
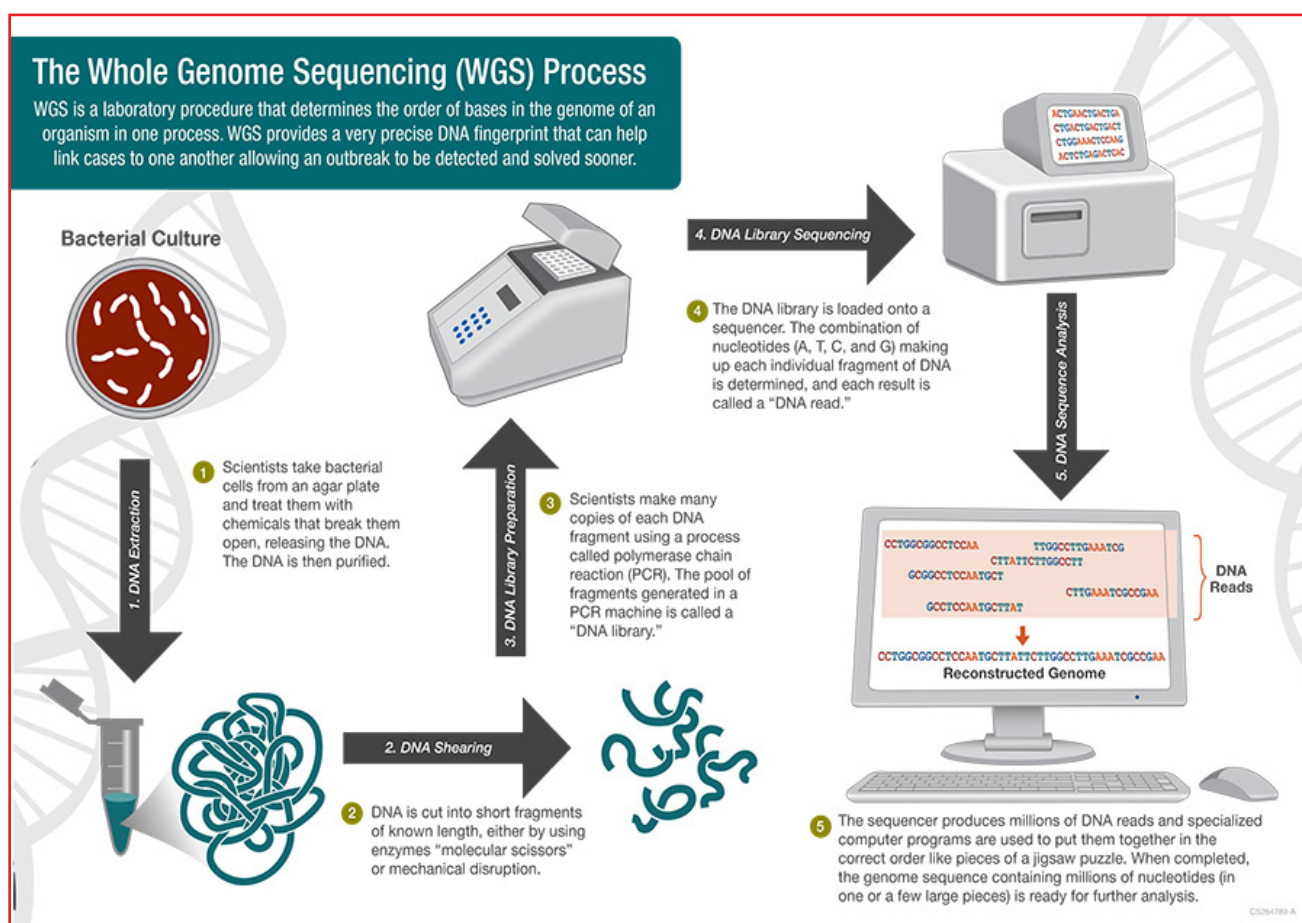
➢ **One Day One Genome Initiative:** Launched in 2024 by DBT, aims to sequence and publicly release one bacterial genome daily to showcase India's microbial diversity.

➢ **Global Alliance for Genomics and Health (GA4GH):** Established in 2013, GA4GH is a non-profit international alliance that sets standards to promote the use of genomic data within a human rights framework.

➢ **Human Genome Project:** It was coordinated by the US and operated from 1990 to 2003, providing researchers with fundamental information about the genetic makeup of the human organism.

What is Genome Sequencing?

➢ **Genome:** It refers to the entire set of genetic material (Deoxyribonucleic acid (DNA) in most organisms; Ribonucleic acid (RNA) in some viruses) present in an organism.

 ○ It contains all the biological instructions required for an organism's development, functioning, and survival.

The Whole Genome Sequencing (WGS) Process

WGS is a laboratory procedure that determines the order of bases in the genome of an organism in one process. WGS provides a very precise DNA fingerprint that can help link cases to one another allowing an outbreak to be detected and solved sooner.

Bacterial Culture

1. DNA Extraction — Scientists take bacterial cells from an agar plate and treat them with chemicals that break them open, releasing the DNA. The DNA is then purified.

2. DNA Shearing — DNA is cut into short fragments of known length, either by using enzymes "molecular scissors" or mechanical disruption.

3. DNA Library Preparation — Scientists make many copies of each DNA fragment using a process called polymerase chain reaction (PCR). The pool of fragments generated in a PCR machine is called a "DNA library."

4. DNA Library Sequencing — The DNA library is loaded onto a sequencer. The combination of nucleotides (A, T, C, and G) making up each individual fragment of DNA is determined, and each result is called a "DNA read."

5. DNA Sequence Analysis — The sequencer produces millions of DNA reads and specialized computer programs are used to put them together in the correct order like pieces of a jigsaw puzzle. When completed, the genome sequence containing millions of nucleotides (in one or a few large pieces) is ready for further analysis.

DNA Reads

Reconstructed Genome

➢ **Genome Sequencing:** It is the process of determining the complete sequence of **nucleotide bases (Adenine (A), Cytosine (C), Guanine (G), Thymine (T), and Uracil (U))** in an organism's genome.

 ○ It can include whole-genome, partial genome, or targeted gene sequencing

➢ **Whole Genome Sequencing (WGS):** Used to determine the complete DNA sequence of an organism's genome at a single time, identifying the exact order of all the nucleotide bases across the entire genome.

○ It provides the most comprehensive genetic blueprint of an organism.

US to Build Small Modular Reactors in India

Why in News?

The US has granted approval to **Holtec International** under its regulation **10CFR810**, to transfer **unclassified Small Modular Reactor (SMR) technology** to 3 Indian private entities.

What are the Key Highlights of India-US SMR Technology Nuclear Deal?

➢ **Validity:**

○ The authorization, **valid for 10 years** and subject to **review every 5 years**, allows Holtec to design and construct nuclear reactors in India.

➢ **Regulatory Safeguards:**

○ Under the approval, **SMR** technology can **only be used for peaceful civilian purposes**, must follow **International Atomic Energy Agency (IAEA)** safeguards, and **cannot be used for military activities**, ensuring compliance with global non-proliferation norms.

➢ **Significance:**

○ **Operationalises the 123 Agreement:** Revives the **2008 India-US Civil Nuclear Deal or 123 Agreement** by overcoming legal and commercial barriers.

○ **Encouraging Private Sector:** Marks the **first direct US tech transfer to Indian private firms**, shifting from **state-only control to a public-private (PPP) model.**

○ **Boosting Indigenous Capability:** Facilitates local manufacturing of **SMR** and positions India as a **future hub for nuclear innovation** and exports, especially for the Global South.

➢ **Legal and Policy Challenges:**

○ **Civil Liability for Nuclear Damage Act, 2010:** Civil Liability for Nuclear Damage Act, 2010 holds suppliers liable for nuclear accidents, discouraging foreign investment and tech transfer.

○ **Atomic Energy Act, 1962:** Atomic Energy Act, 1962 restricts nuclear power generation to government entities, **barring private firms from owning or operating plants.**

● The government has formed **inter-ministerial committees** to amend the **Atomic Energy Act, 1962** and the **Civil Liability for Nuclear Damage Act, 2010**, aiming to enable **private sector participation** in nuclear energy.

What are Small Modular Reactors (SMRs)?

➢ **About:**

○ **SMRs** are advanced nuclear reactors with a **capacity of up to 300 MW(e)**, about **one-third of traditional reactors.**

○ They are **compact, factory-assembled, and transported for installation,** making them suitable for **remote or space-constrained areas.**

● Eg: NuScale (USA), CAREM (Argentina)

➢ **Key Features:**

○ **SMRs** are compact nuclear reactors that generate low-carbon electricity. They are:

● **Small**: Much smaller in size compared to conventional nuclear reactors.

● **Modular**: Factory-built components can be transported and assembled on-site.

● **Reactors**: Use nuclear fission to produce heat, which is converted into energy.

➢ **Key Advantages:**

○ **Fuel Efficiency:** Require refueling every **3-7 years** (as compared to **1–2 years in conventional plants).**

○ **Scalability & Flexibility:** Easily integrated into diverse power systems and can be scaled for remote areas or urban grids.

● Reduce reliance on **rare reactor-grade fuels** or advanced enrichment processes.

○ **Passive Safety:** Incorporate **inherent safety systems** for enhanced accident resilience.

○ **Low-Carbon & Reliable:** Provide **24/7 clean energy,** complementing renewables and aiding grid stability, helping meet rising energy demand and net-zero goals by 2070).

➢ **SMR and India:**

○ **Budgetary Allocation:** The <u>Union Budget 2025–26</u> announces the launch of a **Nuclear Energy Mission** with focus on **research and development of Small Modular Reactors (SMRs)** and develop **at least 5 indigenously designed and operational SMRs by 2033.**

○ **Bharat Small Reactors (BSRs)**: BSR are **220 MW Pressurized Heavy Water Reactors (PHWRs)** with a strong safety record which will be **deployed near industries** like steel, aluminium, and metals, functioning **as captive power plants to aid decarbonization**.

● Private entities will provide land, cooling water, and capital, while NPCIL will handle design, quality assurance, and operations.

■ This initiative aligns with **India's COP26 pledge to achieve 500 GW of non-fossil fuel-based energy** and **50% renewable energy by 2030.**

○ **Small Modular Reactors (SMRs)**: **Bhabha Atomic Research Centre (BARC)** is working on SMRs for **repurposing retiring coal-based power plants** and **meeting the energy needs of remote areas.**

● The **Department of Atomic Energy (DAE)** is also focusing on developing reactors such as **high-temperature gas-cooled reactors** for **hydrogen generation** and **molten salt reactors** to utilize India's vast **thorium resources.**
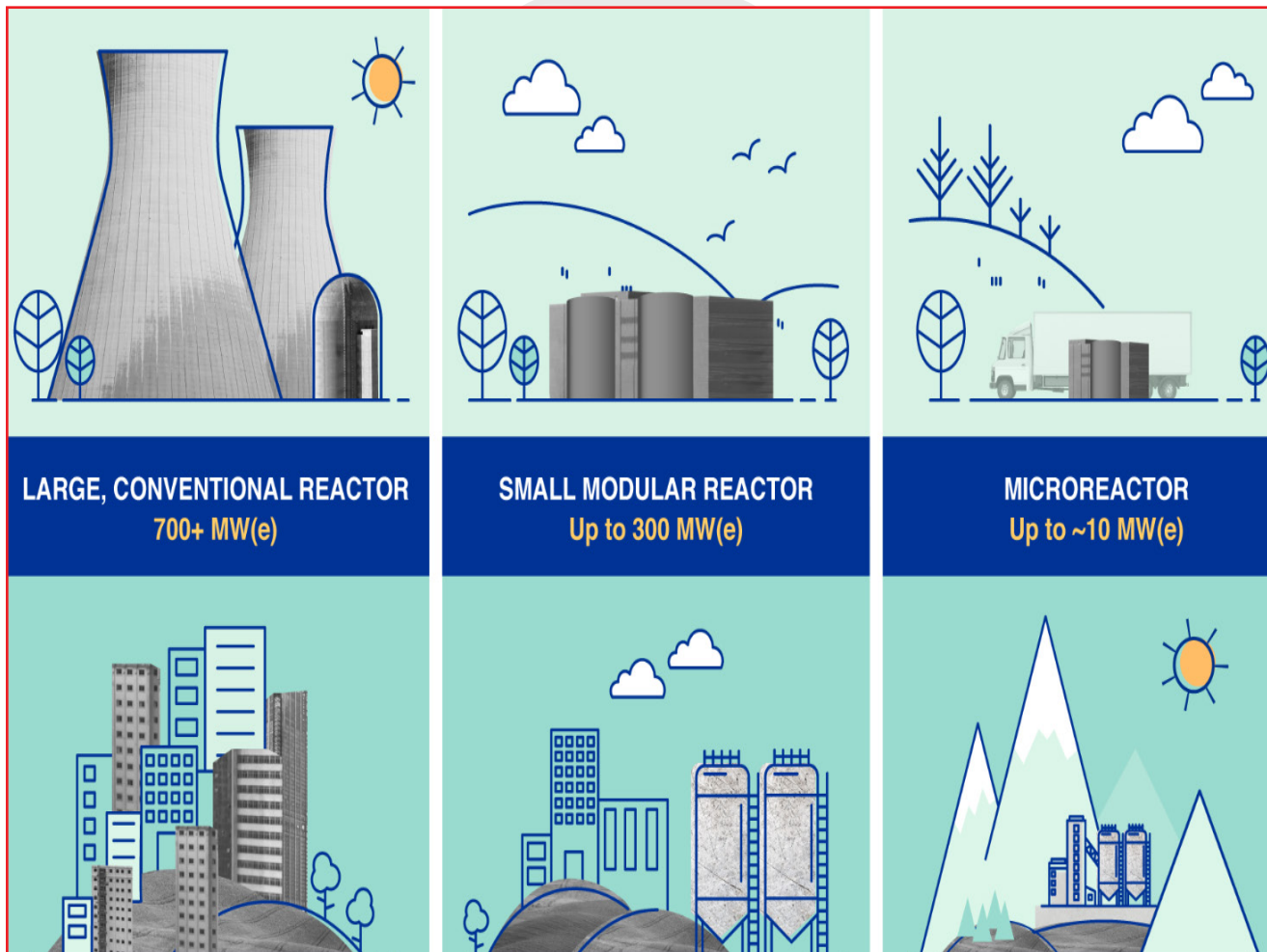
LARGE, CONVENTIONAL REACTOR 700+ MW(e) | **SMALL MODULAR REACTOR** Up to 300 MW(e) | **MICROREACTOR** Up to ~10 MW(e)

SMALL MODULAR REACTORS

Small modular reactors (SMRs) are one of the latest innovations in producing nuclear energy. With a simplified, compact design and relative low-cost production methods, innovators hope to deploy them more readily.
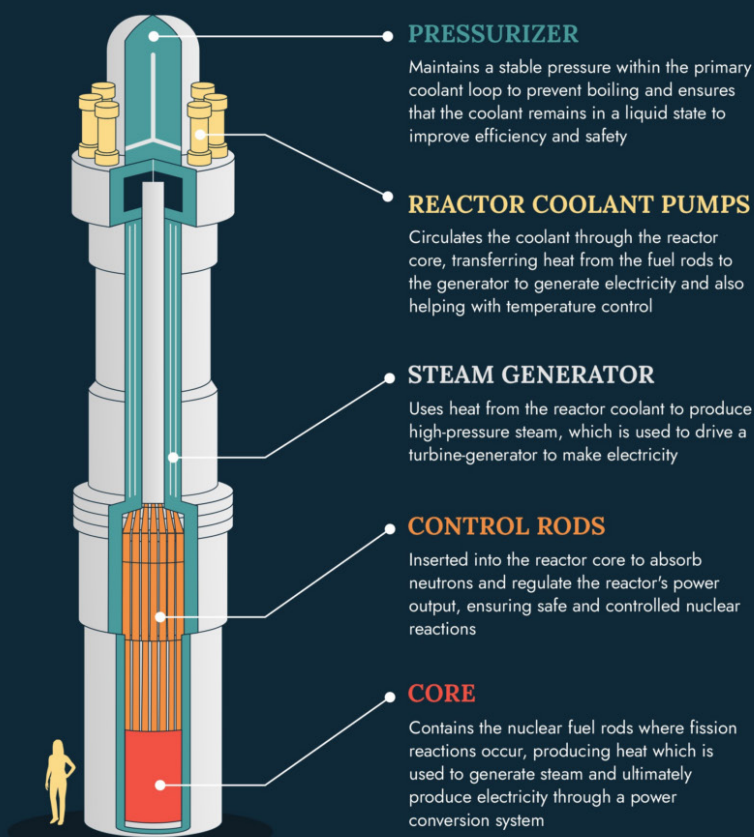
SMALL:

SMRs are designed to be in the range of 1 to 300 megawatts, roughly one third of the gigawatt scale of traditional nuclear reactors

MODULAR:

SMRs can be manufactured in a factory and transported to the site, making them easier to deploy and potentially reducing construction costs

REACTOR:

Like all nuclear reactors today, SMRs harness nuclear fission to generate heat to produce energy

PRESSURIZER

Maintains a stable pressure within the primary coolant loop to prevent boiling and ensures that the coolant remains in a liquid state to improve efficiency and safety

REACTOR COOLANT PUMPS

Circulates the coolant through the reactor core, transferring heat from the fuel rods to the generator to generate electricity and also helping with temperature control

STEAM GENERATOR

Uses heat from the reactor coolant to produce high-pressure steam, which is used to drive a turbine-generator to make electricity

CONTROL RODS

Inserted into the reactor core to absorb neutrons and regulate the reactor's power output, ensuring safe and controlled nuclear reactions

CORE

Contains the nuclear fuel rods where fission reactions occur, producing heat which is used to generate steam and ultimately produce electricity through a power conversion system

Source: U.S. Department of Energy

The Main SMR Types

Light Water Reactors

High Temperature Gas Cooled Reactors

Molten Salt Reactors

Fast Neutron Reactors

By using smaller, mass manufactured designs, SMRs can provide additional benefits in terms of **safety, cost,** and **flexibility** in nuclear power generation.

HALEU Fuel Cycle as an Alternative to FBRs

Why in News?

India's **3-stage nuclear power programme is** facing delays in deploying **Fast Breeder Reactors (FBRs).** Amid these challenges, the **former Bhabha Atomic Research Centre (BARC) chief** has suggested using **HALEU and thorium** as fuel to effectively utilize existing **PHWRs.**

How Can Thorium-HALEU Fuel Be Integrated into India's Nuclear Programme?

➢ **Using PHWRs with HALEU:** India can enhance its nuclear energy programme by using a **mix of High Assay Low Enriched Uranium (HALEU)** and **thorium** in existing **700 MWe Pressurised Heavy Water Reactors (PHWRs).**

    ❍ **HALEU** is uranium enriched between **5% and 20% U-235.** This approach enables India to **start utilizing thorium sooner,** making its **nuclear power generation more sustainable.**

➢ **Recycling Spent Fuel:** The **spent fuel from PHWRs using HALEU-thorium** can be **reprocessed to extract valuable fissile material** (substance whose nucleus can undergo fission when struck by a neutron).

    ❍ This reprocessed material can then be **utilized in advanced reactors** such as **Molten Salt Reactors (MSRs),** which form part of India's **3rd stage of its nuclear programme.**

    ❍ It ensures **optimal use of nuclear fuel,** contributing to the long-term sustainability of India's nuclear energy sector by **minimizing waste and maximizing fuel efficiency.**

What is India's 3-Stage Nuclear Power Programme?

➢ **About**: India's 3-Stage Nuclear Power Programme, formulated by **Dr. Homi Bhabha,** aims to **achieve long-term energy security** by **efficiently utilising** India's **limited uranium and abundant thorium reserves.**

    ❍ It is a **phased plan** to **develop nuclear energy** in a **sustainable and self-reliant manner.**

➢ **3 Stages:**

Stage	Aim	Fuel/Coolant/Moderator	Nuclear Reactor	Current Status
Stage-1	It aims to generate electricity while producing **plutonium-239 (Pu-239)** as a byproduct. Plutonium is key for the next stages of the programme.	Uranium (U-238) Moderator: **Heavy water (deuterium oxide)**	Pressurized Heavy Water Reactors (PHWRs)	India has already constructed **18 PHWRs,** as the **foundation of India's nuclear power infrastructure.**
Stage-2	It focuses on **Fast Breeder Reactors (FBRs)**, which utilize **Pu-239** from the first stage to generate more fissile material than they consume. These reactors convert fertile uranium-238 into Pu-239, enhancing the nuclear fuel cycle efficiency.	Mixed **Oxide of Plutonium-239 and Uranium-238**	Fast Breeder Reactors (FBRs)	The Prototype FBR at **Kalpakkam, Tamil Nadu**, is a key development in this stage.

Stage-3	It focuses on **Thorium Reactors,** which use Thorium-232 to produce uranium-233, a fissile material.	**Thorium-232** (converted into Uranium-233)	Thorium-Based Reactors (Thorium Cycle)	Research into thorium-based reactors is ongoing, with the **Advanced Heavy Water Reactor (AHWR)** & **Molten Salt Reactors** being developed as part of this stage.

India's Nuclear Weapon Programme

➢ **Smiling Buddha (1974):** India's **first successful nuclear test** conducted at **Pokhran,** Rajasthan, making it the **6th country** (after the US, Soviet Union, United Kingdom, France, and China) to possess nuclear capability.

➢ **Operation Shakti (1998):** A series of **5 nuclear tests (Pokhran-II),** including a **thermonuclear device**, which demonstrated India's advanced nuclear weapons capability.

Bird Flu

Why in News?

A casualty was observed in Andhra Pradesh from bird flu virus marking **India's second recorded human fatality from H5N1 since 2021.**

What is Bird Flu?

➢ **About: Bird flu, or avian influenza,** is a highly contagious viral disease that affects both wild and domestic birds.

  ❍ It is caused by **avian influenza A viruses,** with subtypes such as **H5N1** and **H5N8** being particularly significant.

➢ **History of Human Cases:** First human cases were reported in **1997 (Hong Kong)**. Most have occurred in Asia and were linked to close contact with infected birds.

  ❍ Between 2003 and February 2025, the **World Health Organization (WHO)** has recorded **972 cases** of confirmed H5N1 influenza.

➢ **Transmission:** H5N1 spreads primarily through **direct contact with infected live or dead birds** or **contaminated environments** (e.g., live bird markets).

  ❍ **Rarely, transmission from infected mammals to humans** has been observed. Though human infections are rare, **H5N1 has a high fatality rate (~60%)**, much higher than the peak fatality of Covid-19 (~3%). Also, **airborne transmission has not been confirmed in humans.**

  ❍ Human-to-human transmission remains **extremely rare**. The **virus continues to evolve**, and i**f it mutates to allow sustained human-to-human transmission,** it could **trigger a global pandemic.**

    ● Hence, H5N1 is listed as a **priority disease under WHO R&D Blueprint.**

➢ **Symptoms:** Common symptoms include **high fever, cough, sore throat, and muscle aches**.

  ❍ Severe cases can lead to **respiratory failure** or **neurological complications**. Some individuals may remain asymptomatic despite exposure.

➢ **Treatment:** Antiviral drugs like **oseltamivir** are effective, especially when administered early in high-risk or severe cases.

➢ **Vaccination:** Current seasonal flu vaccines **do not protect** against H5N1.

  ❍ Some countries have developed **H5N1-specific vaccines** for emergency use.

➤ **Strains of Avian Influenza Viruses:**
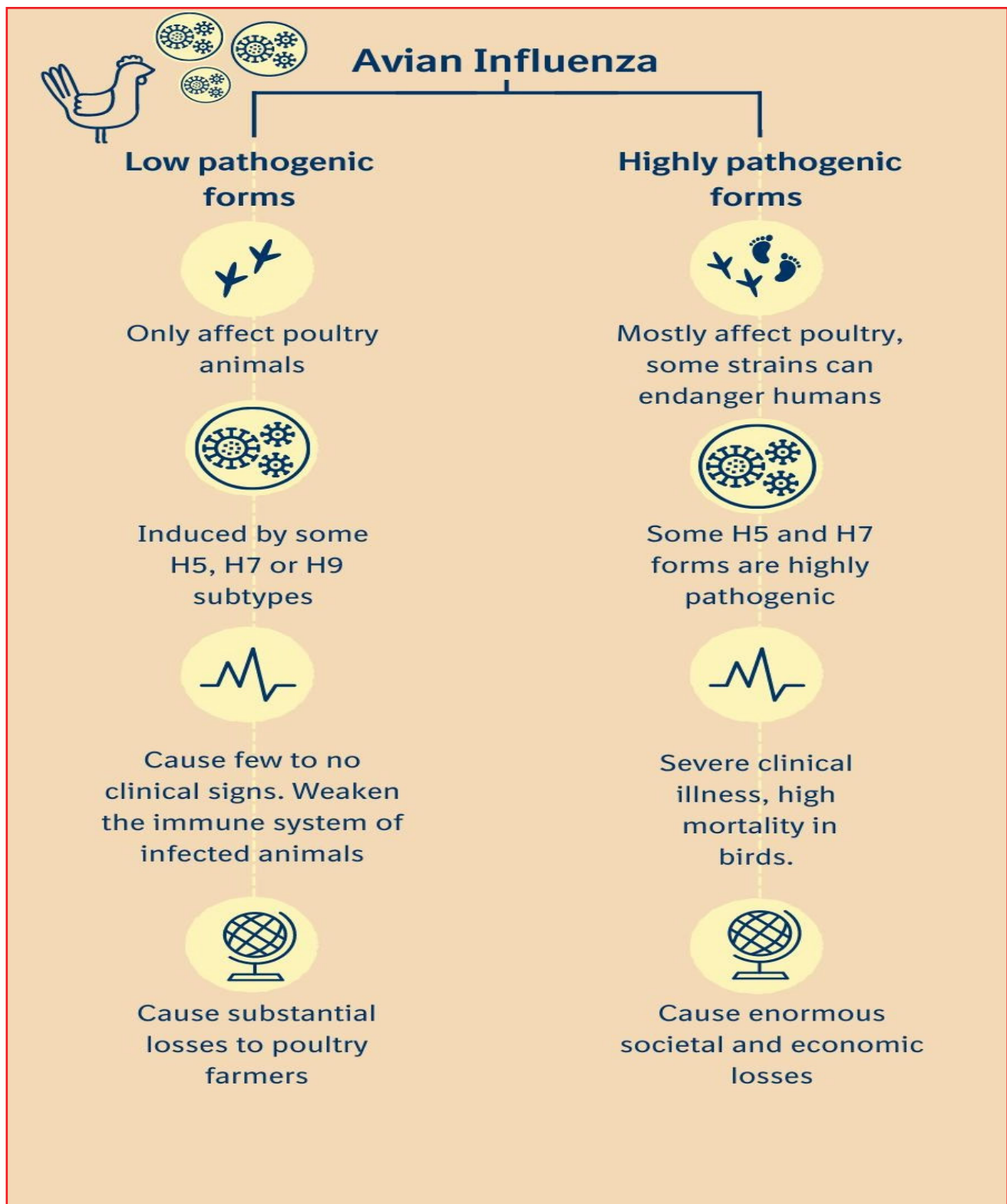
Avian Influenza

Low pathogenic forms

Only affect poultry animals

Induced by some H5, H7 or H9 subtypes

Cause few to no clinical signs. Weaken the immune system of infected animals

Cause substantial losses to poultry farmers

Highly pathogenic forms

Mostly affect poultry, some strains can endanger humans

Some H5 and H7 forms are highly pathogenic

Severe clinical illness, high mortality in birds.

Cause enormous societal and economic losses

What are Influenza Virus Types?

Type	Hosts	Impact on Humans	Key Features	Public Health Relevance
Influenza A	Humans, birds, pigs, other animals	High – causes pandemics and severe epidemics	Subtypes (H1N1, H5N1) based on HA & NA proteins	Major global concern; pandemic potential
Influenza B	Humans	Moderate – seasonal flu outbreaks	Two lineages: B/Yamagata and B/Victoria; slower mutation	Seasonal flu impact; affects vulnerable groups
Influenza C	Humans (rare)	Low – mild respiratory illness	No epidemics; long-lasting immunity	Limited concern; self-limiting
Influenza D	Cattle and other animals	None	No human infections; animal monitoring	Veterinary relevance; no human threat

About Bird Flu

WHAT IS BIRD FLU?

Bird flu is an infectious disease in birds caused by avian influenza type A viruses. It may cause mild to severe illness or sudden death in birds. Domestic poultry like chickens are particularly vulnerable.

Avian influenza viruses do not usually infect humans but may sometimes be transmitted to humans who have contact with infected poultry and their secretions and faeces, or contact with contaminated surfaces.
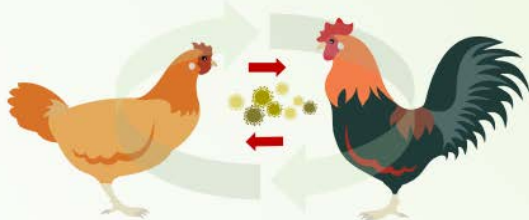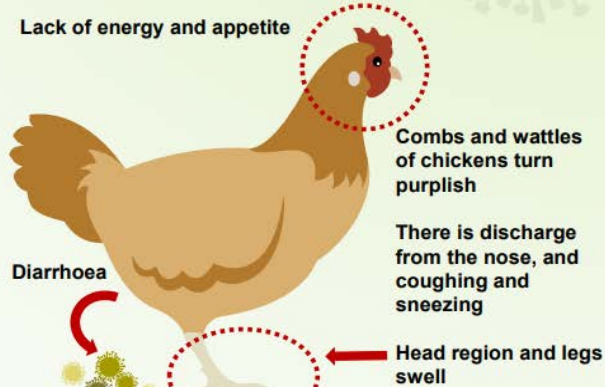
HOW DOES BIRD FLU SPREAD BETWEEN BIRDS?

• Direct contact with nasal and respiratory secretions from infected birds
• Direct contact with infected bird faeces
• Contamination of feed and water
• Contact with contaminated equipment and humans

SIGNS IN INFECTED BIRDS

Lack of energy and appetite

Combs and wattles of chickens turn purplish

There is discharge from the nose, and coughing and sneezing

Diarrhoea

Head region and legs swell

Environment and Ecology

Highlights

- Indoor Air Quality
- Elephant Poaching in Tamil Nadu
- India's Air Pollution Crisis
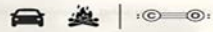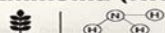- Growing Threat of Light Fishing in India

Indoor Air Quality

Why in News?

Indoor air pollution is a growing concern in India, especially in urban areas where people spend 70–90% of their time indoors. Yet, discussions around **Indoor Air Quality (IAQ)** remain limited, with most policy focus still on outdoor pollution.

Air Pollutants

Air Pollutants

Sulphur Dioxide (SO$_2$)

It comes from the consumption of fossil fuels (oil, coal and natural gas). Reacts with water to form acid rain.

Impact: Causes respiratory problems.

Ozone (O$_3$)

Secondary pollutant formed from other pollutants (NOx and VOC) under the action of the sun.

Impact: Irritation of the eye and respiratory mucous membranes, asthma attacks.

Nitrogen Dioxide (NO$_2$)

Emissions from road transport, industry and energy production sectors. Contributes to Ozone and PM formation.

Impact: Chronic lung disease.

Carbon Monoxide (CO)

It is a product of the incomplete combustion of carbon-containing compounds.

Impact: Fatigue, confusion, and dizziness due to inadequate oxygen delivery to the brain.

Ammonia (NH$_3$)

Produced by the metabolism of amino acids and other compounds which contain nitrogen.

Impact: Immediate burning of the eyes, nose, throat and respiratory tract and can result in blindness, lung damage.

Lead (Pb)

Released as a waste product from extraction of metals such as silver, platinum, and iron from their respective ores.

Impact: Anemia, weakness, and kidney and brain damage.

Particulate Matter (PM)

PM10: Inhalable particles, with diameters that are generally 10 micrometers and smaller.
PM2.5: Fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.
Source: Emitted from construction sites, unpaved roads, fields, fires.
Impact: Irregular heartbeat, aggravated asthma, decreased lung function.

Note: These major air pollutants are included in the Air quality index for which short-term National Ambient Air Quality Standards are prescribed.

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What is Indoor Air Quality?

➤ **Definition:** IAQ refers to the quality of **air inside and around buildings**, impacting the health and comfort of occupants.

➤ **Common Indoor Air Pollutants:**

○ **Carbon Monoxide (CO)**: A toxic **odorless gas** produced from incomplete combustion.

○ **Formaldehyde**: Found in wood products, glues, paints, and furnishings; a known **carcinogen.**

○ **Asbestos:** Found in older construction materials **used for making fireproof or incombustible building components;** exposure can lead to serious lung diseases.

○ **Radon**: A radioactive gas that **seeps from the ground into buildings.**

○ **Lead**: Found in old paints, plumbing, and ceramics.

○ **Mould**: A **microorganism and type of fungus** that thrives in damp places, and humid environments.

○ **Pesticides**: Used **indoors for pest control**, contributing to chemical exposure.

○ **Smoke**: From cigarettes or cookstoves, carrying harmful toxins.

○ **Allergens**: Dust mites, pet dander, and pollen trapped in carpets and furniture.

➤ **Reasons for Deteriorating IAQ:** Outdoor pollutants like **Particulate Matter (PM2.5)** enter poorly sealed or ventilated buildings through gaps in poorly insulated structures.

○ Indoor activities such as cooking, smoking, use of incense sticks, and chemical cleaning.

○ **Overcrowded housing** in Indian cities increases pollutant levels due to **limited space for dispersion.**

○ The **lack of public awareness and regulatory oversight on IAQ** standards allows harmful practices and materials to persist unchecked.

➤ **Impact:** India recorded the **highest average annual indoor PM2.5 levels** (55.18 µg/m³), as revealed in Dyson's Global study, followed by China, Turkey, UAE, and South Korea.

○ Globally, **household air pollution causes 3.2 million premature deaths annually (WHO)**, as pollutants from solid fuels and kerosene damage the lungs, impair immunity, and reduce blood oxygen levels.

○ Poor ventilation can lead to carbon dioxide build-up, resulting in **"sick building syndrome."**

○ Indoor air pollution is linked to **noncommunicable diseases** such as stroke, heart disease, Chronic obstructive pulmonary disease (COPD) and lung cancer. Women and children bear the heaviest health burden.

Elephant Poaching in Tamil Nadu

Why in News?

A **recent elephant** poaching incident in Tamil Nadu has reignited concerns about the re-emergence of **wildlife crime as an existential threat** to the survival of wild elephants.

➤ As per the **Ministry of Environment, Forest and Climate Change (MoEFCC), the elephant population dropped from over 4,000 (2012) to <2,800 (2017)** but recovered to 3,000+ (2024).

What are the Key Facts About Elephants?

➤ **About:**

○ Elephant is a **National Heritage animal** of India.

○ They are **matriarchal**, living in groups led by females.

○ They are considered **"Keystone Species"** for playing a critical role in maintaining the balance and health of forest ecosystems.

● As **ecosystem engineers**, elephants **facilitate seed dispersal and create access to water sources** for other species.

➤ **Species:**

○ **Asian Elephants** (*Elephas maximus*)

○ **African Elephants:**

● **African Savannah Elephants (*Loxodonta africana*)**

● **African Forest Elephants (*Loxodonta cyclotis*)**

➢ **Population in India:**

   ○ Indian elephants are a **subspecies of Asian elephants** native to the Indian subcontinent that represent around **60%** of all Asian elephants.

   ○ According to the **elephant census conducted in 2017**, India is home to approximately 29,964 elephants.

   ○ **Karnataka had the highest number** of elephants followed by **Assam and Kerala**.

     ● In terms of protected areas, Sathyamangalam forest division has the highest number of elephants.

➢ **Threats:**

   ○ Ivory trade, human-animal conflict, inter-state and transnational wildlife trafficking, etc.

➢ **Conservation Status:**

   ○ **Convention of the Migratory Species (CMS):** Appendix I

   ○ **Wildlife (Protection) Act, 1972:** Schedule I
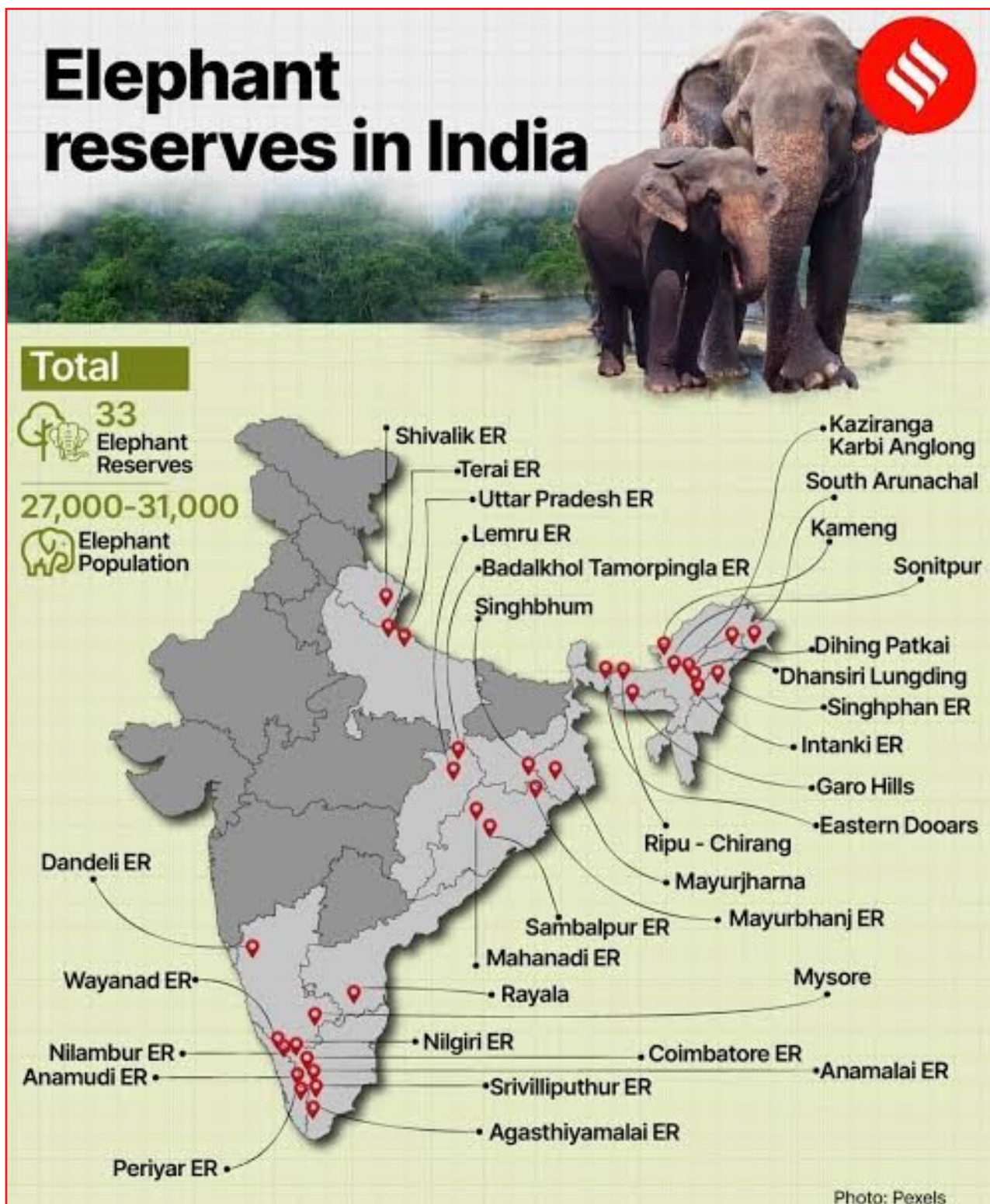
➢ **Related Initiatives:**

   ○ **India:**

     ● **Project Elephant:** Launched in 1992 to safeguard elephants and their natural habitat in India.

     ● **Elephant Reserves & Corridors:** There are 33 elephant reserves and 150 elephant corridors in the country.

     ● **Project RE-HAB:** Aims to **prevent elephant-human conflicts** by installing bee-fences, thereby minimising both conflicts and retaliatory killings.

   ○ **Global:**

     ● **World Elephant Day:** It is observed annually on **12th August** to raise awareness about the urgent need to protect and conserve elephants.

     ● **Monitoring of Illegal Killing of Elephants (MIKE) Programme:** It is an international initiative that tracks elephant mortality trends to **support conservation efforts in Asia and Africa**.

Difference Between Asian and African Elephants:

Feature	Asian Elephant	African Elephant
Geographical Range	➢ 13 countries across South & Southeast Asia (including India, Sri Lanka, Myanmar, etc.)	➢ Sub-Saharan Africa (Savannahs & Rainforests)
Size	➢ Smaller in size with proportionally smaller ears	➢ Larger in size **(largest land animals on earth)**
Tusks	➢ Most males have tusks; females are usually tuskless or have tiny tusks	➢ Both males and females have large visible tusks
Trunk	➢ They have just one 'finger-like projection' at the tip of their trunk	➢ They have two 'finger-like projections' at the tip of their trunk
Skin Texture	➢ Smoother, may have pinkish freckles (depigmentation)	➢ Wrinkled skin that retains moisture (adaptation to dry climates)
Conservation Status (IUCN)	➢ Endangered	➢ **African Forest Elephant:** Critically Endangered ➢ **African Savannah Elephant:** Endangered

Elephant reserves in India

Total

33 Elephant Reserves

27,000-31,000 Elephant Population

- Shivalik ER
- Terai ER
- Uttar Pradesh ER
- Lemru ER
- Badalkhol Tamorpingla ER
- Singhbhum
- Kaziranga Karbi Anglong
- South Arunachal
- Kameng
- Sonitpur
- Dihing Patkai
- Dhansiri Lungding
- Singhphan ER
- Intanki ER
- Garo Hills
- Eastern Dooars
- Ripu - Chirang
- Mayurjharna
- Mayurbhanj ER
- Dandeli ER
- Sambalpur ER
- Mahanadi ER
- Rayala
- Mysore
- Wayanad ER
- Nilgiri ER
- Coimbatore ER
- Anamalai ER
- Nilambur ER
- Anamudi ER
- Srivilliputhur ER
- Agasthiyamalai ER
- Periyar ER

Photo: Pexels

Note: Elephant Reserves **lack legal protection** unless they fall within existing Reserve Forests or Protected Areas.
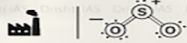
India's Air Pollution Crisis

Why in News?

Air pollution in India has escalated into a persistent **public health crisis,** impacting millions of lives annually. It is not merely an environmental issue but a multi-faceted challenge affecting health, economy, and development.

Air Pollution
➤ Air pollution is the contamination of air by **chemical, physical, or biological agents** that alter its natural composition.

Air Pollutants

Sulphur Dioxide (SO_2)
It comes from the consumption of fossil fuels (oil, coal and natural gas). Reacts with water to form acid rain.
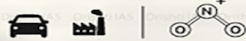**Impact:** Causes respiratory problems.

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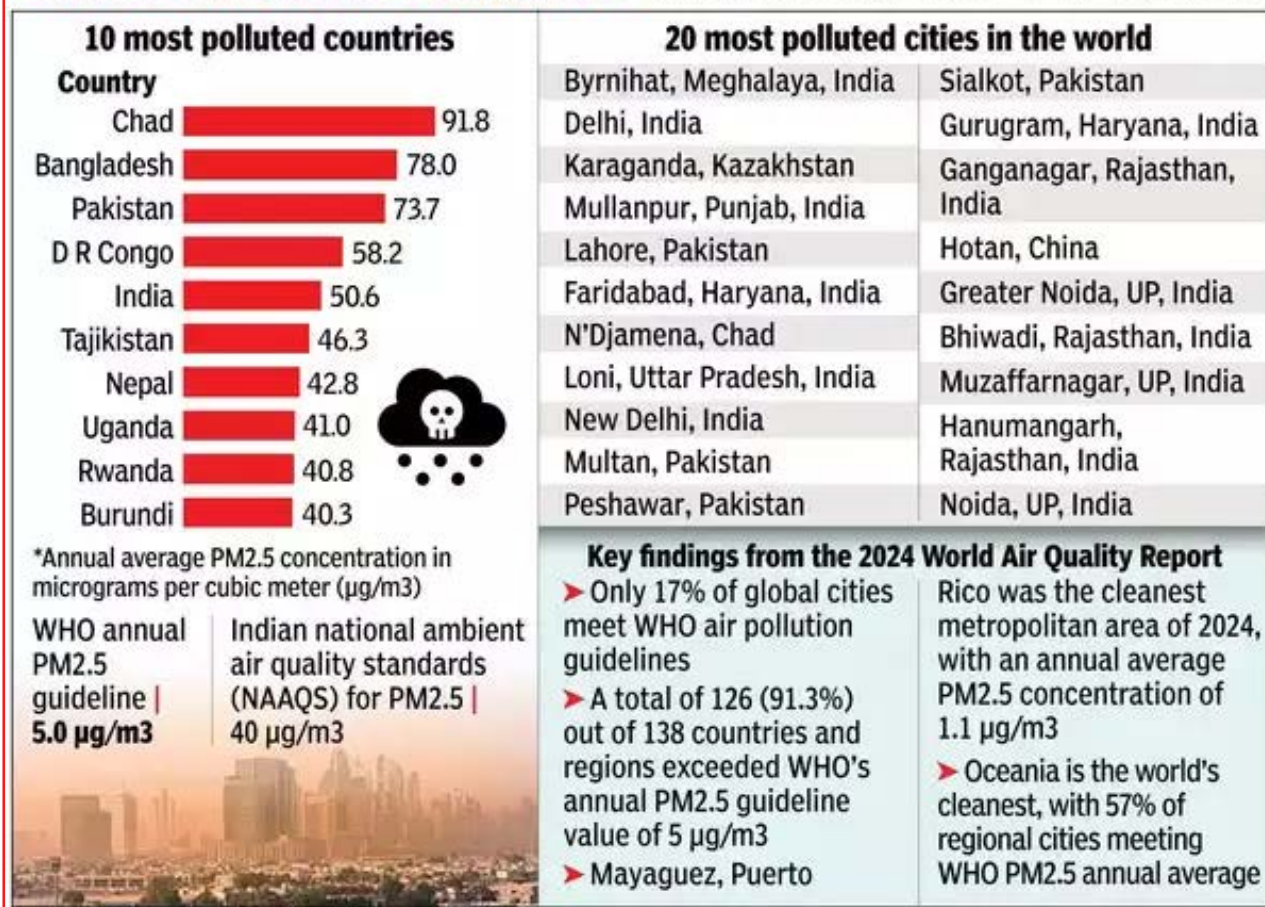
Drishti IAS

➤ Major sources include **combustion, vehicles, industries, and fires.**

➤ Air pollutants like PM, CO, O_3, NO_2, and SO_2 cause respiratory diseases and high mortality.

What is the State and Impact of Air Pollution in India?

➤ **Air Pollution in India:** According to the <u>World Air Quality Report 2024</u> by **IQAir**, India is the **5th most polluted country**, with an average **PM2.5 level of 50.6 μg/m³**, **10 times** the **WHO safe limit (5 μg/m³).**

   ○ **Delhi** remains the **most polluted capital**, while **Byrnihat (Assam-Meghalaya border)** is the **world's most polluted city**.

   ○ India dominates the global pollution list, with **6 of the top 10 and 13 of the top 20 most polluted cities**.

   ○ **Globally, WHO** reports that **99% of the population breathes polluted air**, with low- and middle-income countries most affected.

LITTLE KNOWN BYRNIHAT WORLD'S MOST POLLUTED

10 most polluted countries

Country	Annual avg PM2.5 (μg/m³)
Chad	91.8
Bangladesh	78.0
Pakistan	73.7
D R Congo	58.2
India	50.6
Tajikistan	46.3
Nepal	42.8
Uganda	41.0
Rwanda	40.8
Burundi	40.3

*Annual average PM2.5 concentration in micrograms per cubic meter (μg/m3)

WHO annual PM2.5 guideline	Indian national ambient air quality standards (NAAQS) for PM2.5
5.0 μg/m3	40 μg/m3

20 most polluted cities in the world

Byrnihat, Meghalaya, India	Sialkot, Pakistan
Delhi, India	Gurugram, Haryana, India
Karaganda, Kazakhstan	Ganganagar, Rajasthan, India
Mullanpur, Punjab, India	
Lahore, Pakistan	Hotan, China
Faridabad, Haryana, India	Greater Noida, UP, India
N'Djamena, Chad	Bhiwadi, Rajasthan, India
Loni, Uttar Pradesh, India	Muzaffarnagar, UP, India
New Delhi, India	Hanumangarh, Rajasthan, India
Multan, Pakistan	
Peshawar, Pakistan	Noida, UP, India

Key findings from the 2024 World Air Quality Report

➤ Only 17% of global cities meet WHO air pollution guidelines

➤ A total of 126 (91.3%) out of 138 countries and regions exceeded WHO's annual PM2.5 guideline value of 5 μg/m3

➤ Mayaguez, Puerto Rico was the cleanest metropolitan area of 2024, with an annual average PM2.5 concentration of 1.1 μg/m3

➤ Oceania is the world's cleanest, with 57% of regional cities meeting WHO PM2.5 annual average

➤ **Impact of Air Pollution:**

   ○ **Health Impact:** In 2021, air pollution caused **8.1 million deaths globally**, with **India (2.1 million)** and **China (2.3 million)** being the worst affected (**State of Global Air Report 2024**).

      • Health impacts include <u>respiratory infections</u>, **lung diseases**, <u>chronic obstructive pulmonary disease (COPD)</u>, **asthma,** <u>cardiac arrest</u>, and **gastrointestinal issues**.

- ❍ **Economic Loss:** Air pollution lowers GDP growth by reducing productivity, **lowering consumer activity,** increasing health costs, and **decreasing asset efficiency.**
- ❍ **Reduced Solar Efficiency:** Air pollution **reduces solar power efficiency** by **blocking radiation**, while **rising temperatures lower photovoltaic performance.**
    - By **2041-2050,** India's solar panel efficiency may drop **by 2.3%,** causing an **annual loss of at least 840 GWh of electricity.**
- ❍ **Environmental Degradation:** Air pollution **accelerates climate change** by increasing **greenhouse gases**, degrades ecosystems through **acid rain and toxin buildup**, and **threatens biodiversity**.
    - It weakens plants by excess nitrogen deposition and reduces crop yields by impairing photosynthesis due to ozone pollution.

What are the Causes of Air Pollution?
- ➤ **Click Here to Read:** [Causes of Air Pollution](#)

What Measures Have Been Taken to Control Air Pollution?
- ➤ [National Clean Air Programme](#) **(NCAP)**
- ➤ [System of Air Quality and Weather Forecasting and Research (SAFAR) Portal](#)
- ➤ [Graded Response Action Plan (for Delhi)](#)
- ➤ **For Reducing Vehicular Pollution:**
    - ❍ [BS-VI Vehicles](#)
    - ❍ [Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME)](#)
- ➤ [Pradhan Mantri Ujjwala Yojana (PMUY)](#)
- ➤ **WHO's 4 Pillar Strategy:** WHO adopted a resolution in **2015** to address the adverse health effects of air pollution adopting a [4 Pillar Strategy](#). Those 4 pillars are:
    - ❍ Expanding the knowledge base
    - ❍ Monitoring and reporting
    - ❍ Global leadership and coordination
    - ❍ Institutional capacity strengthening

What are the Challenges in Combating Air Pollution in India?

- ➤ **Diverse Sources**: Air pollution **arises from industries, vehicles, biomass burning,** construction, and seasonal factors like stubble burning, **with rural and urban areas facing distinct challenges.**
- ➤ **Weak Monitoring and Policy Gaps:** India faces weak air quality monitoring and policy gaps.
    - ❍ While **BS-VI norms and PMUY** encourage cleaner fuels, **enforcement is lacking**.
    - ❍ **FAME's push for electric vehicles struggles** due to a **shortage of charging and [battery swapping](#) stations.**
- ➤ **Financial & Technological Constraints**: Limited funding, **outdated pollution control technologies**, and underutilization of resources are slowing progress.
    - ❍ [NCAP](#) **aims for a 40% PM2.5 reduction by 2026** but faces challenges in implementation and funding, with a **meagre budget (less than 1% of China's air pollution control expenditure**).
- ➤ **Over-Reliance on Technology:** India is focusing too much on high-tech solutions like **smog towers and AI dashboards** while **ignoring major pollution sources** like biomass burning, **old industrial processes,** and polluting vehicles.
- ➤ **Behavioral & Social Barriers:** Public **resistance to green technologies, reliance on solid fuels,** and **low awareness** of air pollution's health risks hinder progress.
    - ❍ Additionally, **focusing more on research than real implementation** delays effective policy implementation.

➤ **Coordination & Seasonal Challenges**: Weak inter-state cooperation and seasonal spikes in pollution (**Eg: stubble burning**, winter smog, dust storms) complicate enforcement.

  ○ Local policies like **odd-even schemes** and **construction restrictions** provide temporary relief but **lack long-term impact.**

Growing Threat of Light Fishing in India

Why in News?

India's 7,500-km coastline, home to rich **marine biodiversity** and millions of fishers, faces a growing threat from **illegal light fishing.**

➤ Despite a national ban within the **Exclusive Economic Zone (EEZ)** since 2017, weak enforcement has allowed the practice to persist, prompting calls for urgent action to prevent ecological and social damage.

What is Light Fishing?

➤ **About:** Light fishing involves the use of **high-intensity artificial lights** to attract fish and squid to the surface, making them easy to catch.

  ○ Light fishing is prohibited under the **National Policy on Marine Fisheries (NPMF), 2017** which aims to protect marine resources and promote sustainability by banning destructive practices like light fishing.

➤ **Impacts:** Light fishing leads to the indiscriminate capture of fish, including juveniles, **depleting stocks** and threatening future populations.

  ○ It also disturbs marine ecosystems, degrading **coral reefs.** Squid (**soft-bodied mollusk**), vital to the marine food web, are particularly vulnerable, causing cascading effects on larger predator species and **disrupting the food chain.**

  ○ Light fishing harms **traditional fishers' catches,** especially in states like Andhra Pradesh, Maharashtra, and Kerala.

    ● Mechanized trawlers using powerful lights create unfair competition, escalating tensions between **industrial operators and local communities.**

Why is Enforcement of Light Fishing Regulations Weak in India?

➤ **Weak Policy Framework**: While the EEZ ban is in place, enforcement within territorial waters (up to 12 nautical miles) is left to states (**'Entry 21' of the State List in the Seventh Schedule of the Constitution**), leading to inconsistency.

  ○ Tamil Nadu and Andhra Pradesh have only partial bans and Maharashtra focuses on trawling rather than light fishing.

➤ **Institutional Capacity Gaps:** Coastal Police can only patrol up to 5 nautical miles; light fishing typically occurs beyond this limit.

➤ **Inadequate Penalties:** Fines (e.g., Rs 16,000 in Karnataka) are dwarfed by profits (up to Rs 1 lakh per trip), failing as a deterrent.

➤ **Technological Proliferation:** Affordable Light Emitting Diodes (LEDs) and portable generator technologies have made light fishing accessible and widespread.

History

Highlights

- *Ambedkar and Gandhi: Ideological Similarities & Differences*
- *Jyotiba Phule*
- *Mahavir Jayanti*
- *Centenary of Tagore's Visit to China*

Ambedkar and Gandhi: Ideological Similarities & Differences

Why in News?

As India reflects on the legacy of **Dr. B.R. Ambedkar, on his 135th birth anniversary**, revisiting his ideas on caste, democracy, and social reform offers valuable insights for building an inclusive and just society.

➢ His vision often converged with that of **Mahatma Gandh**i on the need for upliftment of the oppressed, yet differed sharply in approach.

What are the Key Areas of Ideological Convergence between B.R. Ambedkar and Mahatma Gandhi?

➢ **Rejection of Violent Revolution and Communism:**
  ○ Both Ambedkar ªnd Gandhi **opposed communism'**s focus on **class struggle and violence.**
    ● **Gandhi criticized "Bolshevism" f**or its violent methods, advocating non-violence and moral persuasion.
    ● Similarly, **Ambedkar condemned communism** for seeking "**short cuts" to progress,** stressing the need for a sustained, non-violent struggle for justice and equality.
  ○ Ambedkar, in *Buddha or Karl Marx* **(1956)**, prioritized Buddha's message of **compassion and moral progress** over Marxist coercion, while Gandhi emphasized **non-violence as the highest principle, stating, "There is no road to peace, peace is the road."**
  ○ **Gandhi emphasized that the means must align with the ends**, rejecting the idea that **"the ends justify the means."**

➢ **Emphasis on Human Dignity and Social Justice:**
  ○ Both Gandhi and Ambedkar aimed for a **just society grounded in dignity and compassion**, though through **different approaches.**
    ● Gandhi focused on *Sarvodaya* **(upliftment of all)**, while Ambedkar emphasized *Bahujan Hitay* **(welfare of the majority).**

➢ **Role of Ethics in Public Life:**
  ○ Both Gandhi and Ambedkar emphasized the importance of **ethics in public life.** Gandhi's politics were based on **moral idealism**, while Ambedkar, though a **rationalis**t, recognized the **role of ethics in governance**.
    ● Both believed that **character and morality** were essential for **public service and leadership.**

➢ **Moral Politics:**
  ○ Initially, Ambedkar criticized **Gandhi's moral politics**, calling them "**hollow and noisy" and "dishonest."** However, later Ambedkar recognized the importance of **individual morality,** quoting Buddha on self-upliftment and non-violence, a principle similar to Gandhi's vision of swaraj.

What were the Ideological Differences between Gandhi and Ambedkar?

➢ **Caste and Varna System:**
  ○ **Ambedkar** called for the **total annihilation of caste** and strongly criticized Hindu texts like *Manusmriti* for legitimizing caste oppression. In *"Annihilation of Caste" (1936)*, he described the Hindu social order as a "veritable chamber of horrors."
    ● Gandhi acknowledged the social harm caused by the caste system, but **didn't fully reject Manusmriti** as he considered the caste system as a distortion of true Hinduism, viewing the **Manusmriti as a text with both valuable and flawed aspects.**

○ Gandhi **opposed untouchability** and **initially supported a reformed varna system,** later advocating for the abolition of caste in *Harijan* **(1936),** stating **"caste has to go."**
- He coined the term *Harijans* for Dalits, which Ambedkar rejected as patronizing.

➢ **Separate Electorates for Dalits:**
○ **Ambedkar** supported **separate electorates for the Depressed Classes** to secure their political representation and rights.
○ **Gandhi** opposed it, fearing it would divide Hindu society. His **fast unto death led to the *Poona Pact* (1932),** which replaced separate electorates with **reserved seats for Dalits in joint electorates.**
- In *"What Congress and Gandhi Have Done to the Untouchables,"* Dr **Ambedkar criticizes Gandhi and the Congress** for failing to address the structural inequalities faced by Dalits.
- He argues that Gandhi's focus on moral reforms **overlooked the need for legal and political measure**s to ensure Dalit emancipation.

➢ **Religion and Social Reform:**
○ **Ambedkar** saw Hinduism as **inherently discriminatory** and converted himself to **Buddhism in 1956**, advocating liberty, equality, and fraternity.
○ **Gandhi** treated religion as a **moral guide**, championing *Sarva Dharma Sambhava* **(equal respect for all religions)**, but his **defense of some Hindu traditions (such as Varna system**, the term **Harijan** for Dalits, and **Manusmriti**) was criticized by reformers like Ambedkar.
- While Gandhi, Aurobindo, and Tagore drew inspiration from Hinduism, Ambedkar's ideas were rooted in Buddhism.
○ **Navayana Buddhism** was founded **by Ambedkar in 1956** as a **Dalit Buddhist movement** in India.

➢ **Means of Social Transformation:**
○ **Ambedkar** advocated for **social reforms through legal and constitutional means,** asserting that **true political freedom** could only be achieved **after establishing social equality and justice.**
○ **Gandhi** emphasized **personal morality, non-violence (ahimsa), and spiritual awakening (Swaraj)** as means of societal transformation.

➢ **Role of the State and Constitution:**
○ Ambedkar supported **state-led affirmative action to rectify historical injustices,** emphasizing that

"Democracy is not a form of government, but a form of social organization."
○ **Gandhi** advocated for **Gram Swaraj (village self-rule)** and **minimal state intervention,** emphasizing **community self-reliance and moral development** over bureaucratic governance.

➢ **Economic Models:**
○ **Ambedkar** advocated for **state socialism, planned development**, and **economic rights** like land reforms and equal wages. He proposed state ownership of key industries in the **States and Minorities memorandum (1947).**
○ **Gandhi:** Propounded **trusteeship theory,** where the **wealthy act as custodians of public wealth**. Favoured **small-scale industries** and *swadeshi* **over Western industrialism.**

Read More:
➢ **Dr. B.R. Ambedkar Who was Dr. BR Ambedkar?, What are Dr. B.R. Ambedkar's Contributions? Mahatma Gandhi: What are the Major Gandhian Ideologies & Its Role in Today's Context?**

Government's Tribute to Dr. B.R. Ambedkar

➢ **Bharat Ratna (1990):** Conferred posthumously as **India's highest civilian award** for his immense contribution to nation-building.
➢ **Ambedkar Circuit (Panchteerth):** Development of five key sites linked to his life—Mhow (birthplace), London (Shiksha Bhoomi), Nagpur (Deeksha Bhoomi), Mumbai (Chaitya Bhoomi), and Delhi (Mahaparinirvan Bhoomi).
➢ **BHIM App:** Launched in his name to promote digital payments and financial inclusion.
➢ **Dr. Ambedkar Centres of Excellence (DACE):** Set up in 31 Central Universities to offer free UPSC coaching to Scheduled Caste students.
➢ **ASIIM Scheme:** Ambedkar Social Innovation and Incubation Mission supports SC youth entrepreneurs through startup funding.
➢ **National Monuments:** Sites like **Sankalp Bhumi (Vadodara)** and his school in Satara proposed for national monument status.
➢ **Constitution Day (26th Nov):** Observed since 2015 to honor his legacy as the chief architect of the Indian Constitution.
➢ **Ambedkar Jayanti:** His birth anniversary, 14th April is observed as Ambedkar jayanti, a national holiday honoring his contributions to social justice, Dalit rights, and the Indian Constitution.

Drishti IAS

Dr. Bhimrao Ramji Ambedkar

Babasaheb Ambedkar-
The Father of Indian Constitution
14 April 1891- 06 December 1956

1. Brief Profile

- A social reformer, jurist, economist, author and thinker of comparative religions
- Labour member in the **Executive Council of Viceroy (1942)**
- **Chairman** of the **Drafting Committee** for the new Constitution
- **First Law Minister** of India
- Posthumously awarded **Bharat Ratna (1990)**

2. Contributions

- Led the **Mahad Satyagraha in 1927** against Hindus
- Participated in **all three Round Table Conferences**
- Signed the **1932 Poona pact with Mahatma Gandhi** to abandon the idea of separate electorates for the depressed classes

The reserved seats for depressed classes were increased from 71 to 147 in provincial legislatures and to 18% in the Central Legislature.

- **Opposed the special status of J&K** (Article **370**)
- Supported **Uniform Civil Code**
- Referred **Article 32** as **"soul of the Constitution and very heart of it"**

3. Resignation and Buddhism

- Differences over **Hindu Code Bill** led to his resignation from Cabinet in **1951**
- Converted to Buddhism; his death is observed as **Mahaparinirvan Diwas**

4. Important Journals

- Mooknayak (**1920**)
- Samatha (**1929**)
- Bahishkrit Bharat (**1927**)
- Janata (**1930**)

5. Books

- Annihilation of Caste
- Buddha or Karl Marx
- **The Untouchable:** Who are They and Why They Have Become Untouchables
- The Rise and Fall of Hindu Women

6. Organisations

- Estd. **'Bahishkrit Hitkarini Sabha' (1923)**
- Founded **Independent Labour Party (1936)**
- Founded **Scheduled Castes Federation (1942)**

Mohandas Karamchand Gandhi

Drishti IAS

"The weak can never forgive. Forgiveness is the attribute of the strong."

Brief Description

Birth: 2nd October 1869, Porbandar (Gujarat).
2nd October is observed as **International Day of Non-Violence.**
Profile: Lawyer, Politician, Social activist, Writer and led Nationalist Movement.
Father of the Nation (first called by Netaji Subhash Chandra Bose).
Ideology: Believed in the ideas of non-violence, Truth, Honesty, Care for Mother Nature, Compassion, Welfare of Downtrodden etc.
Political Mentor: Gopal Krishna Gokhale
Death: Shot dead by Nathuram Godse (30th January, 1948).
30th January is observed as **Martyrs' Day**
Nominated for the Nobel Peace Prize five times.

Gandhi in South Africa (1893-1915)

Used satyagraha against racist regime (Native Africans and Indians were discriminated).
Pravasi Bharatiya Divas (PBD) is celebrated every year on 9th January, to commemorate his return from South Africa.

Contribution in India's Freedom Struggle

Small-scale movements like Champaran Satyagraha (1917)—First Civil Disobedience, Ahmedabad Mill Strike (1918)— First Hunger Strike, and Kheda Satyagraha (1918)—First Non-Cooperation.
Nationwide Mass Movements: Against Rowlatt Act (1919), Non-Cooperation Movement (1920-22), Civil Disobedience Movement (1930-34), Quit India Movement (1942).
Gandhi-Irwin Pact (1931): Between Gandhi and Lord Irwin that marked the end of a period of civil disobedience.
Poona Pact (1932): Between Gandhi and **B.R. Ambedkar;** this abandoned the idea of separate electorates for the depressed classes (Communal Award).
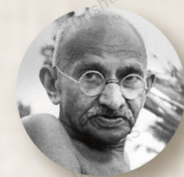
Books Written
Hind Swaraj, My Experiments with Truth (Autobiography)

Weeklies
Harijan, Navjivan, Young India, Indian Opinion.

Gandhi Peace Prize
is given by India for social, economic, and political transformation through Gandhian methods.

"Happiness is when what you think, what you say, and what you do are in harmony."

"You must not lose faith in humanity. Humanity is an ocean; if a few drops of the ocean are dirty, the ocean does not become dirty"

Jyotiba Phule

Why in News?

The birth anniversary of **Jyotiba Phule** was observed on **11th April**, the great **social reformer, philosopher and writer**.

What are the Key Facts about Jyotiba Phule?

➤ **About:** He was born on **11th April, 1827,** and emerged as a pioneering social reformer who challenged **Brahmanical orthodoxy**, fought for the **rights of Dalits and women**, and laid the foundation for India's **social justice movements**.
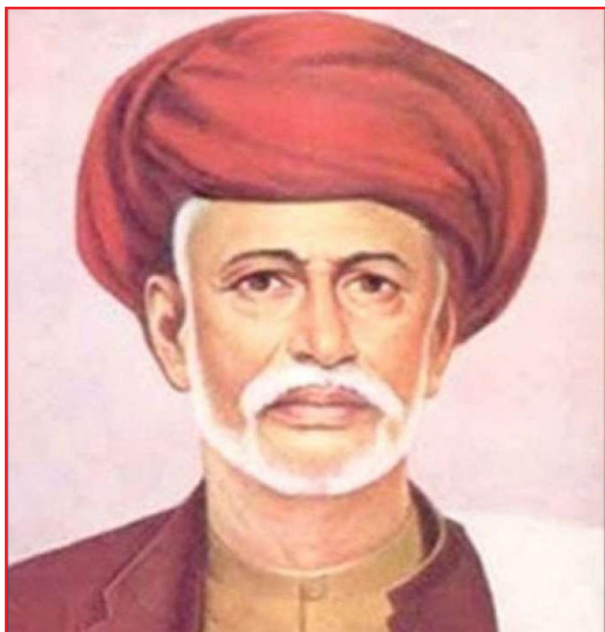
➤ **Key Contributions:**
- ○ **Educational Reforms:** Phule and his wife **Savitribai** opened **India's first girls' school in 1848** and later started **night schools (1855) for workers, farmers, and women** in Pune.
- ○ **Social Reforms:**
  - ● **Opposed Orthodoxy:** Phule opposed **caste oppression, criticized** Brahminical figures like **Chiplunkar and Tilak**, and **supported the British** to uplift the oppressed and women.
  - ● **Anti-Caste Movement:** Phule founded **Satyashodhak Samaj (1873)** to fight caste hierarchy and, in **Gulamgiri,** compared caste oppression to **American slavery.**
    - ■ **Deenbandhu**, a Marathi weekly newspaper founded by **Krishnarao Pandurang Bhalekar in 1877**, served as an outlet for **Satyashodhak Samaj**.
  - ● **1857 Revolt Critique:** Viewed it as an **upper-caste effort** to restore Brahmin rule.
- ○ **Economic Reforms:** Advocated **compulsory education** for lower castes and economic upliftment to **dismantle caste hierarchies.**
- ○ **Religious Freedom:** In his **Satsar (The Essence of Truth)**, Phule defended the right of **Pandita Ramabai** to convert to Christianity.
- ○ **Farming Reforms:** In **Shetkaryanche Asud (Farmer's Whip),** Jyotirao Phule **critiqued** the exploitation of **Shudra peasantry** by a **British and Brahmin bureaucratic alliance.**
- ○ **Rationalism**: In **Sarvajanik Satya Dharma Pustak,** he advocated for a **just and equitable society** where **God** is seen as a **loving and rational creator**. It dismantled **traditional hierarchies**.
- ○ **Major Publications: Tritiya Ratna (1855), Powada: Chatrapati Shivajiraje Bhosle Yancha (1869), Gulamgiri (1873), Shetkarayacha Aasud (1881).**

➤ **Inspiration:** He was influenced by **Thomas Paine's** *The Rights of Man*, and saw **education** of women and lower castes as key to **ending social evils.**

➤ **Recognition:** He was bestowed with the title of **Mahatma** on **11th May, 1888** by a Maharashtrian social activist **Vithalrao Krishnaji Vandekar.**

Mahavir Jayanti

Why in News?

Prime Minister inaugurated **Navkar Mahamantra Divas** to mark **Mahavir Jayanti** (10th April 2025), emphasizing that **Lord Mahavir's teachings of non-violence, truth, and compassion** offer contemporary solutions to global challenges and align with the vision of **'Viksit Bharat'.**

What is the Historical Background of Mahavir Jayanti?

➤ **About:** Mahavir Jayanti, also known as **Mahaveer Janma Kalyanak**, is one of the significant religious festivals in Jainism.

- ❍ It celebrates the **birth of <u>Vardhamana Mahavira</u>,** the **24th and last Tirthankara** of Jain tradition (succeeded the 23rd Tirthankara Parshvanatha), who is considered a great spiritual teacher and reformer.
- ❍ Mahavir Jayanti is celebrated on the **13th day of Chaitra month** in the Hindu calendar, the date varies annually.
- ➢ **Vardhamana Mahavira:**

VARDHAMAN MAHAVIRA

The 24th and last Tirthankara; succeeded the 23rd Tirthankara, Parshvanatha
(Mahavira was not the founder of Jainism)

BIRTH

- To King Siddhartha of Kundalgram and Queen Trishala, a Lichchhavi princess
- In 6th century BC, Vajji kingdom (modern day Vaishali, Bihar)
- Belonged to Ikshvaku dynasty

Mahavir Jayanti, one of the most auspicious festivals for Jains, marks the birth of Vardhamana Mahavira

SPIRITUAL LIFE

- Abandoned worldly life at age 30
- Attained 'kaivalya' (omniscience) at age 42
- Delivered his first sermon at Pava (near Patna)

A symbol is associated with every Tirthankara, Mahavira's symbol was a lion

DEATH

- Believed to be passed away and attained Moksha at age 72 (5th century BC)
- Died at Pavapuri (near modern-day Rajgir, Bihar)

Moksha - liberation from the cycle of birth and death

TITLES

- Mahavira (great hero)
- Jaina/Jitendriya (who conquered all his senses)
- Nirgrantha (who is free from all bonds)

TEACHINGS (JAIN AGAMAS)

- Ahimsa (non-violence)
- Satya (truth)
- Asteya (non-stealing)
- Aparigraha (non-attachment)
- Brahmacharya (chastity) (propounded by Mahavira)

Mahavira and his disciples taught in Prakrit to teach ordinary people

Drishti IAS

What is the Contemporary Relevance of Teachings of Lord Mahavira?

- ➢ **Ahimsa (Nonviolence):** Lord Mahavira's teaching of Ahimsa advocates ending all forms of violence, including **physical, verbal, and psychological,** and promotes compassion towards all living beings.
    - ❍ In today's world, plagued by **armed conflicts, terrorism, and nuclear threats,** this principle calls for **peaceful resolutions and compassionate dialogue.**
    - ❍ This principle is also echoed in the <u>UN Charter</u>, <u>Gandhian ethics</u>, and <u>Sustainable Development Goal 16</u> (Peace, Justice, and Strong Institutions), highlighting its global relevance and contemporary importance..
- ➢ **Aparigraha (Non-possessiveness):** Mahavira's principle of detachment from material possessions encourages a **sustainable lifestyle**, fostering **minimalism** and curbing greed, values that align with <u>Mission LiFE (Lifestyle for Environment)</u> and and <u>SDG 12 (Responsible Consumption and Production)</u> to address environmental degradation and climate change

➤ **Anekantavada:** It teaches that truth has many dimensions, promoting respect for diverse perspectives and helping reduce **religious intolerance, racial discrimination, and societal divisions.**

  ○ It resonates with constitutional morality, freedom of thought and expression **(Article 19),** and **secularism (Article 25)** in the Indian Constitution.

ETHICS IN JAINISM

Triratna (Three Jewels)

Jainism provides threefold path known as Triratna for the attainment of Moksha (salvation):

Right faith (Samyag Darsana)

Right knowledge (Samyag Jnana)

Right conduct (Samyag Caritra)

Pancha-mahavratas

In general, Jaina morality consists of the essential observance of Pancha-mahavratas which are the ingredients of right conduct. They are:

- **Ahimsa** — nonviolence or **abstinence from all injuries to life,** either trasa (mobile) or sthavara (immobile)

- **Satyam** — Abstinence from falsehood

- **Asteyam** — Abstinence from stealing

- **Brahmacharya** — Abstinence from sensual and casual pleasures

- **Aparigraha** — Abstinence from amassing **wealth greedily** or any kind of attachments

- **Satya (Truth) and Asteya (Non-stealing):** Mahavira's principles of honesty and respecting others' rights **promote transparency and integrity** in today's world, combating corruption and **unethical practices.**
  - These teachings guide the creation of **ethical businesses** that prioritize social responsibility.
  - In business, Asteya promotes **ethical sourcing, fair wages, and sustainability,** aligning with fair trade principles and **ESG (Environmental, Social, and Governance)** frameworks to combat exploitation in the global economy.
- **Brahmacharya (Celibacy/ Self-restraint):** Though interpreted in modern times as self-discipline, it helps address issues like **substance addiction, mental health, and emotional instability.**

> **What are the Key Facts About Jainism?**
> - **Click here to Read:** Jainism

Centenary of Tagore's Visit to China

Why in News?

On 1st April 2025, **Visva-Bharati University** in **Santiniketan** hosted an international seminar **to mark the 100th anniversary of** Rabindranath Tagore's **visit to China (1924)** and the 75th anniversary of diplomatic **relations between** India and China.

- The **event was held at Cheena Bhavana of the Visva-Bharati University**, South Asia's oldest Chinese studies department.

Who was Rabindranath Tagore and his Contributions to Nation Building?

About:

- Rabindranath Tagore, **born in Calcutta on 7th May 1861**, was a Bengali poet, novelist, playwright, musician, painter, philosopher, and educationist.
- He was **popularly known as** *Gurudev*, *Kabiguru*, **and** *Biswakabi*.
- Tagore was a good friend of **Mahatma Gandhi** and is said to have **given him the title of Mahatma** (the Great Soul).
  - Mahatma Gandhi was the first person to call Tagore "Gurudev", and referred to him as "poet of the world".
- He became the first non-European to win the **Nobel Prize in Literature (1913) for his work** *Gitanjali*.

Tagore's Contribution to Nation-Building

- **Views on Nationalism:** His idea of nationalism was both inclusive and spiritual. He believed **nationalism should elevate human values,** not breed hatred or extreme patriotism.
  - Tagore's patriotism was ethical and moral, rooted in universal humanism, respect for cultures, and inter-civilisational dialogue.
  - He emphasized that **India's strength lay in its diversity and unity, not in uniformity** or religious majoritarianism.
  - Tagore's nationalism **was cosmopolitan, not isolationist** which is relevant even today in times of rising ethnonationalism.
  - In his book **Nationalism (1917)**, he warned against Western-style aggressive nationalism, calling it a **threat to peace and global harmony.**
- **Contribution in the National Movement of India:** Though not an active political agitator, Tagore played a moral and intellectual role in **India's freedom struggle**. During the **Partition of Bengal (1905)**, he supported the **Swadeshi movement**, composing songs (*Amar Sonar Bangla*) to encourage unity and self-reliance.
  - A major turning point came after the **Jallianwala Bagh Massacre (1919) when he renounced the knighthood awarded by the British.**
  - The song *Jana Gana Mana*, the **National Anthem of India, was originally written and composed in Bengali** by Rabindranath Tagore.

- **Contribution in Music, Dance, and Art:** Tagore was a cultural revivalist who gave India a distinctive identity in global aesthetics.
  - He **composed over 2,000 songs**, collectively known as **Rabindra Sangeet**, known for their lyrical depth and emotional richness.
  - His music blended classical ragas, folk traditions, and spiritual themes, with songs like **'Ekla Chalo Re'** becoming part of nationalist symbolism.
  - He created dance dramas like **Chitrangada**, **Shyama**, and **Chandalika**, merging theatre, music, and classical Indian dance.
  - As a painter, he introduced **abstract and symbolic expression,** challenging **colonial artistic norms and emphasizing Indian visual identity**.
- **Contribution in Literature:** He modernised Bengali prose and poetry while engaging with themes of freedom, identity, spirituality, and modernity. **His major works include:**
  - **Poetry:** Gitanjali, Balaka, Sonar Tori, Manasi
  - **Novels:** Ghare-Baire, Gora, Chokher Bali
  - **Plays:** Chitra, The Post Office
  - **Essays:** Sadhana: The Realisation of Life, The Religion of Man, Nationalism.
- **Contribution in Education:** Tagore envisioned education as a **means to liberate the mind, not control it**. In 1921, he **founded Visva-Bharati University** at Santiniketan, built on the philosophy of **'learning in harmony with nature'**.
  - Visva-Bharati was a global centre of learning, with the motto "**Yatra visvam bhavatyekanidam"** (Where the world meets in one nest).
  - In 1937, he established Cheena Bhavana to foster **Indo-Chinese civilisational ties** and global cultural dialogue.

> **What are the Key Areas of Convergence Between India and China?**
>
> - **Click Here to Read: Areas of Convergence Between India and China**

Art and Culture

Rongali Bihu

Why in News?

Rongali Bihu, also known as Bohag Bihu, is celebrated across Assam from 14th to 20th April 2025, marking the **Assamese New Year** and the beginning of the harvesting season.

What are the Key Features of Rongali Bihu?

➢ **Other Bihus:**

- ➢ **About:** Rongali Bihu is the most prominent of the **three Bihus** celebrated annually in Assam, the other two being **Kati Bihu (October) and Magh Bihu (January).**
  - ○ Rongali Bihu signifies the beginning of the Hindu solar calendar and is thus celebrated as the **Assamese New Year.**
  - ○ Primarily a harvest festival, it marks the onset of spring, with prayers for a prosperous agricultural season.
- ➢ **Etymology:** "Rong" means joy in Assamese, reflecting the festival's cheerful spirit.
- ➢ **Celebrations:** The **Bihu dance** (vibrant, fast-paced folk dance from Assam) is performed to the rhythm of folk songs and traditional instruments such as the dhol, pepa, gogona, toka, taal, and hutuli.

Festival	Timing	Significance
Rongali Bihu	April (Bohag)	Start of sowing season, Assamese New Year
Kati Bihu	October (Kati)	Mid-crop season, prayers for good harvest
Magh Bihu	January (Magh)	End of harvest, community feasts

New Year Celebrations Across Indian States

- ➢ **Baisakhi:** Marks the beginning of the spring harvest season in **Punjab** and **Northern India**.
- ➢ **Puthandu:** Celebrated in Tamil Nadu and by Tamil communities worldwide. It falls on the first day of Chithirai month in the Tamil calendar.
- ➢ **Pohela Boishakh:** Celebrated in **West Bengal**, marking the start of the **Bengali calendar year**.
- ➢ **Jude Sheetal:** Celebrated by **Maithili communities** in **Bihar**, **Jharkhand**, and **Nepal**.
- ➢ **Pana Sankranti:** Celebrated in Odisha as the Odia New Year. It is known for the traditional drink **Bela Pana** made from bael fruit ((wood apple).
- ➢ **Vishu:** Celebrated in Kerala and parts of Tamil Nadu, it marks the Sun's transition into Mesha Rashi.
- ➢ **Ugadi:** Observed in Andhra Pradesh, Telangana, and Karnataka as the start of the Hindu New Year.
  - ○ Ugad derived from Sanskrit, "Yuga" (age) and "Adi" (beginning) together mean "the beginning of a new age."
- ➢ **Gudi Padwa:** Celebrated in **Maharashtra and Goa** as Samvatsar Padvo. It marks the beginning of the Marathi New Year and the first day of the Chaitra month.

> ➢ **Navreh:** Observed by Kashmiri Pandits to mark their traditional New Year. Navreh derived from Sanskrit "Nava Varsha", meaning "new year".
>
> ➢ **Sajibu Cheiraoba:** Celebrated in Manipur by the Meitei community. It marks the beginning of the Manipuri lunar calendar year.
>
> ➢ **Bestu Varas:** Celebrated in Gujarat as New Year and is observed a day after Diwali as part of the five-day festive celebrations.

THE NEW YEAR MAP OF INDIA
New Year festivals in different regions of India

Navreh — J&K

Baisakhi — North Indian states, mainly Punjab

Bohag Bihu — Assam

Losoong — Sikkim

Bestu Varas — Gujarat

Gudi Padwa — Maharashtra, Goa

Pohela Boishakh — Bengal

Sajibu Cheiraoba — Manipur

Bishuva Sankranti — Odisha

Ugadi — Karnataka, Andhra Pradesh, Telangana

Puthandu — Tamil Nadu

Vishu — Kerala

| Mar/Apr | April | Oct/Nov | Dec |

Read more: New Year Festivals Across India, Harvest Festivals

Geography

Highlights

- *Atmospheric River*

Atmospheric River

Why in News?

In April 2025, a large part of the US experienced heavy rain, strong winds, and severe thunderstorms due to a meteorological phenomenon known as an **Atmospheric River (AR).**

➢ This phenomenon, though not new, is gaining attention due to **climate change** and increasing **extreme weather events.**

What is the Atmospheric River?

➢ **Definition:** An atmospheric river is often described as a *"river in the sky"*. It refers to a relatively long and narrow band in the **atmosphere** that transports enormous amounts of **water vapor from the** tropical oceans to continental regions. Unlike rivers on Earth, they are not visible.

  ○ The **"Pineapple Express"** is a well-known example of AR storms that bring heavy rainfall to the US West Coast, particularly California.

➢ Characteristics:

  ○ **Shape & Size:** ARs can be up to 1,600 km long and 400–600 km wide, according to the **National Oceanic and Atmospheric Administration (NOAA).**

  ○ **Moisture Content:** Carries water vapor equivalent to the average flow of water at the mouth of the **Mississippi River**. The strongest ones can carry up to 15 times more.

  ○ Categories:

    ● **Category 1 (Weak):** Primarily beneficial, helps in replenishing soil moisture and drought recovery.

    ● **Category 2 (Moderate):** Mostly beneficial for replenishing reservoirs after droughts, but prolonged rain may cause localized flooding and mudslides.

    ● **Category 3 (Strong):** Balance of beneficial and hazardous. It helps refill drought-hit reservoirs, but heavy rain raises river levels, posing flood risks in already saturated areas.

    ● **Category 4 (Extreme):** Mostly hazardous, but also beneficial for drought recovery. Extreme rainfall can cause severe flooding, with rivers often reaching flood stage.

    ● **Category 5 (Exceptional):** Primarily hazardous, as prolonged heavy rainfall causes catastrophic flooding, landslides, and widespread destruction, often resulting in billions in economic losses.

➢ **Formation:** An AR forms when **warm ocean waters,** usually in tropical (e.g., the central Pacific, and most of the Indian Ocean) or subtropical regions (Southern California), cause **high levels of evaporation,** loading the atmosphere with moisture.

  ○ Low-level jet streams (fast-moving winds in the lower atmosphere) guide the moist air from the **tropics toward mid-latitudes.**

  ○ As the moist air is forced upward by **mountain ranges or frontal boundaries**, it condenses into **rain or snow.**

➢ **Significance:** ARs help replenish water supplies by increasing snowpack in mountainous regions.

  ○ ARs are responsible for over **90% of poleward water vapor transport** in the mid-latitudes and can produce extreme precipitation when making landfall.

➢ **AR in India:** A study found that between 1951 and 2020, India experienced 596 major atmospheric river (AR) events, with over 95% occurring during the summer monsoon season (June to September).

  ○ Notably, 70% of major floods from 1985 to 2020 were linked to ARs, including the devastating **2013 Uttarakhand floods, 2018 Kerala floods, and 2007 South Asian floods.**
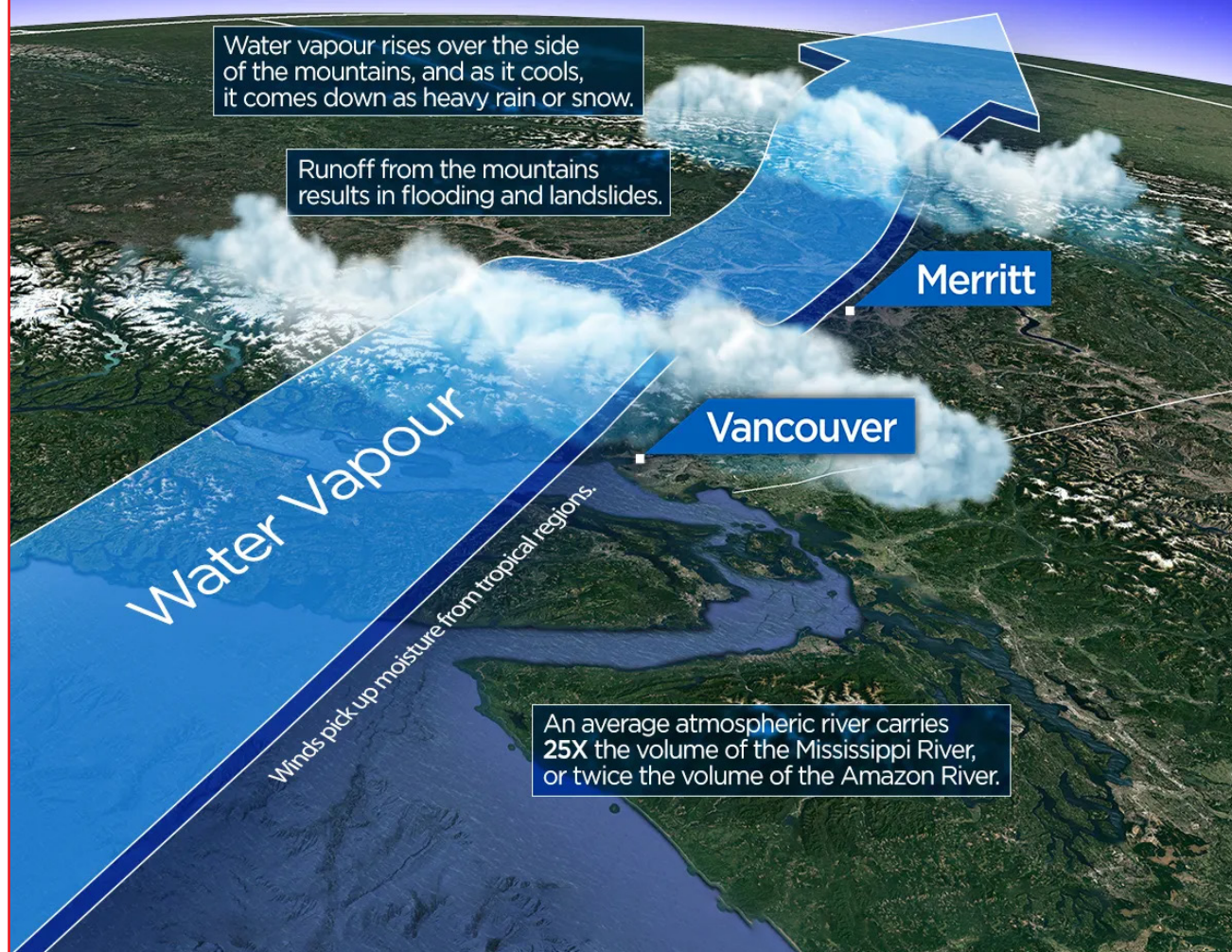
- ❍ The frequency and severity of ARs have increased in recent decades, particularly in the **Indo-Gangetic plains and peninsular India,** leading to significant destruction and loss of life.
- ➢ **Impact of Climate Change on AR:** Rising global temperatures are intensifying the impact of ARs. Warmer air can hold about **7% more moisture for each 1°C increase,** making AR-fueled storms more powerful.
  - ❍ Future ARs are expected to be longer, wider, and more intense, doubling extreme AR events and increasing flood risks in vulnerable areas.

A 'River in the Sky'

Atmospheric rivers are giant bands of water vapour in the sky. They are, on average, 800 kilometres wide, and several hundred kilometres long.

Water vapour rises over the side of the mountains, and as it cools, it comes down as heavy rain or snow.

Runoff from the mountains results in flooding and landslides.

Merritt

Vancouver

Water Vapour

Winds pick up moisture from tropical regions.

An average atmospheric river carries **25X** the volume of the Mississippi River, or twice the volume of the Amazon River.

Security

Highlights

- *India's Push for Tech Driven Border Security*

India's Push for Tech Driven Border Security

Why in News?

During a visit to Kathua, Jammu & Kashmir, the Union Home Minister **announced plans to bring the entire India-Pakistan border under comprehensive electronic surveillance** within four years.

➢ The move follows the **March 2025 terror attack near Kathua**, which underscored the need for advanced, **technology-driven border security measures**.

➢ As part of the initiative, **anti-drone systems**, **tunnel detection systems**, and **High-Mast Lighting and Watchtowers** will be key areas of development to enhance border security.

International Land Border

- Indo-Afghanistan (106 km)
- Indo-China (3488 km)
- Indo-Bhutan (699 km)
- Indo-Pak (3323 km)
- Indo-Nepal (1751 km)
- Indo-Myanmar (1643 km)
- Indo-Bangladesh (4096.7 km)
- Coastline (7516.6 km)

Why is Enhanced Border Management Critical for India?

➢ **Cross-Border Terrorism:** Persistent threats from Pakistan-based terror outfits (e.g., **Lashkar-e-Taiba, Jaish-e-Mohammed**) necessitate round-the-clock surveillance, particularly along the **India-Pakistan border** and **Line of Control (LoC)**.

  ○ **For example**, the **2016 Uri attack** and the **2019 Pulwama attack** were both carried out by these terror groups.

  ○ The **India-Pakistan border**, **stretching over 3,323 km**, includes 744 km of the **LoC** and around 200 km of international border in Jammu and Kashmir—**a region frequently targeted by infiltration and cross-border terrorism**.

    ● Since 2021, **over 30 terror-related incidents have been reported** from the Jammu region.

➢ **To Tackle Smuggling, Arms, and Narcotics Trade:** India's porous borders, especially in Punjab, Jammu, and the Northeast, are often **exploited for drug smuggling, arms trafficking, and counterfeit currency movement**.

  ○ Effective border management curtails the flow of illegal goods that fuel internal crime and **insurgency**.

  ○ A recent example includes the **busting of a cross-border drug cartel by Punjab police in March 2025**, highlighting the issue posed by **'Death Crescent'** to India.

    ● The Death Crescent includes **Afghanistan, Iran, and Pakistan,** which is a primary source of heroin trafficked into India

➢ **To Facilitate Development in Border Areas:** Border regions often remain underdeveloped due to security risks. Strengthening border infrastructure allows for the implementation of schemes like the **Vibrant Villages Programme**.

  ○ It also plays a crucial role in **countering China's efforts to expand villages along the Line of Actual Control (LAC)**.

➢ **To Strengthen National Sovereignty and Strategic Deterrence:** Visible, well-managed borders act as a symbol of sovereignty.

  ○ They help deter adversarial activities and project India's firm control over its territory, especially in contested zones like J&K and Arunachal Pradesh (**China recently claimed this territory in its newly released map**).

What are India's Existing Initiatives for Border Management?

➢ **Comprehensive Integrated Border Management System (CIBMS):** To ensure better situational awareness at all levels and enable a quick response to any situation along the India-Pakistan and India-Bangladesh borders, the **CIBMS** has been designed.

  ○ It brings together **manpower, sensors, communication networks, intelligence**, and command control systems into one integrated setup.

➢ **Integrated check posts (ICPs):** **ICPs** at international borders aim to ensure smooth, secure, and efficient movement of people and goods across borders.

➢ **Border Infrastructure Development:** Under the **Vibrant Villages Programme** and **Border Area Development Programme**, infrastructure upgrades help in both defense and local development.

➢ **Border Infrastructure and Management (BIM) Scheme:** It aims to strengthen security along the country's international borders by implementing projects focused on developing border infrastructure, **such as border fences, border roads, and other related facilities**.

➢ **Smart Fencing:** A technologically advanced border security infrastructure is designed to **strengthen surveillance and control in sensitive border areas**.

  ○ As part of this initiative, **the Ministry of Home Affairs plans to construct** a 100-kilometer **Smart Fencing System along the India-Myanmar border**.

Read More: **India's Border and Its Management**

Global Models of Border Surveillance		
Country	**Border Surveillance Model**	**Key Features**
USA	Integrated Fixed Towers & SBInet	Fixed and mobile video surveillance systems, thermal imaging devices, radar, ground sensors, and **radio frequency sensors**.
Israel	Smart Fence Technology	AI-enabled systems, underground sensors, motion detection and facial recognition.
China	BeiDou Satellite-based surveillance	Smart towers, satellite-linked border management.
European Union	EUROSUR	Real-time monitoring using drones, satellites, and **AI-based analysis**.
South Korea	Demilitarized Zone Surveillance	Heat sensors, seismic sensors, smart fences, and **round-the-clock human surveillance with drone support.**

Note: Some countries, **like the US and Israel have explored border walls** to address security concerns and control illegal activities, such as the **US-Mexico border wall** and **Israel's West Bank Barrier**, aiming to curb illegal immigration and trafficking.

What are the Key Issues Associated with India's Plan for Tech Driven Border Security?

➢ **Terrain Complexity and Customization Needs:** India's border with Pakistan spans deserts, marshlands, and hilly terrain, **making a uniform surveillance model ineffective**. Adapting technology to suit local conditions, especially in forests and mountains (Valley of Kashmir), remains a key challenge.

➢ **Inter-agency Coordination Gaps:** Effective border management requires seamless collaboration between the **Border Security Force (BSF)**, **Indian Army**, **Intelligence Bureau**, local police, and central ministries.
   ○ However, overlapping jurisdictions, **lack of real-time intelligence sharing, and absence of a unified command structure** often lead to delayed responses during infiltration or drone intrusions.

➢ **Technological Reliability and Maintenance:** High-tech surveillance equipment such as drones, and sensors require **regular maintenance** and specialist training.
   ○ Harsh weather conditions **(extreme heat in Rajasthan, snow and fog in J&K)** often impair system performance.
   ○ This **raises questions about the sustainability and durability** of equipment on the ground.

➢ **Financial and Logistical Constraints:** While the government has assured "no budget shortage," the sheer scale of surveillance implementation **entails high capital and operational expenditure**.
   ○ Efficient project management and strong vendor accountability are essential for the procurement, deployment, and lifecycle maintenance of equipment, especially in remote areas.

➢ **Civil Liberties and Environmental Concerns:** Increased surveillance must be balanced with privacy safeguards and ecological concerns.
   ○ For instance, under the **Forest (Conservation) Amendment Act, 2023**, strategic projects within 100 km of the border are exempted from forest clearances, **raising concerns about deforestation and displacement**, especially in tribal and **ecologically sensitive zones**.

Indian Borders and the Forces Deployed	
Border	**Deployed Forces**
India-Nepal Border	Sashastra Seema Bal (SSB)
India-Pakistan Border	Border Security Force (BSF)
India-China Border	Indo-Tibetan Border Police (ITBP)
India-Bangladesh Border	Border Security Force (BSF)
India-Bhutan Border	Sashastra Seema Bal (SSB)
India-Myanmar Border	Assam Rifles
India-Sri Lanka Maritime Boundary	Indian Coast Guard (ICG)

Ethics

Highlights

- *Compassion in Primary Health Care*

Compassion in Primary Health Care

Why in News?

The **World Health Organization (WHO)** released a report titled *"Compassion and primary health care(PHC)"* which highlights compassion as key to improving PHC and addressing rising mental health challenges through patient-centered and dignified care.

What is the Significance of Compassion in PHC?

➢ **About:** Compassion in PHC is the recognition of **human suffering coupled with the motivation and action to alleviate** it within the context of essential health services.
  - ○ It is not just a moral value but a practical driver that enhances the quality, accessibility, and equity of care.
➢ **Significance:** Compassion differs from **sympathy and empathy.** Sympathy is passive and pity-driven, while empathy can cause **emotional fatigue.**
  - ○ In contrast, compassion combines emotional connection with thoughtful action, making it a more sustainable and effective approach in health care.
➢ **Role in Healthcare:** The lifetime prevalence of **mental disorders** in India is **13.7%**, and 15% of India's adult population experiences mental health issues.
  - ○ WHO estimates that the **burden of mental health problems in India is 2443 disability-adjusted life years (DALYs) per 10000 populatio**n. The economic loss due to mental health conditions, between **2012-2030, is estimated at USD 1.03 trillion.**
  - ○ In India 70% to 92% of people with **mental disorders do not receive proper treatment due** to lack of awareness, stigma, and shortage of professionals.
    - • With rising cases of depression and anxiety, compassion has become a vital component in healthcare. It promotes people-centred care by making services more responsive, respectful, and holistic.
    - • Moreover, compassion strengthens the entire health continuum spanning prevention, health promotion, treatment, rehabilitation, and palliative care, ensuring that care delivery is both effective and empathetic.
  - ○ Compassion fosters **inclusive care**, especially for Dalits, Adivasis, **LGBTQ+** individuals, persons with disabilities, and other marginalised groups.

Case Studies Related to Compassionate Healthcare

➢ ASHA Worker Responding to Domestic Violence:
  - ○ **Key Actor:** ASHA worker Praveena Ben
  - ○ **Ethical Lens:** ASHA workers extended her roles beyond maternal health to address domestic violence, a deeply sensitive and stigmatized issue.
    - • She upheld the dignity and autonomy of survivors by ensuring private referrals and trauma-informed care.
➢ Tamil Nadu's Disaster-Ready PHCs:
  - ○ **Ethical Lens:** Tamil Nadu's health system showcases anticipatory ethical governance by training PHC staff for disaster response.
    - • Its interdepartmental coordination ensures swift, humane action during crises, while prioritizing ethical resource allocation to protect the most vulnerable.
➢ Clinical Courage in Tribal Areas:
  - ○ **Key Actor:** Dr. Vidith Panchal, Amrit Clinic (NGO: Basic Health Services).
  - ○ **Ethical Lens:** Despite poor infrastructure and limited support, Dr. Panchal chose to treat a **critically ill TB patient**, Tukaram, locally instead of referring him to a distant hospital prioritizing the patient's dignity and comfort over administrative convenience.
    - • Acted with beneficence and compassion, providing comfort and **reducing suffering in end-of-life care.**

Disaster Management
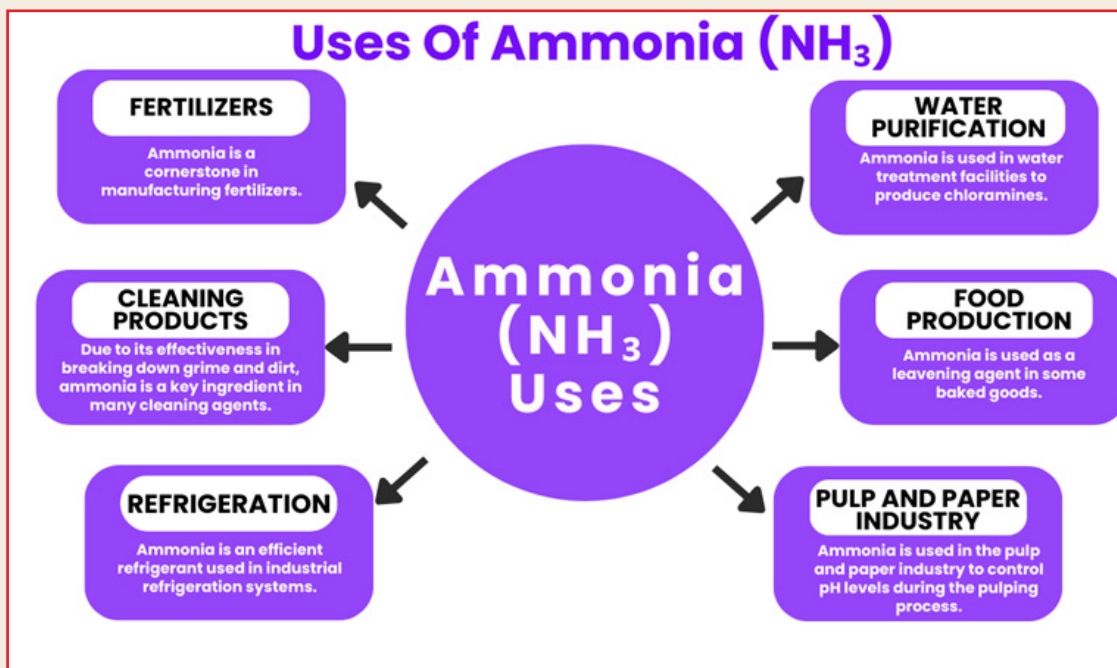
Highlights

- *Ammonia Gas Leakage*

Ammonia Gas Leakage

Why in News?

An **ammonia gas leak** at an ice factory in Ratlam, Madhya Pradesh, triggered panic among residents. Such chemical incidents highlight the recurring challenges of industrial safety and disaster preparedness in India.

Ammonia & its Industrial Applications

➢ **Ammonia (NH_3)** is a **colorless gas with a sharp smell**, widely used in **industry and** naturally found in the **environment and human body**.

- ○ It is produced by the **Haber-Bosch process ($N_2 + 3H_2 \rightarrow 2NH_3$)** under high temperature and pressure in the presence of a catalyst:
- ○ Its concentrated form is **corrosive and can cause burns or explode under high heat.** It is stored as a **compressed liquid.**
- ○ It is **highly water-soluble** and forms **ammonium hydroxide** in contact with **water.**
- ○ It has **9 times the energy density of Li-ion batteries** and **3 times that of compressed hydrogen**, making it a promising **carbon-free energy carrier.**

➢ **Key Applications:**

Uses Of Ammonia (NH_3)

FERTILIZERS
Ammonia is a cornerstone in manufacturing fertilizers.

WATER PURIFICATION
Ammonia is used in water treatment facilities to produce chloramines.

CLEANING PRODUCTS
Due to its effectiveness in breaking down grime and dirt, ammonia is a key ingredient in many cleaning agents.

Ammonia (NH_3) Uses

FOOD PRODUCTION
Ammonia is used as a leavening agent in some baked goods.

REFRIGERATION
Ammonia is an efficient refrigerant used in industrial refrigeration systems.

PULP AND PAPER INDUSTRY
Ammonia is used in the pulp and paper industry to control pH levels during the pulping process.

What are Industrial & Chemical Disasters?

➢ **Industrial Disaster**: An industrial disaster is a **significant accident at an industrial site** that results in **extensive damage, injuries, or fatalities.**

  ○ It can result from various causes, including **chemical, mechanical, civil, or electrical processes,** as well as **accidents, negligence, or incompetence.**

  ○ **Types:**

    ● Chemical disasters, Explosions, Mining disasters, Falling objects, Radiological incidents.

  ○ According to the **National Disaster Management Authority (NDMA),** India reported 130 significant chemical accidents, resulting in 259 deaths and 563 major injuries over the last decade.

➢ **Chemical Disaster: Chemical disasters** are a type of **industrial disaster** involving the **accidental release of hazardous chemicals**, leading to **mass casualties, long-term environmental damage, and socio-economic disruptions**.

  ○ They may result from **industrial accidents, improper handling or storage of chemicals**, or **failure of safety systems.**

  ○ **Notable Examples:**

    ● **Chennai Ammonia Leak (2024):** Caused by a pipeline damaged during Cyclone Michaung.

    ● **Vizag Gas Leak (2020): Styrene gas** leak at LG Polymers, Visakhapatnam.

    ● **Bhopal Gas Tragedy (1984): Methyl isocyanate** leak from Union Carbide, causing mass casualty.

> **What are the Causes and Impact of Industrial Accidents?**
>
> ➢ **Click Here to Read: Causes of Industrial Accidents in India**
>
> ➢ **Click Here to Read: Consequences of Industrial and Chemical Accidents**

What are the Legal Safeguards against Chemical and Industrial Disasters in India?

➢ The Bhopal Gas Leak (Processing of Claims) Act, 1985

➢ The Environment Protection Act (EPA),1986

➢ **National Environment Appellate Authority (NEAA) Act, 1997:** Established the **NEAA** to hear appeals on environmental clearances ensuring transparency and accountability.

➢ **Public Liability Insurance Act (PLIA), 1991:** It mandates **insurance for industries** handling **hazardous substances**, ensuring **immediate relief to victims of industrial accidents.**

➢ **Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 1989:** It imposes **obligations on industries to identify accident-prone areas,** undertake **preventive measures,** and report hazards to authorities.

➢ Additional Measures:

  ○ **NDMA Guidelines on Chemical Disasters:** These provide a comprehensive roadmap for disaster risk reduction, mitigation, and preparedness specific to chemical hazards.

  ○ **Factories Act, 1948** contains **safety provisions for workers in manufacturing units**, including handling hazardous substances.

  ○ **Insecticides Act, 1968** regulates the **import, manufacture, sale, and use of insecticides** to prevent risk to humans and animals.

What are the Key International Conventions and Safeguards Related to Chemical and Disasters?

➢ Sendai Framework for Disaster Risk Reduction 2015-2030

➢ **UN Convention on the Transboundary Effects of Industrial Accidents (1992)** provides a legal framework for **international cooperation in preventing, preparing for, and responding to industrial accidents** that may have **cross-border impacts.**

➢ **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989)** regulates t**ransboundary movement of hazardous wastes** and ensures their **environmentally sound disposal.**

➢ **Rotterdam Convention (2004)** promotes shared responsibility in the international trade of hazardous chemicals and pesticides through the **Prior Informed Consent (PIC)** procedure.

➢ **Strategic Approach to International Chemicals Management (SAICM)**, adopted in **2006**, is a **policy framework** to promote **chemical safety worldwide.**

➢ **UNEP**'s Flexible Framework for Chemical Accident Prevention and Preparedness (CAPP), 2006 adopts a flexible approach to help countries, especially developing ones, build programs to **prevent and prepare for chemical accidents.**

➢ The **OECD** **Programme on Chemical Safety and Biosafety (mid 1980s)** deals with the **safe use of chemicals, nanomaterials, pesticides, biocides,** and products of modern **biotechnology.**

Occupational Safety, Health and Working Conditions Code, 2020

➢ **Safety Responsibilities:** It outlines the **duties of employers and employees** to ensure workplace safety.

➢ **Industry-Specific Standards:** Mandates customized safety norms across various sectors.

➢ **Focus on Worker Welfare:** Ensures r**egulation of working hours, health conditions, leaves, and other welfare measures.**

➢ **Protection for Contract Workers**: Recognizes and safeguards the rights of **contractual and migrant workers.**

➢ **Gender Inclusivity:** Enables women to be employed in **all types of work across all establishments**.

ILO Recommendations on Industrial Disaster Prevention

➢ **Click Here to Read: What are ILO Recommendations on Industrial Disaster Prevention**?

Miscellaneous

Highlights

- *GI Tag to Tomato Chilli and Kannadippaya*

GI Tag to Tomato Chilli and Kannadippaya

Why in News?

Telangana's **Warangal Chapata Chilli (Tomato Chilli)** and Kerala's **tribal handicraft Kannadippaya** have been granted the Geographical Indication (GI) tag, further enriching **India's GI registry, which now has over 600 products listed**.

Geographical Indication (GI) Tag

➢ **About:** A GI tag is a **name or sign used on certain products** that correspond to a specific geographical location or origin.
   ○ The GI tag ensures that only authorised users or those residing in the geographical territory are **allowed to use the popular product name**.
     • It also protects the product from being copied or imitated by others.
   ○ A registered GI is **valid for 10 years and can be renewed**.
   ○ GI registration is **overseen by the Department for Promotion of Industry and Internal Trade** under the Ministry of Commerce and Industry.
 ➢ **Legal Framework:**
   ○ Geographical Indications of Goods (Registration and Protection) Act, 1999
   ○ WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

What are the Key Facts About Warangal Chapata Chilli?

- ➢ **About:** It is **Telangana's 18th GI-tagged product** and the **third agricultural GI,** after Banaganapalli Mango and Tandur Red Gram.

- ➢ **Features:** It is known for its **bright red colour and round tomato-like shape**.
  - ○ The chilli is **less spicy but lends a bright red colour** with extensive flavour due to its capsicum *oleoresin* **properties** (anti-obesogenic, antioxidant, anti-inflammatory, and neuroprotective properties).

- ➢ **Types:** **It exists in three fruit types:** Single Patti, Double Patti, and Odalu.

- ➢ **Cultivation:** The Warangal Chapata is under cultivation in the villages of Nagaram of Jammikunta mandal for more than 80 years **while Nadikuda village and mandal could be the oldest source**.
  - ○ Its unique **characteristics can be attributed to the red and black soil** of the region.
  - ○ The area's unique soil, water, and weather **make it hard to grow this crop anywhere else**.

What are the Key Facts About Kannadippaya?

- ➢ **About:** The recognition **makes Kannadippaya the first tribal handicraft product** from Kerala **to receive the GI tag**.

KANNADIPPAYA
BAMBOO MAT
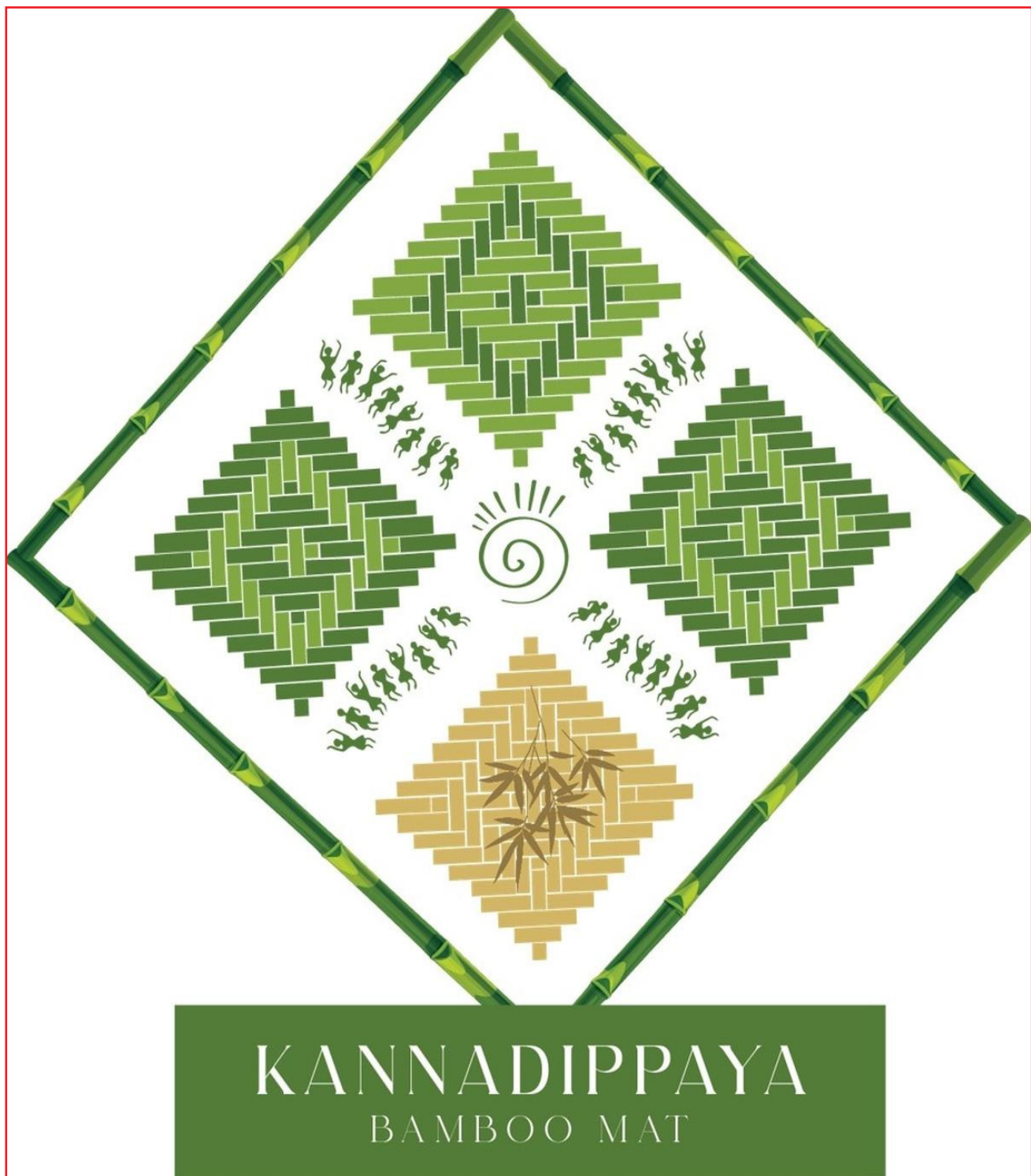
➤ **Origin:** The craft is **primarily preserved by the Oorali, Mannan, Muthuva, Malayan, and Kadar tribal communities** and by the Ulladan, Malayarayan, and Hill Pulaya artisans in Idukki, Thrissur, Ernakulam, and Palakkad districts.

○ In the past, **Kannadippaya was once presented to kings by tribal communities** as a mark of honour.

➤ **Key Features:** The product derives its name, **which literally means mirror mat, from its unique reflective pattern**
  ○ It is **made from the soft inner layers of reed bamboo** (*Teinostachyum wightii*), the mat is **known for its unique properties** like providing warmth during winter and cooling effects in summer.

What are the Other Recent GI Tagged Products?

Product	State	Year	Fact
Banaras Thandai	Uttar Pradesh	2024	Traditional spiced beverage associated with Varanasi.
Assam Bihu Dhol	Assam	2024	Traditional drum integral to Bihu celebrations.
Kasti Coriander	Maharashtra	2023	Known for its distinctive fragrance and taste
Koraput Kalajeera Rice	Odisha	2023	Aromatic black paddy rice, often referred to as the **'Prince of Rice'**.
Uttarakhand Red Rice	Uttarakhand	2023	High-altitude rice known for its nutritional benefits and distinct aroma.

Rapid Fire Current Affairs

Highlights

- Gandhi Sagar Wildlife Sanctuary
- Kavach 5.0
- Long-Range Glide Bomb 'Gaurav'
- India Supports First Global Carbon Tax on Shipping
- Siachen Day
- CAPTCHA
- Toxic Bloom Turns Sea Lions Aggressive
- New Pamban Bridge
- Maintenance and Welfare of Parents and Senior Citizens Act, 2007
- Panama Canal
- Olive Ridley Turtles in India
- WMO Retired Hurricane Names for 2024
- Agasthyamalai Biosphere Reserve
- City Key of Honour Award to Indian President
- Thar Desert
- 150th Assembly of the Inter-Parliamentary Union
- Daulatabad Fort
- India's First-Ever Climate Change Station
- Naval Exercise INDRA-2025
- India Skills Accelerator
- Dire Wolves
- Kashmir's Spring Blooms
- "Blue Category" for Industries

- Limits on Validity of Foreign Funds
- Bankim Chandra Chattopadhyay
- Centrifuge Process of Uranium Enrichment
- Mahabodhi Temple
- Fluoride Contamination
- Pipalapanka Dam Threat to Rushikulya River
- Diego Garcia & Chagos Islands
- NITI NCAER States Economic Forum Portal
- Euphaea wayanadensi
- Chandrayaan's ChaSTE
- Denmark Reaffirms Greenland's Sovereignty
- Audible Enclaves and PAL Technology
- Devaraya I and Vijayanagara Empire
- 75 Years of India-China Relations
- Tiger TRIUMPH 2025
- Fram2 Mission and Polar Orbit
- Public Disclosure of Judges Assets
- Death Anniversary of Shyamji Krishna Verma
- AFSPA Extension in Northeast States
- Transgenic Research
- Tribhuvan Sahkari University Bill 2025
- Birth Anniversary of Shree Harichand Thakur
- 5 Years of National Technical Textiles Mission
- IOS Sagar and AIKEYME

Gandhi Sagar Wildlife Sanctuary

The **Cheetah Project Steering Committee**, under the **National Tiger Conservation Authority (NTCA),** approved the relocation of some cheetahs from **Kuno National Park** and **Gandhi Sagar Wildlife Sanctuary** (Madhya Pradesh), to expand the habitat.

➢ **Gandhi Sagar Wildlife Sanctuary:** It is located in northwestern Madhya Pradesh, bordering Rajasthan, and spans 368 sq km.

○ It features a diverse ecosystem of **savanna, open grasslands, dry deciduous forests,** and is recognized as an <u>**Important Bird and Biodiversity Area (IBA).**</u>

- The sanctuary's vegetation is characteristic of the <u>**Khathiar-Gir dry deciduous forests**</u> ecoregion.

○ The <u>**Chambal River**</u> bifurcates the sanctuary into two parts, with the **Gandhi Sagar Dam** situated within the sanctuary.

○ The sanctuary's ecosystem resembles the **Maasai Mara in Kenya,** known for its savanna wilderness and abundant wildlife, making it an ideal habitat for cheetahs.

➤ **Long-term Cheetah Conservation Goal:** Gandhi Sagar is planned to be part of a broader **metapopulation strategy,** aiming for 60-70 cheetahs across the Kuno-Gandhi Sagar landscape in Madhya Pradesh and Rajasthan.

Cheetah

Common Name – Cheetah

Scientific Name – *Acinonyx jubatus*
- *Acinonyx jubatus jubatus* (African Cheetah)
- *Acinonyx jubatus venaticus* (Asiatic Cheetah)
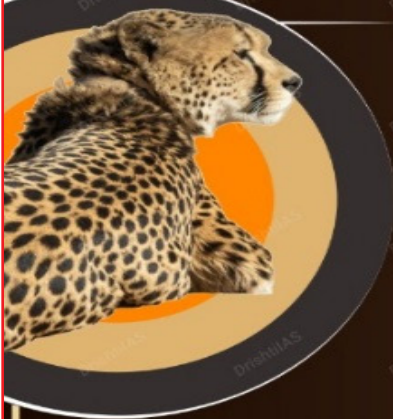
Reintroduction of Cheetah to India:

- The "Action Plan for Introduction of Cheetah in India" was released by MoEF&CC at the **19th meeting of the National Tiger Conservation Authority** (NTCA) (January 2022).
  - Such a plan was first proposed in 2009.
- In September 2022, **eight cheetahs landed in India from Namibia.**
  - The 8 cheetahs have been relocated to the Kuno-Palpur National Park, Madhya Pradesh.
- The relocation of cheetahs to India from Namibia is the **world's first inter- continental large wild carnivore translocation project.**

Slightly brownish and golden **skin; thicker than the Asiatic Cheetahs**

More prominent spots and lines on the face

Found all over the African continent

IUCN Red List Status – Vulnerable

African Cheetah

Slightly smaller than the African ones.

Pale yellowish fawn coloured skin – **more fur under body, belly specifically.**

Found only in Iran; the country claims there are only 12 of them left. **Year 1952 –** Asiatic Cheetah officially declared extinct from India.

IUCN Red List Status – Critically Endangered

Asiatic Cheetah

Drishti IAS

Read more: <u>Cheetahs in Gandhi Sagar Wildlife Sanctuary</u>

Kavach 5.0

The **Union Minister for Railways** announced the implementation of **Kavach 5.0**, aimed at **enhancing train safety.** The current version, **Kavach 4.0,** is already under deployment across Indian Railways.
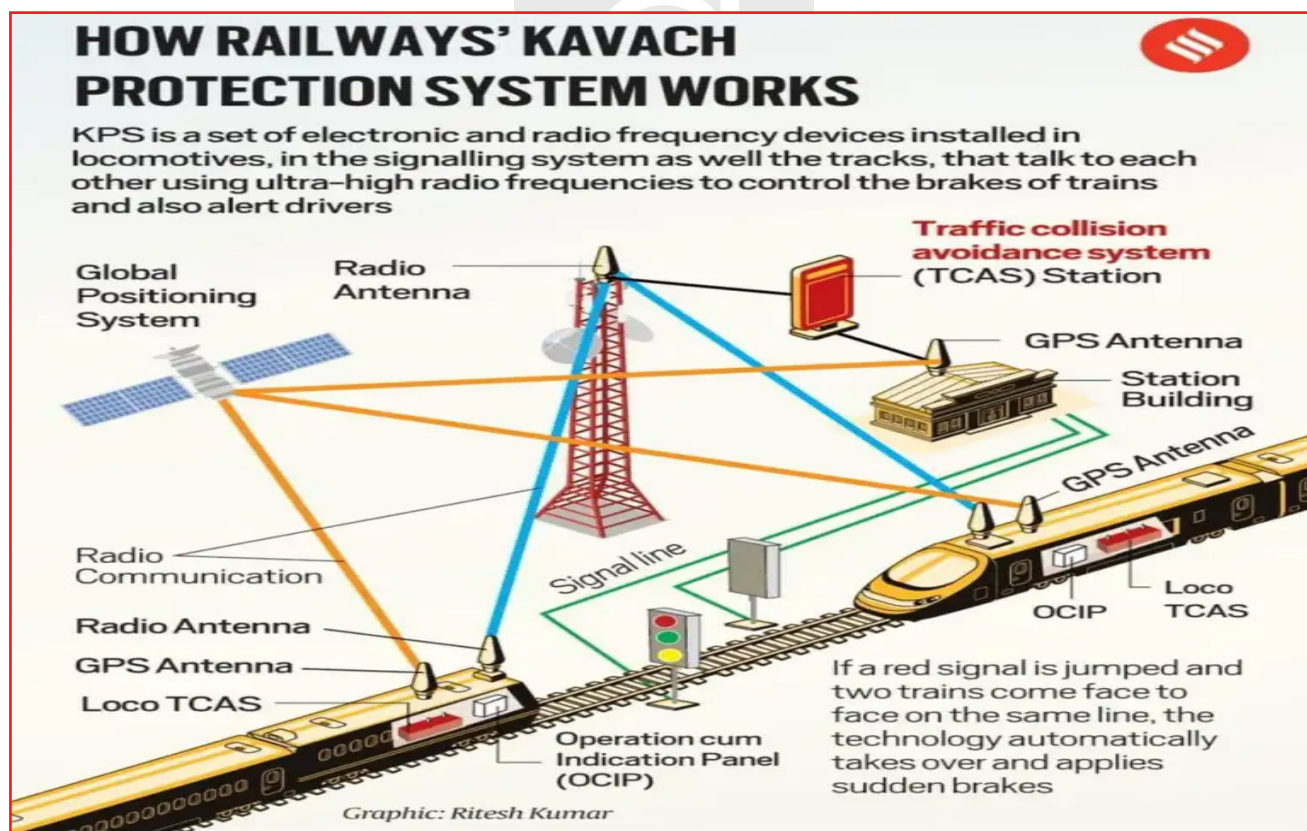
Kavach System:

➢ **About:** India's indigenous **Automatic Train Protection (ATP) system**, developed to prevent **train collisions by automatically activating** the braking system if the loco pilot fails to act**.**

➢ **Technology: Radio Frequency Identification (RFID)** tags are placed throughout the entire track length to enable the **Kavach system** to track train positions.

  ○ **Optical Fibre Cable** is laid along the tracks to ensure fast and efficient data transmission.

Indian Railways:

➢ India operates the **world's fourth-largest railway network**, spanning **over 65,000 kms,** and is projected to **account for 40% of global rail activity by 2050**, highlighting its significance in sustainable transportation and mobility.

Global Best Practices on Rail Safety:

➢ The UK uses **Train Protection and Warning System (TPWS)**, **ETCS**, and **RAIB** for signal protection, real-time control, and independent investigations.

➢ Japan employs **Automatic Train Control (ATC)**, **CATIS** for fault detection, and **EEWS** to stop trains during earthquakes.

HOW RAILWAYS' KAVACH PROTECTION SYSTEM WORKS

KPS is a set of electronic and radio frequency devices installed in locomotives, in the signalling system as well the tracks, that talk to each other using ultra-high radio frequencies to control the brakes of trains and also alert drivers

Global Positioning System — Radio Antenna — Traffic collision avoidance system (TCAS) Station — GPS Antenna — Station Building — GPS Antenna — Loco TCAS — OCIP

Radio Communication — Radio Antenna — GPS Antenna — Loco TCAS — Signal line — Operation cum Indication Panel (OCIP)

If a red signal is jumped and two trains come face to face on the same line, the technology automatically takes over and applies sudden brakes

Graphic: Ritesh Kumar

Read More: Kavach System, Committees Related to Railway Reforms

Long-Range Glide Bomb 'Gaurav'

Defence Research and Development Organisation (DRDO) has conducted successful release trials of the indigenously developed **Long-Range Glide Bomb (LRGB) 'Gaurav'** from the **Su-30 MKI aircraft.**

LRGB 'Gaurav'

➢ **About**: It is an **indigenously developed air-launched precision-guided weapon** designed for **accurate strikes on land targets** from **stand-off distances,** beyond the reach of enemy air defence systems.

➢ **Key Features:**

  ○ **Range**: Demonstrated nearly **100 km with pin-point accuracy**, and an operational range between **30 km to 150 km**.

  ○ **Weight**: The **winged version 'Gaurav'** weighs **1,000 kg,** while the **non-winged 'Gautham'** weighs **550 kg.**

  ○ **Navigation**: Uses **Inertial Navigation System (INS)**, **satellite guidance** and **digital control system.**

➢ **Significance**: Enhances India's **precision strike capabilities**, aligning with **indigenous defence development.**

Glide Bomb

➢ A glide bomb is a **precision-guided munition** that travels long distances **without powered propulsion** by using **aerodynamic lift**.

➢ It is guided using systems like **GPS**, **Inertial Navigation System (INS), or laser.**

Su-30MKI

➢ **Su-30 MKI aircraft** is a **multirole combat fighter aircraft** jointly developed by the Sukhoi Design Bureau (Russia) and **HAL** for the IAF.

Read More: Long Range Land Attack Cruise Missile

India Supports First Global Carbon Tax on Shipping

India and 62 other nations have voted in favour of the **world's first-ever global carbon tax** on the shipping industry, imposed by the **United Nations' shipping agency, the International Maritime Organisation (IMO).**

- ➢ **Global Shipping's Contribution:** The shipping industry contributes **around 3%** of global greenhouse gas emissions, a sector previously not included in global climate agreements like the **Paris Agreement.**
- ➢ **Carbon Tax Framework:** The tax will come into effect in 2028, requiring **ships above 5,000 gross tonnage** (which account for 85% of total CO_2 emissions from international shipping) to either shift to cleaner fuel technologies or pay a fee ranging from **USD 100 to USD 380 per tonne** of CO_2 emitted, depending on emission thresholds.
  - ○ The tax is expected to generate up to **USD 40 billion by 2030**, which will be reinvested into decarbonising the maritime sector, with no provision for broader climate adaptation.
- ➢ **Indian Shipping Industry:** India is poised to be among the top 5 shipbuilding countries in the world by 2047. India's fleet grew to 1,530 ships by 2023, ranking third **globally in ship recycling.**
  - ○ Major ports increased cargo capacity by **87% from 871.52 million tonnes in 2014-15 to 1,629.86 million tonnes in 2023-24.**
- **Read more: Global Hub for Green Ship Building by 2030**

Siachen Day

Siachen Day (13th April) commemorates **Operation Meghdoot,** which marked India's successful military control of the **Siachen Glacier in 1984**.

- ➢ **Siachen:** Located at around 20,000 feet in the **Karakoram Range**, is the longest glacier in this range and **highest militarized zone** globally. The **Saltoro Ridge**, part of the Karakoram, lies southwest of the Siachen Glacier.
  - ○ Siachen plays a crucial role in controlling routes from **Gilgit-Baltistan to Leh and the Karakoram Pass.**
  - ○ The **Karachi Agreement of 1949** demarcated the boundary between India and Pakistan until a point called **NJ9842**, beyond which the line was left vague due to inhospitable terrain, stating it would run **"thence North to the glaciers"** (referring to the **Siachen, Rimo, and Baltoro glaciers).**
  - ○ **Post-1972 Simla Agreement**, the **Line of Control (LoC)** was formalized but did not address the area beyond NJ9842.
  - ○ In the 1980s, Pakistan sought to legitimize its claim over the **Saltoro Ridge and beyond Siachen,** aiming for direct connectivity to China and strategic control over the Ladakh region, posing a significant threat to India.

- ➢ **Operation Meghdoot:** On 13th April 1984, under Prime Minister Indira Gandhi, India launched Operation Meghdoot, securing control of the **Siachen Glacier and Saltoro Ridge,** including key passes like **Bilafond La and Sia La.**
  - ❍ This move preempted Pakistan's presence, ensuring strategic oversight of the Ladakh region and blocking access to the Shaksgam Valley.
  - ❍ Operation Meghdoot involved airlifting troops and supplies, with Indian Air Force helicopters playing a crucial role. It marked the first military assault in the world's highest battlefield.

Read more: Operation Meghdoot

CAPTCHA

CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart) is a **challenge-response test** used to **distinguish bots from human users**, enhancing online security and protecting user data.

- ➢ **Bots** are automated software programs that **perform repetitive online tasks.**
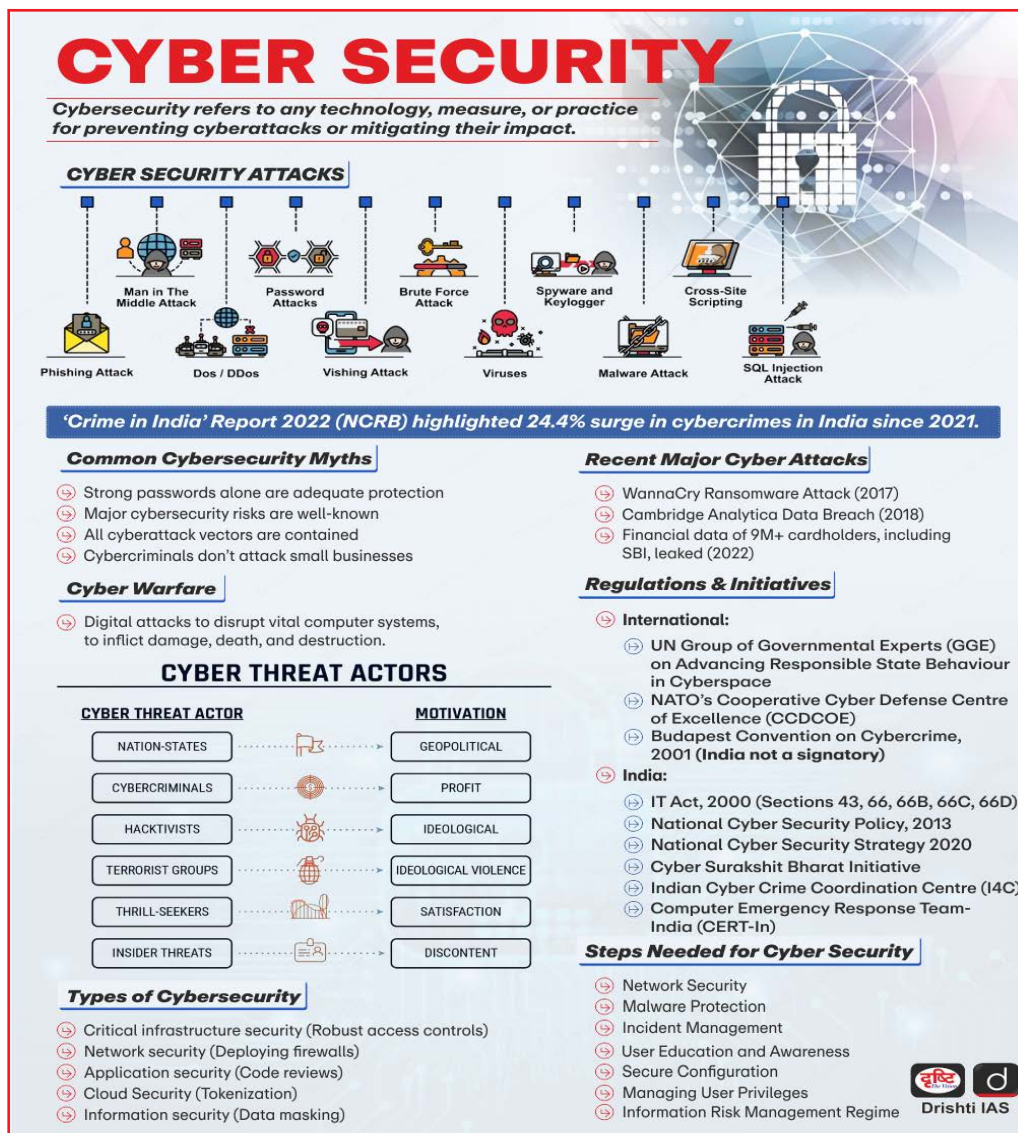
- ➤ **CAPTCHA:**
  - ○ **Origin:** Developed in the early 2000s by **Luis von Ahn** to block bots, CAPTCHA began with **distorted text (2003),** evolved into **reCAPTCHA (2009)** using scanned book words, and later to **Invisible reCAPTCHA (2014) by Google** using behavioural analysis. Modern versions use **image recognition, checkboxes, and interaction tracking.**
  - ○ **Advantages:** It **blocks bots preventing fake accounts, spam,** and data theft, ensuring only human users access digital platforms.
  - ○ **Applications:** CAPTCHA is used in **logins, registrations, transactions, comments, account recovery,** and **surveys to block bots** and verify users. **reCAPTCHA** also aids in **book digitisation.**
  - ○ **Disadvantages:** It can **hinder accessibility for disabled users,** can be **tedious for mobile users** and be bypassed by advanced bots, impacting user experience.
- ➤ **Other Cybersecurity Measures:** Other measures include **Two-Factor Authentication (2FA)**, adding a second verification layer via device codes, **biometric verification** using fingerprints or facial recognition, **honeypots** to trap bots; and **behavioral biometrics** that track typing or swipe patterns to distinguish humans from bots.

Read More: [Emerging Cyber Threats and Their Implications](#)

Toxic Bloom Turns Sea Lions Aggressive

A toxic [algal bloom](#) **off California's coast** has led to **unprecedented aggression in sea lions,** causing them to attack humans.

- ➤ **Domoic acid,** a **neurotoxin produced by the diatom** *Pseudo-nitzschia*, is responsible for altering the brain function of sea lions.
  - ○ It causes **stress, muscle spasms, brain damage, and aggressive behavior** in marine mammals.
- ➤ **Domoic acid** enters the [food chain](#), harming marine life and posing a **deadly risk** to **humans** through **contaminated seafood.**
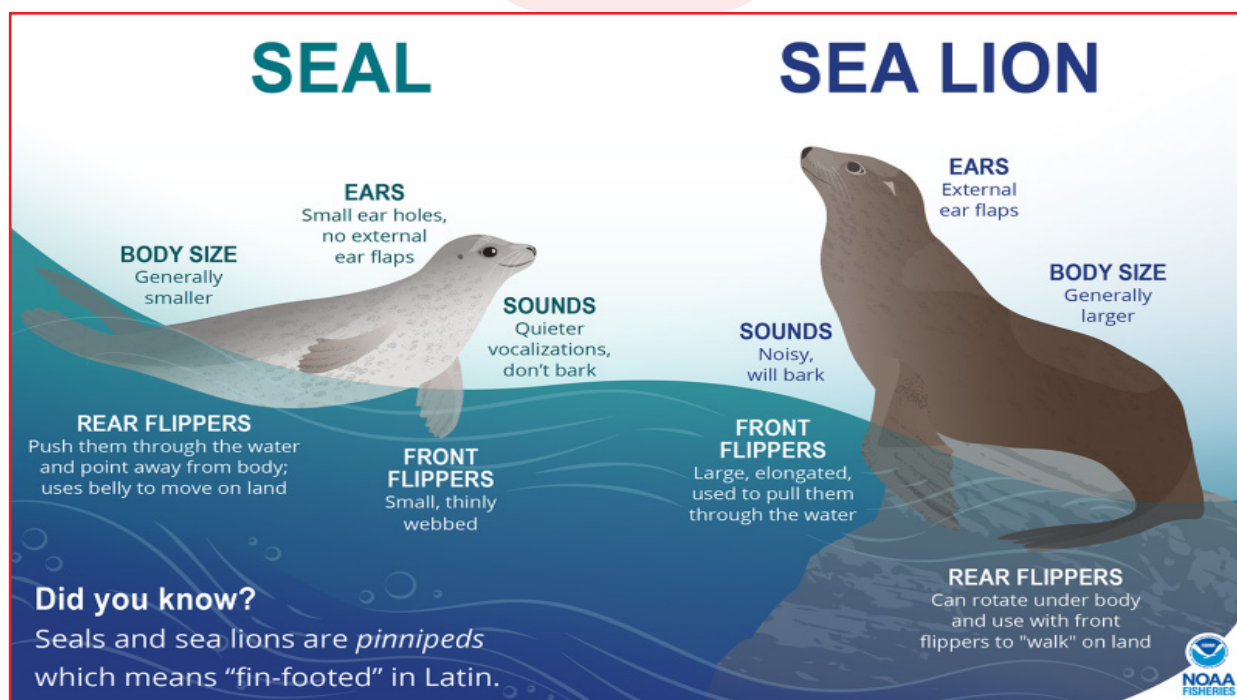
➤ Stronger winds (from global warming) cause **upwelling** and bring **nutrient-rich water to the surface**, fueling algal growth.

  ○ **Pollutant discharge and wildfire runoff** (e.g., from **Los Angeles wildfires**) **add nutrients** that further feed the algae.

➤ **Sea Lions:** Sea lions (along with Seals and walruses) belong to a group of **marine mammals** called **pinniped group** (fin-footed marine mammals).

  ○ They are found in **large groups and** known for their **loud barking sounds.**

  ○ Spend most of their time in the ocean but come ashore for **resting, mating, and pupping.**

  ○ They live mostly in **Pacific waters**.

Read More: Great Seahorse Migration

New Pamban Bridge

The Prime Minister inaugurated India's **first vertical lift railway sea bridge**, the **new Pamban Bridge**, enhancing connectivity between Rameswaram and mainland India.

➤ It is designed by **Rail Vikas Nigam Limited (RVNL)** under the Ministry of Railways, and is built to last over **100 years**.

➤ It spans **2.07 km across the Palk Strait**, replacing the **1914 Pamban Bridge** which was a **cantilever structure** with a **Scherzer Rolling Lift span**.

➤ It features a **72.5-meter vertical lift span** that rises **17 meters** to allow ship passage.

  ○ Designed for **double tracks**, it supports **heavier, faster trains** and smooth **rail-maritime coordination**.

  ○ It joins globally recognized bridges like the **Golden Gate (USA), Tower (UK), and Oresund (connect Denmark and Sweden) bridges.**

➤ It has been built to withstand **turbulent waters, cyclones, and seismic activity.**

　❍ During the **1964 tsunami**, a passenger **train was swept away** from the old Pamban Bridge, although the bridge itself withstood the disaster.

➤ The construction of the **old Pamban Bridge** started in **1911** and was opened to traffic in **1914**. It was **India's first sea bridge**, built for trade.

Read more: Katchatheevu Island

Maintenance and Welfare of Parents and Senior Citizens Act, 2007

The **Supreme Court** dismissed a senior couple's plea to evict their son from their property under the **Maintenance and Welfare of Parents and Senior Citizens (MWPSC) Act, 2007**.

➤ **About the MWPSC Act (Senior Citizens Act):** The Act empowers senior citizens (60 years and above), who are unable to maintain themselves from their income or property, to **seek maintenance from their children or legal heirs.**

　❍ Children or relatives are legally obligated to support elderly parents so they can live a dignified life.

　❍ Special tribunals and appellate tribunals have been established to hear maintenance-related cases under this Act.

　❍ Under **Section 23(1)**, if a senior citizen gifts or transfers property on the condition that the **transferee provides basic care and amenities**, the transfer can be voided if the condition is violated.

　❍ Section 23(2) ensures the right to maintenance from an estate even if it is transferred, provided the new owner is aware of this obligation.

➤ **DV Act vs Senior Citizens Act:** The **Protection of Women from Domestic Violence Act, 2005 (DV Act)** grants women the right to reside in a shared household, even if they have no ownership in the property. But the **Senior Citizens Act** allows senior

citizens to seek eviction of children or relatives from their property if they fail to maintain them or cause distress.

➤ The **DV Act protections remain valid**, and residence rights of women must be carefully weighed against the rights of senior citizens.

Read more: Safeguarding the Rights of Elderly

Panama Canal

The US and Panama have **formalised a new defense and security pact** aimed at countering **China's expanding influence over the Panama Canal**.

➤ China **operates two major ports at the Panama Canal**, raising US concerns about Chinese influence on global shipping, **though Panama denies any Chinese control**.

➤ **Panama Canal:** The Canal was **originally constructed (1914) and controlled by the US**.

　❍ In **1979, control of the Canal** was transferred to the Panama Canal Commission, a joint agency of the US and Panama, and eventually, in **1999, full control was handed over to Panama.**

➤ **Strategic Importance:** It is one of the **two most strategically significant artificial waterways** in the world, the other being the **Suez Canal**.

　❍ It **connects the Atlantic and Pacific Oceans** through the narrow **Isthmus of Panama**, significantly **reducing the distance** between the US east and west coasts by **about 8,000 nautical miles**.

➤ **Operation/Functioning:** It uses a system of **locks and water elevators** to transport ships from one ocean to the other.

　❍ This design is necessary as the **Pacific Ocean is slightly higher (~20 cm) in elevation than the Atlantic Ocean**.

　❍ The locks operate by **flooding (to raise elevation)** or **draining (to lower elevation)** and act as water elevators to lift or lower vessels.

NEW ROUTE: 5,200 nautical miles

OLD ROUTE: New York to San Francisco: 13,100 nautical miles

Read More: <u>Panama Canal</u>

Olive Ridley Turtles in India

A study has revealed that <u>**Olive Ridley turtles**</u> in the Indian Ocean are among the oldest in the world.

➢ **Key Findings:** Indian Ocean Olive Ridleys have survived past climate shifts, with the Atlantic and **Pacific** populations diverging from them around 300,000 - 400,000 years ago.

○ This contradicts earlier belief that Central American turtles were the oldest due to Isthmus of Panama's formation.

OLIVE RIDLEY TURTLES

SCIENTIFIC CLASSIFICATION:

Scientific Name: *Lepidochelys olivacea*

Class: Reptilia

Family: Cheloniidae

PROTECTION STATUS:

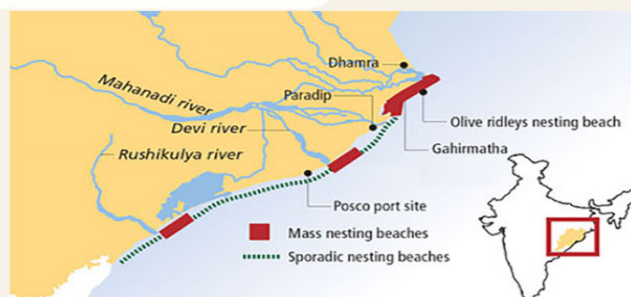Wildlife Protection Act. 1972. Schedule 1

IUCN Red List: Vulnerable

CITES: Appendix I

CONSERVATION INITIATIVES:

Operation Olivia protects nesting turtles; Odisha mandates Turtle Excluder Devices (TEDs): Tagging helps track and conserve Olive Ridleys.

Mahanast river
Paradip
Dhamp-
Rushikulya river
Olive ridleys nesting beach
Gahirmatha
Pasco port site
■ Mass nesting beaches
▪▪▪▪ Sporadic nesting beaches

■ Mass nesting beaches
▪▪▪▪ Sporadic nesting beaches

➢ **Olive Ridley (Lepidochelys olivacea):** It belongs to the *class Reptilia and family Cheloniidae,* is the smallest sea turtle species, recognized by its **olive or grayish-green color** and heart-shaped carapace.

○ Olive Ridleys are **omnivores** and exhibit **arribada,** a mass nesting event where thousands of **females nest together.**

● They migrate 9,000 km from the Pacific to Indian seas, nesting 1–3 times between December and March, and laying about 100 eggs per clutch.

○ **Major Nesting Sites:** <u>Gahirmatha</u> and **Rushikulya in Odisha** are among the world's largest nesting sites for Olive Ridley turtles. In 2024, over 1.3 million turtles laid eggs at these rookeries, surpassing the previous record of 1.15 million in 2023.

  ● Other important nesting sites in India include the Devi River mouth in Odisha and the Andaman Islands.

○ **Threats**: Bycatch in fishing gear, poaching, habitat loss, and plastic pollution. Climate change also disrupts nesting and food availability through rising temperatures and sea levels.

○ **Protection Status:** <u>Wildlife Protection Act, 1972</u> (Schedule 1), <u>IUCN Red List</u> (Vulnerable), and <u>CITES</u> (Appendix I)

OLIVE RIDLEY TURTLES

SCIENTIFIC CLASSIFICATION:

Scientific Name: *Lepidochelys olivacea*

Class: Reptilia

Family: Cheloniidae

PROTECTION STATUS:

Wildlife Protection Act. 1972. Schedule 1

IUCN Red List: Vulneraable

CITES: Appendix I

CONSERVATION INITIATIVES:

• **Operation Olivia:** Indian Coast Guard jnitiative (since the 1980s) to protect nesting turtles and prevent illegal trawling.
• **Turtle Excluder Devices (TEDs):** Odisha mandates TEDs in trawls(cone-shaped net) to prevent accidental deaths.
• **Tagging:** Olive Ridley turtles are tagged with non-corrosive metal tags to track their movements and safeguard their habitats.

Major nesting sites in India:

Dhamra
Mahanadi river
Paradip
Devi river
Olive ridleys nesting beach
Rushikulya river
Gahirmatha
Posco port site
■ Mass nesting beaches
•••••• Sporadic nesting beaches

Read more: <u>Mass Nesting of Olive Ridley Turtles</u>

WMO Retired Hurricane Names for 2024

The **World Meteorological Organization (WMO)** has retired four hurricane names **Beryl, Helene, Milton, and John** from its Atlantic and East Pacific storm lists due to the devastation they caused in 2024, making their reuse inappropriate due to the associated trauma and sensitivity.
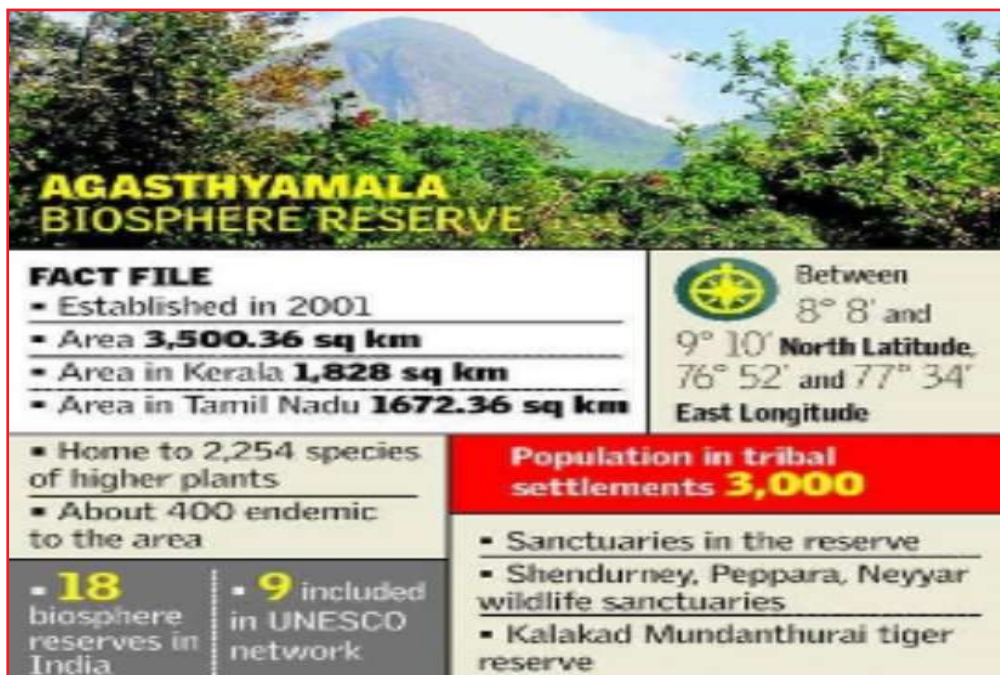
➤ **Beryl** became the **earliest Category-5 hurricane** (Winds exceeding 157 miles per hour) **on record**, severely impacting the **Caribbean**.

➤ **Helene and Milton** caused catastrophic damage in the **United States**, while **John** led to deadly flooding in **Mexico**.

➤ WMO has selected **Brianna, Holly, and Miguel** as replacements in the Atlantic, and **Jake** in the eastern Pacific. Storm names are **reused every six years unless retired due to severe impact.**

➤ **Naming of Cyclones in India:** India uses a one-time naming system for cyclones in the Bay of Bengal and Arabian Sea.

　❍ Cyclones are assigned names once wind speeds exceed **34 knots** or more, and these names are never reused, even if the cyclone moves into another region.

　❍ The **India Meteorological Department** names cyclones in coordination with the **Tropical Cyclone Regional Body** on behalf of littoral countries, which includes **13 countries** (India, Bangladesh, Maldives, Myanmar, Pakistan, Sri Lanka, Oman, Thailand, Iran, Qatar, Saudi Arabia, UAE, and Yemen).

Read more: New List of Names of Tropical Cyclones

Agasthyamalai Biosphere Reserve

The **Supreme Court** has directed the **Central Empowered Committee (CEC)** to carry out a detailed survey of the **Agasthyamalai landscape** to identify any **non-forestry activities and encroachments.**

➤ **Aim of the Survey:** To identify all instances of non-forestry activities that violate statutory laws like the **Forest Conservation Act, 1980** and **Wildlife (Protection) Act, 1972.**

　❍ To provide comparative forest cover data to reveal the extent of degradation.

AGASTHYAMALA BIOSPHERE RESERVE

FACT FILE
- Established in 2001
- Area **3,500.36 sq km**
- Area in Kerala **1,828 sq km**
- Area in Tamil Nadu **1672.36 sq km**

Between 8° 8' and 9° 10' **North Latitude**, 76° 52' and 77° 34' **East Longitude**

- Home to 2,254 species of higher plants
- About 400 endemic to the area

Population in tribal settlements **3,000**

- **18** biosphere reserves in India
- **9** included in UNESCO network

- Sanctuaries in the reserve
- Shendurney, Peppara, Neyyar wildlife sanctuaries
- Kalakad Mundanthurai tiger reserve

- ➢ **Key Areas Under Survey:** **Periyar Tiger Reserve**
  - ○ **Srivilliputhur Grizzled Squirrel Wildlife Sanctuary**
  - ○ **Meghamalai Wildlife Sanctuary**
  - ○ **Thirunelveli Wildlife Sanctuary**
- ➢ **Agasthyamalai:** It is part of a 3,500 sq. km biosphere reserve recognised by **UNESCO.**
  - ○ It **stretches across Tamil Nadu and Kerala** in the southernmost stretch of the Western Ghats.
  - ○ The Neelakkurinji flower, which blooms once every 12 years, grows in this landscape.
  - ○ **Lion-Tailed Macaque**, **Bengal Tiger**, Nilgiri Marten, Nilgiri Tahr, Malabar Spiny Dormouse, Great Pied Hornbill, Gaur (Indian bison), **Sloth Bear** found in this region.
  - ○ The region is inhabited by indigenous communities, especially the **Kani tribe.**
- **Read More:** **Agasthyavanam Biological Park**

City Key of Honour Award to Indian President

The **President of India** received the **'City Key of Honour'** of Lisbon (Portugal), acknowledging the strong ties and goodwill between India and Portugal.

- ➢ It is the **highest honour accorded** by the city of Lisbon, given **by the Mayor** to **recognise contributions to society or ties with Portugal**.
- ➢ 2025 marks the **50th anniversary of India-Portugal diplomatic relations.**

India-Portugal Relations:

- ➢ **Historical Background: India- Portugal** connection began in **1498 with Vasco da Gama's arrival in Calicut**.
  - ○ Full diplomatic normalization was achieved after **Portugal's 1974 Carnation Revolution**, culminating in the **1975 Goa Treaty.**

- ➤ **Strategic Cooperation:** Portugal has **consistently backed India's bid for UNSC permanent membership** and **NSG entry.** It also initiated the **India-EU Summits,** hosting the first in Lisbon in **2000** under PM Vajpayee.
- ➤ **Economic and Trade Relations:** As of 2025, India-Portugal **bilateral trade stands at around USD 1.5 billion**, marking a **50% rise since 2020 (USD 951 million).**
- ➤ **Diaspora Linkages:** Around **1.25 lakh Indians,** including **35,000 nationals and 90,000 persons of Indian origin (PIO)** live in Portugal.
- ➤ **Cultural and Educational Cooperation:** India-Portugal cultural ties include the **Indian Council for Cultural Relations (ICCR)** Chair at the University of Lisbon and release of joint stamps marking 500 years of ties.

Read More: Merger of French and Portuguese Territories

Thar Desert

According to a new study, **the Thar Desert in India has experienced a 38% annual increase in greening** over the past two decades, driven by significant **monsoon rainfall** and agricultural expansion.

- ➤ **Location of Thar Desert (The Great Indian Desert):** It is an **arid region of rolling sand hills** on the Indian subcontinent. It spans an area of 200,000 sq kms across **northwestern India** (Rajasthan, Gujarat, Punjab, and Haryana) and **southeastern Pakistan** (Sindh and Punjab provinces).
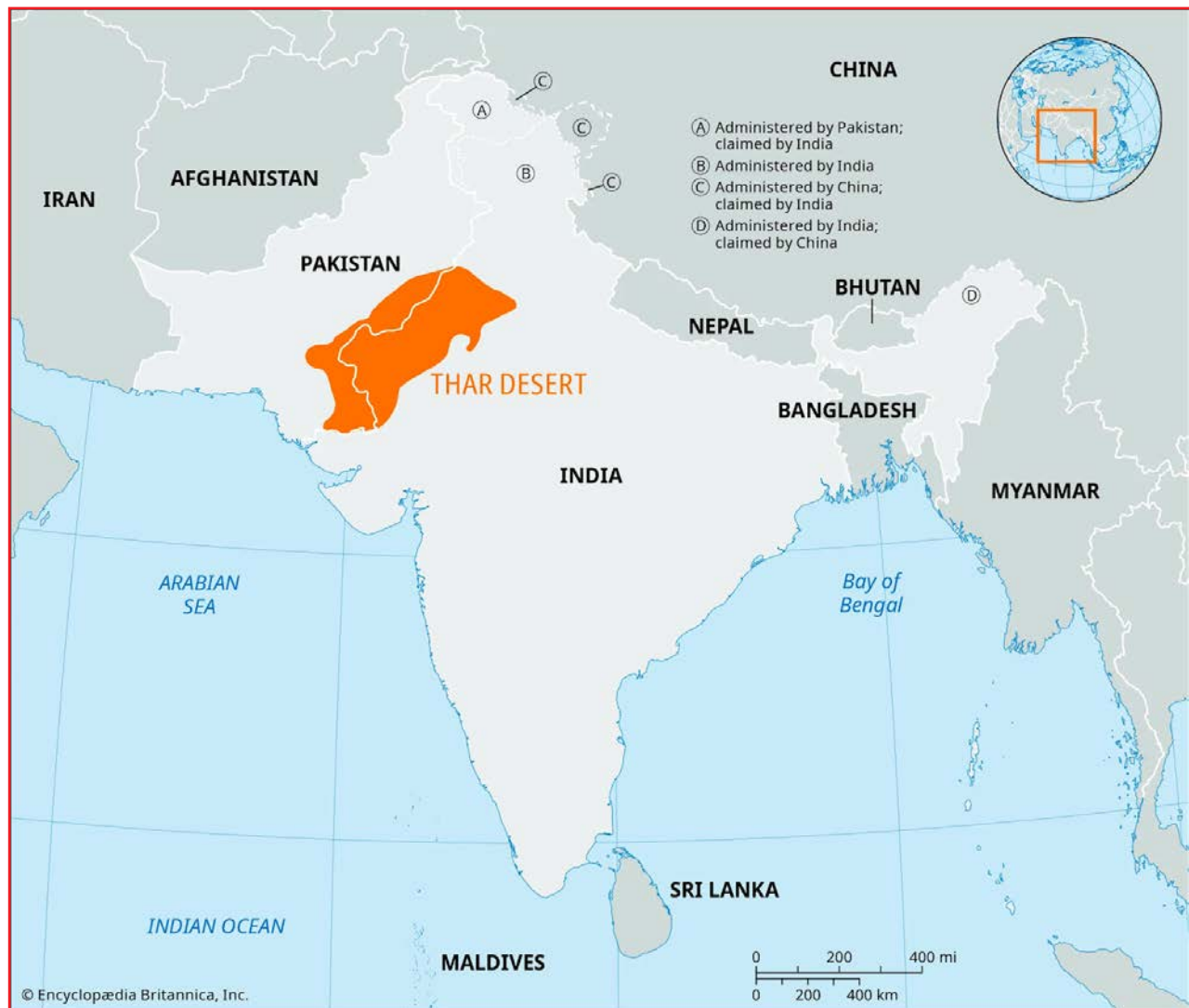
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- **Geography & Climate:** It is bordered by the **Indus River** plain to the west, the Punjab Plain to the north and northeast, the **Aravalli Range** to the southeast, and the **Rann of Kachchh** to the south.
  - The desert **experiences a subtropical desert climate**, characterized by persistent high pressure and subsidence.
- **Soil Composition:** The desert's soils include Desert, Red Desertic, Sierozems, **Red and Yellow**, Saline, Lithosols, and Regosols.
  - These soils are **coarse-textured, well-drained, and calcareous (calcium-bearing)**, supporting specific vegetation and agriculture.
- **Biodiversity:** Supports a relatively rich biodiversity, including **Blue Bull (Nilgai)**, **Blackbuck**, **Great Indian Bustard (GIB)** and **Indian Gazelle (Chinkara).**
  - It is home to **one of the largest national parks in India– Desert National Park** (Rajasthan).
- **Mineral Resources:** The Desert houses **one of the world's largest lignite coal reserves**.
  - It is rich in **gypsum**, and salt (with saltwater lakes– **Sambhar** and **Kuchaman**).
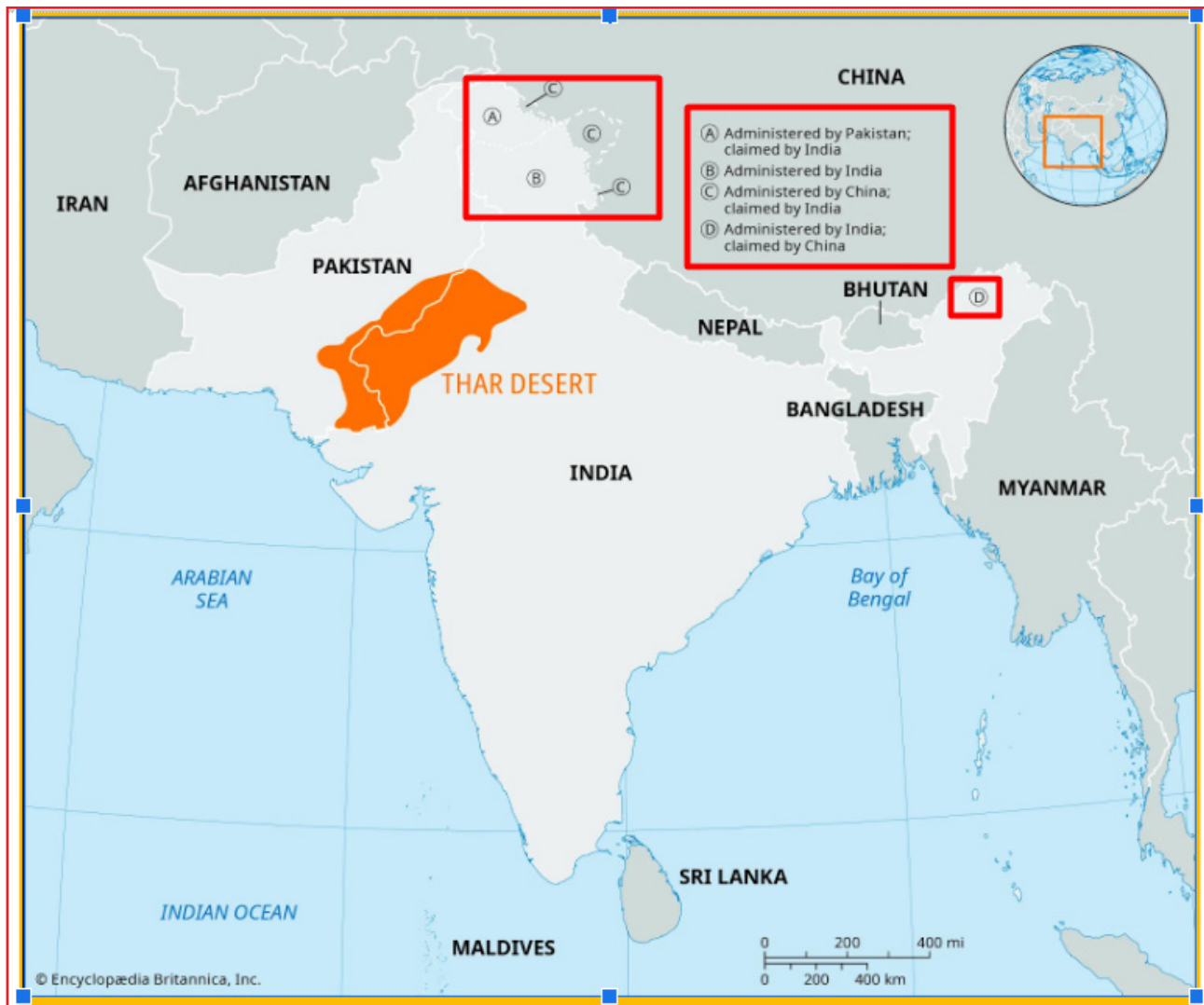
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Read More: Thar Desert

150th Assembly of the Inter-Parliamentary Union

Lok Sabha Speaker along with the **Indian Parliamentary Delegation**, participated in the **150th Assembly of the Inter-Parliamentary Union (IPU)** held in **Tashkent, Uzbekistan**.

Inter-Parliamentary Union (IPU)

➢ **Inter-Parliamentary Union**, founded in **1889**, is the **global organization of national parliaments** promoting **peace through parliamentary diplomacy.**

○ **Headquartered** in **Geneva,** it has **182 Member Parliaments** and **15 Associate Members (2025)**.

○ **Funded primarily by member contributions**, its slogan is: **"For democracy. For everyone."**

➢ **Objective:** Its objective is to **promote democratic governance, dialogue,** and **capacity-building** by empowering parliaments to address public aspirations.

➢ **IPU Assembly:** It is its **principal statutory body, meeting twice a year** to **discuss and adopt resolutions on democracy, human rights, peace, and sustainable development.**

➢ **Key Highlight of 150th IPU:** India emphasized inclusive democracy through the **Nari Shakti Vandan Act,** promoted values like **'Vasudhaiva Kutumbakam',** proposed **regular parliamentary exchanges with Uzbekistan, Israel, and Kazakhstan**, and paid **tribute to former PM Lal Bahadur Shastri** in Tashkent.

**Read More: India-Central Asia Summit, India and Uzbekistan Signed BIT**

Daulatabad Fort

A fire at **Daulatabad Fort** in Maharashtra's Chhatrapati Sambhajinagar district has prompted the **Archaeological Survey of India (ASI)** to initiate damage assessment and plan disaster management.

➢ **Significance:** Originally called **Devgiri (Hill of Gods)**, it was renamed Daulatabad by **Muhammad bin Tughlaq** when he shifted his capital there in the 14th century.

○ It served as the capital of several dynasties including **Yadavas, Tughlaqs, Bahmanis, Nizam Shahis, Mughals**, and briefly the **Marathas** before the **Nizams of Hyderabad**.

○ It is a **UNESCO-nominated heritage site,** known for its historical, architectural, and ecological importance.

➢ **Architectural Brilliance:** Daulatabad Fort is fortified in three layers **Ambarkot, Mahakot, and Kalakot** with moats, bastions, and iron-spiked gates.

○ It features a deadly tunnel called **Andheri,** used to trap and attack invaders.

➢ **Monuments and Structures Within:**

○ **Chand Minar (1435 CE):** Indo-Islamic style victory tower modeled after Qutub Minar.

○ **Bharat Mata Mandir,** located within the fort, was previously the Jama Masjid during **Qutub-ud-din Mubarak's** reign (1318 CE).

○ **Chini Mahal,** a lavish palace turned prison by Aurangzeb.

➢ **Artillery and Cannons:** Fort was equipped with **~288 cannons**, a notable one is **Aurangzeb's Mendha** also called **Qila Shikan (fort-breaker)**, symbolized military power.
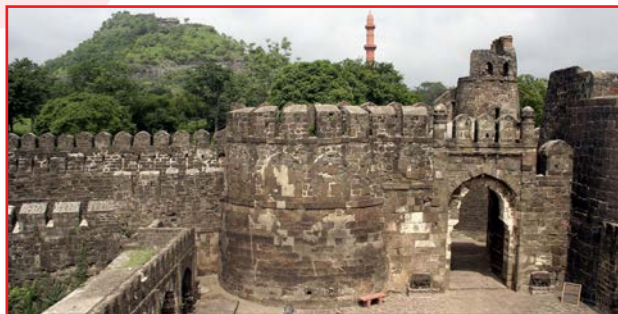
Read more: Gingee Fort Nominated for UNESCO World Heritage Site

India's First-Ever Climate Change Station

India has inaugurated **the Himalayan High Altitude Atmospheric and Climate Research Centre at Nathatop**, Jammu & Kashmir, marking a **major milestone in global climate science**.
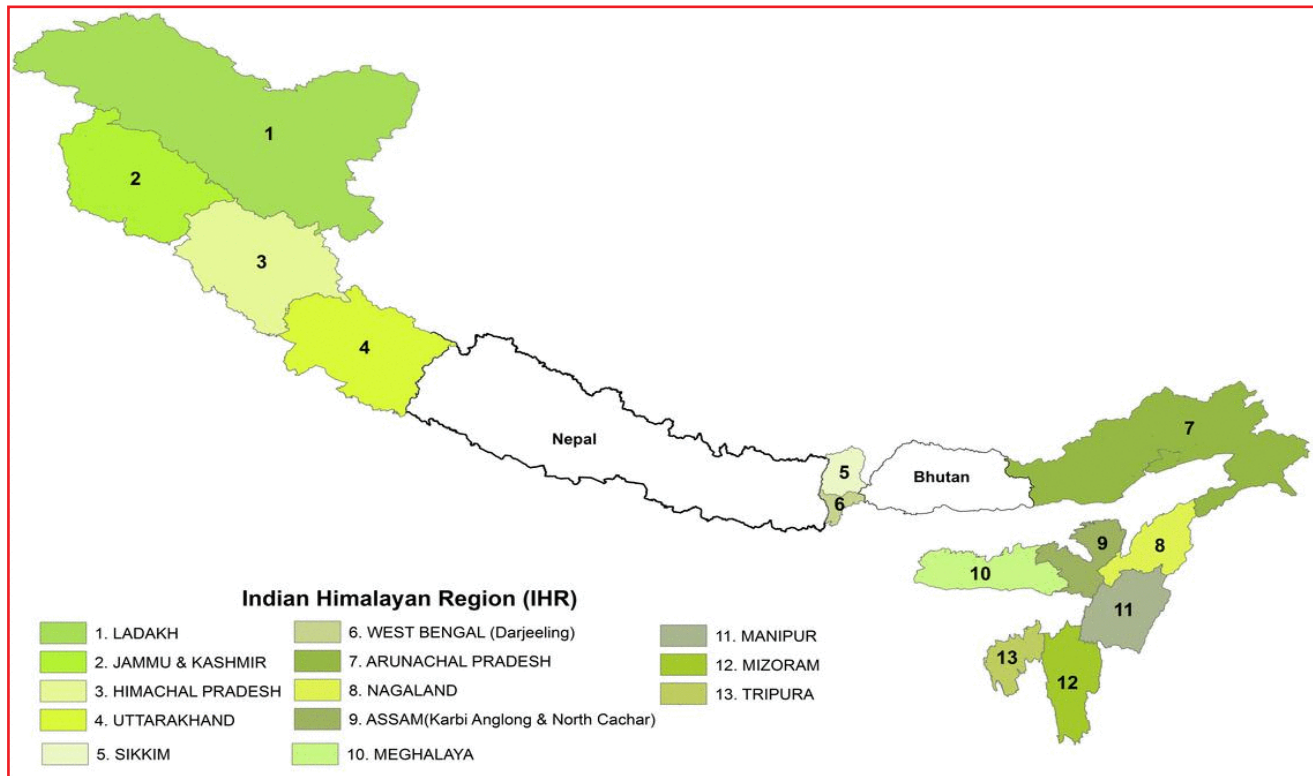
Himalayan High Altitude Atmospheric and Climate Research Centre

➤ **Strategic Location:** The center is located at an altitude of **2,250 meters** above sea level in **Nathatop,** chosen for its **clean air and minimal pollution**.

○ Which makes the center ideal for **high-accuracy atmospheric and climate measurements**.

➤ **Research Domain:** The centre **will facilitate cutting-edge studies on cloud formation**, aerosol interactions, and weather patterns.

➤ **ICE-CRUNCH:** The inauguration marked the launch of the **Indo-Swiss Joint Research Project,** ICE-CRUNCH **(Ice Nucleating Particles and Cloud Condensation Nuclei Properties in the North-Western Himalayas)**.

○ It focuses on understanding **Ice-Nucleating Particles (INPs)** and **cloud condensation nuclei** (tiny suspended particles, either solid/liquid), pivotal to climate modelling and precipitation patterns in the region.

➤ **Significance:** It will **enhance India's leadership in climate science** and support efforts to meet global climate targets, including the **country's commitment to net-zero emissions (by 2070)**.

Indian Himalayan Region (IHR)

1. LADAKH	6. WEST BENGAL (Darjeeling)	11. MANIPUR
2. JAMMU & KASHMIR	7. ARUNACHAL PRADESH	12. MIZORAM
3. HIMACHAL PRADESH	8. NAGALAND	13. TRIPURA
4. UTTARAKHAND	9. ASSAM(Karbi Anglong & North Cachar)	
5. SIKKIM	10. MEGHALAYA	

Read More: Indian Himalayan Region (IHR), Sustaining the Himalayan Ecosystem

Naval Exercise INDRA-2025

The **14th edition** of the **bilateral naval exercise INDRA-2025** between **India and Russia** was conducted in Chennai.

INDRA 2025

➤ It was held in **2 phases**:

○ Harbour Phase in **Chennai**, featuring **expert exchanges, ship visits and sports.**

- ○ Sea Phase in the **Bay of Bengal,** with **advanced drills like tactical manoeuvres**, anti-air operations and helicopter landings.

➢ Russian ships such as **Pechanga, Rezkiy, Aldar Tsydenzhapov,** and Indian warships- **Rana, Kuthar, and the P-8I aircraft** participated in the exercise.

Exercise INDRA

➢ It is a **bilateral naval exercise** conducted regularly **since 2003.**

➢ It aims to **counter maritime threats,** promote global peace and stability, and strengthen joint operations**.**

➢ It reaffirms <u>India-Russia defence ties</u>, enhances **collective maritime security**, and underscores India's commitment to a **rules-based maritime order.**

Other Joint Naval Exercises of India

Exercise	Countries
MALABAR	India, USA, Japan, Australia
Varuna	India, France
La Perouse	India, Australia, United States, France, Japan, and United Kingdom
Sea Dragon	India, USA, Japan, Canada, South Korea
Konkan	India, UK
AIME & IMDEX	India, ASEAN Countries
Bright Star	India, 34 Countries
SALVEX	India, USA
SLINEX	India, Sri Lanka
Samudra Shakti	India, Indonesia
Al-Mohed Al-Hindi	India, Saudi Arabia
India - France - UAE trilateral exercise	India, France, UAE
India - France - UAE trilateral PASSEX	India, France, UAE
KOMODO	India, Multiple (36 Countries)
AUSINDEX	India, Australia
SIMBEX	India, Singapore

Read More: <u>Major Military Exercises of India</u>

India Skills Accelerator

The **Ministry of Skill Development and Entrepreneurship (MSDE),** in collaboration with the **World Economic Forum (WEF),** launched the **India Skills Accelerator (ISA).**

➢ ISA is a national public-private collaboration platform aimed at fostering **cross-sectoral cooperation** to address complex challenges in India's skilling ecosystem, with a focus on **innovation, knowledge sharing, and policy reform.**

➢ It supports India's **demographic dividend** and aims to make **India the Skill Capital of the World.**

  ❍ With **65% of organizations citing skill gaps as a major barrier,** the initiative aims to close these gaps through inclusive **upskilling, reskilling, and aligning education with industry needs.**

➢ **Global Alignment:** The initiative leverages insights from the **WEF's Future of Jobs 2025 report** to maintain competitiveness in the global job market.

Read more: **Future of Jobs Report 2025**

Dire Wolves

A US-based **biotechnology** company (Colossal Biosciences) has claimed to have genetically engineered **wolf pups (Romulus, Remus, and Khaleesi)** with traits resembling the **long-extinct dire wolves (*Aenocyon dirus*).**

Genetically Engineered Wolf Pups:

➢ Scientists used **ancient DNA** from **13,000-72,000-year-old dire wolf fossils** to identify traits like **white coats and thick fur**.

➢ By **comparing dire wolf genomes** with **modern canids (wolves, jackals, foxes)**, they found **99.5% DNA similarity with gray wolves**.

➢ Using **CRISPR,** they **edited 20 gene sites in gray wolf cells, inserted them into domestic dog egg cells**, and **implanted embryos into dog surrogates**.

  ❍ Out of 8 transfers, **3 genetically engineered pups** were born after a 62-day gestation.

  ❍ **Different From Extinct Dire Wolves:**

    ● The gene-edited pups are **not exact genetic replicas of extinct dire wolves.** Despite a **99.5% DNA similarity** with gray wolves, **millions of base pair differences exist.**

    ● This experiment classified the recreated animals as dire wolves using the **morphological species concept- based on physical resemblance, not precise genetic or evolutionary lineage.**

Dire Wolf

➢ They were **large prehistoric canines** that went extinct around **13,000 years ago.**

➢ **Native to southern Canada and the US**, they were **larger than modern gray wolves**, standing **3.5 feet tall, over 6 feet long,** and weighing up to **68 kg**, with **likely white coats**.

➢ They **hunted large prey like bison and horses** and **likely went extinct due to prey depletion and human interference.**
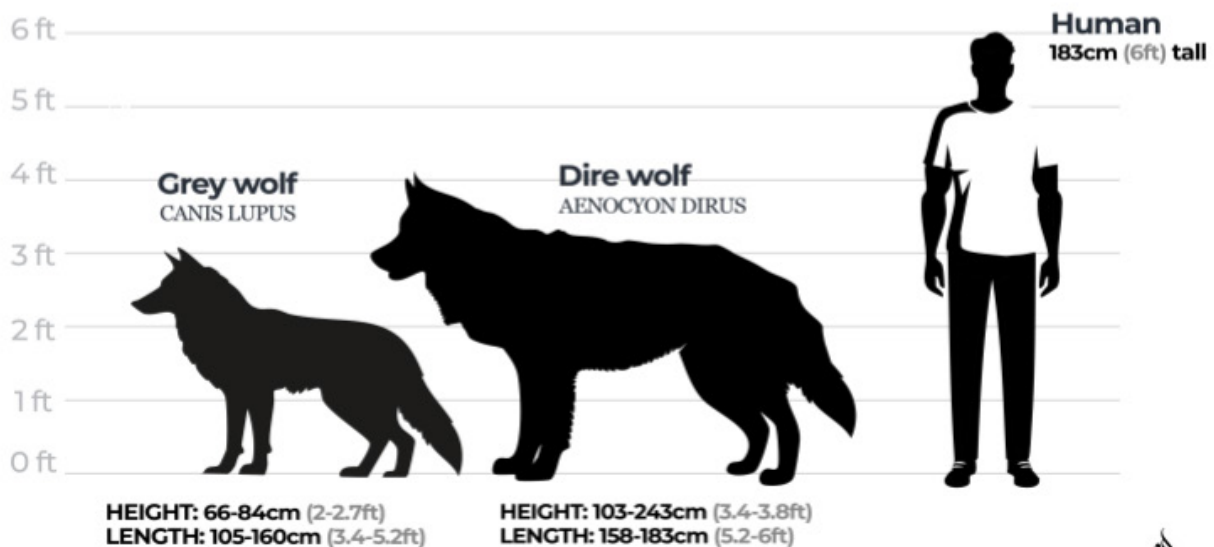
THE RESURRECTION OF THE DIRE WOLF

A Dallas-based laboratory says it has used fossil DNA and gene editing from grey wolves to genetically revive the extinct dire wolf, which became extinct some 12,500 years ago.

AI-GENERATED IMAGE

The resulting cubs, though 99% grey wolf genetically, are seen by some as a resurrection of the dire wolf's phenotype, making them the closest living relative of the extinct species.
The dire wolf gained widespread fame through its appearance in the HBO series Game of Thrones.

Grey wolf CANIS LUPUS

Dire wolf AENOCYON DIRUS

Human 183cm (6ft) tall

HEIGHT: 66-84cm (2-2.7ft)
LENGTH: 105-160cm (3.4-5.2ft)

HEIGHT: 103-243cm (3.4-3.8ft)
LENGTH: 158-183cm (5.2-6ft)

Source: Al Jazeera, Colossal Biosciences | April 8, 2025

@AJLabs ALJAZEERA

Read More: Indian Grey Wolf

Kashmir's Spring Blooms

Kashmir's distinct agroclimatic conditions nurture a wide variety of endemic plants, especially **spring blooms,** which are crucial for the valley's biodiversity and cultural heritage.
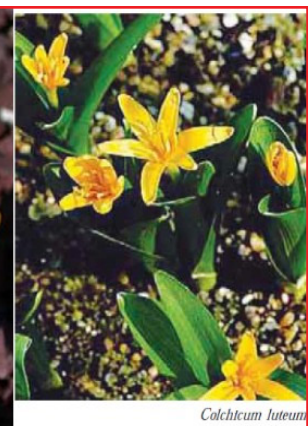
➢ **Distinct Agroclimatic Conditions:** Kashmir's altitudinal variations (1,600m to 4,500m) support diverse spring blooms like *Colchicum luteum* (veer kaum), *Sternbergia vernalis* (goul tour), and *Viburnum grandiflorum* (kulmansh) , thriving due to its harsh winters and mild springs.

➢ **Ecological and Cultural Significance:** These **spring blooms** provide vital ecosystem services by supporting **pollinators essential** for fruit tree pollination.

   ❍ They also have cultural significance, being used medicinally and deeply rooted in Kashmiri folklore.

➢ **Threats:** Unsustainable development, deforestation, and human encroachment threaten these spring blooms.

   ❍ Climate change is altering blooming patterns, causing premature flowering, disrupting **natural seasonal cycles**.

   ❍ Despite their importance, there are no dedicated conservation programs for spring blooms. Current protection comes from national parks like **Salim Ali** and wildlife sanctuaries like **Gulmarg Wildlife Sanctuary**.

Viburnum grandiflorum   Sternbergia vernalis   Colchicum luteum

Read more: Titan Arum Flower

"Blue Category" for Industries

The **Central Pollution Control Board (CPCB)** has introduced a revised classification system for industries, which includes a new **"Blue Category"** for essential environmental services, aiming to incentivize sectors like waste management and biomining.

➢ **Classification Methodology:** The classification is based on the **Pollution Index (PI) by CPCB,** which classifies industries based on their pollution potential, considering air, water, and waste pollutants. The categories include **Red (PI > 80), Orange (55 ≤ PI < 80), Green (PI < 25),** and Blue (for essential environmental services).

➢ **Blue Category:** Covers industries like landfill maintenance, biomining, and waste-to-energy plants. They will receive a **two-year extension for their consent** to operate as an incentive for environmental management.

   ❍ Despite a **high PI (97.6), waste-to-energy plants** are categorized as Blue due to the essential environmental service they provide.

   ❍ CBG (Compressed Biogas) plants, depending on their feedstock, are also eligible for Blue Category status.

➤ **CPCB:** It is a statutory organisation, constituted under the Water (Prevention and Control of Pollution) Act, 1974. Further, CPCB was entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.

  ❍ It provides technical services to the Ministry of Environment, Forests, and Climate Change under the Environment (Protection) Act, 1986.

Pollution Index (PI)	Category of industrial sector
PI ≥ 80	Red
55 ≤ PI < 80	Orange
25 ≤ PI < 55	Green
PI < 25	White

Read more: CPCB's New Guidelines for India's Stone Crusher Sector

Limits on Validity of Foreign Funds

The Ministry of Home Affairs (MHA) has revised its policy on **foreign funds** obtained through the **prior permission route,** limiting the validity to four years, unlike the earlier policy where the funds could be utilized until the entire amount was spent.

➤ **New Order:** Specifies that the validity for receiving foreign contributions will be three years from the approval date, and the utilization window will be four years.

  ❍ For applications already approved, the four-year limit will apply from the date of the new MHA order, even if the approved project timeline exceeds three years.

➤ **Impact of Time Limit:** Non-compliance with the time limit will result in a violation of the **Foreign Contribution (Regulation) Act, 2010 (FCRA),** attracting punitive actions.

➤ **FCRA Prior Permission:** Under the FCRA, entities (Non-Governmental Organisations (NGOs)) that are not registered with the Central Government must obtain prior permission to accept foreign contributions. This permission is specific to the purpose and the source of the funds.

  ❍ Entities must be registered under statutes like the **Societies Registration Act, 1860, Indian Trusts Act, 1882,** or the **Companies Act, 2013.**

    ● A bank account with **State Bank of India, New Delhi,** is mandatory for FCRA transactions.

  ❍ Additionally, the **Chief Functionary of the recipient Indian organization** should not be part of the donor organization, and **75% of governing body members** should not be connected to the foreign donor or its family.

Read more: Foreign Contribution Regulation Act

Bankim Chandra Chattopadhyay

The death anniversary of **Bankim Chandra Chattopadhyay** was observed on **8th April,** remembering his contributions to Indian literature, nationalism, and the cultural awakening of **Bengal** during the 19th century.

➤ **Early Life:** Born on 27th June 1838 in **Naihati, West Bengal,** Bankim was a brilliant student and joined British service after completing his studies.

➤ **Nationalism and Literature:** Through works like *Anandamath* (banned by the British), which narrates the **Sanyasi Rebellion,** Bankim became synonymous with India's struggle for independence.

  ○ The national song of India, <u>**Vande Mataram,**</u> originated from **Bankim's Anandamath,** becoming a symbol of the freedom movement.

➤ **Famous Works: Rajmohan's Wife ((1864)** (first novel in English by an Indian). His novels **Durgeshnandini (1865), Kapalkundala (1866), and Vishabriksha (1873)** addressed social issues like women's rights, child marriage, and caste discrimination.

  ○ Also, his notable religious writings include *Krishna Charitra.*

➤ **Role in the Bengali Renaissance:** Bankim started the literary magazine **Bangadarshan (1872),** which played a key role in fostering **Bengali nationalism.**

  ○ Bankim's vision for Bangadarshan was to bridge the gap between the educated and uneducated classes and promote Bengali identity.

    ● <u>**Rabindranath Tagore,**</u> deeply influenced by **Bangadarshan,** later revived the magazine, making it a platform for nationalist writings.

Read more: <u>**Bankim Chandra Chattopadhyay**</u>

Centrifuge Process of Uranium Enrichment

Uranium Enrichment is used to **increase U-235 concentration to the desired level.**

➤ **Need for Enrichment:** Natural uranium has **99.3% U-238 and 0.7% U-235.** Nuclear **reactors require 3–20% U-235,** while **nuclear weapons** require about **90% U-235.**

  ○ Uranium enriched **beyond 20%** is considered as **highly enriched.**

➤ **Centrifuge Process of Uranium Enrichment:**

  ○ In this method, uranium is first converted into a gas called **uranium hexafluoride (UF_6).**

    ● UF_6 is the **only gaseous** form of uranium suitable for centrifuge separation.

  ○ Uranium has two main isotopes **U-238 (heavier)** and **U-235 (lighter and used in nuclear reactors/ weapons),** having a **small mass difference of 1.27%.**

  ○ When the UF_6 gas is spun at **very high speeds (around 50,000 rpm)** inside a centrifuge, the **heavier U-238 moves to the outer edge,** and the **lighter U-235 stays closer to the centre.**

    ● This process is **repeated across many centrifuges,** gradually **increasing the U-235 concentration** in the final product.
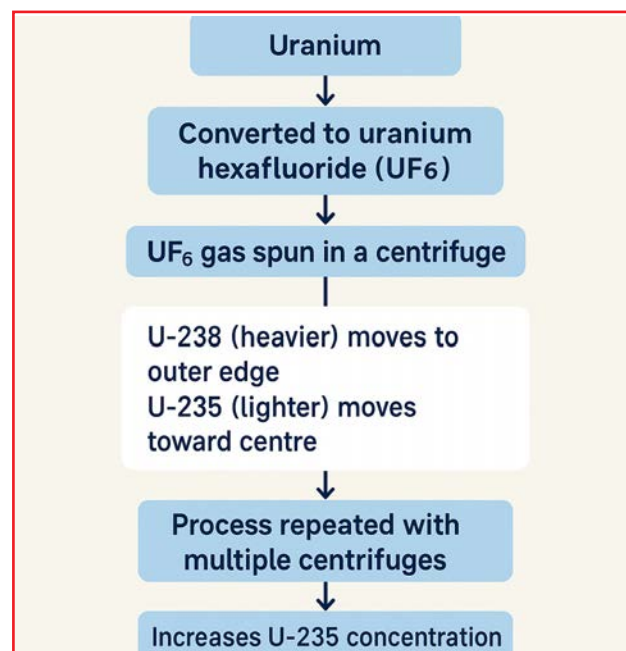
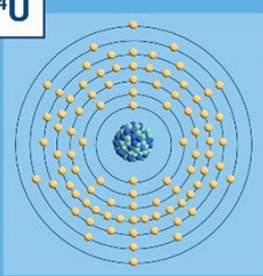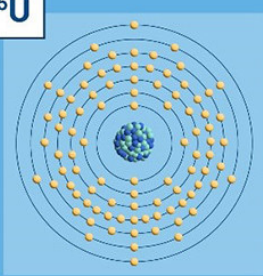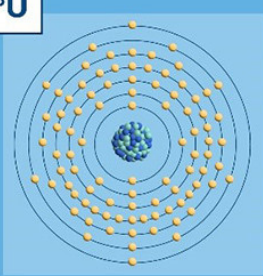➢ **Centrifuge Design:**

○ The centrifuge has a **rotor chamber** made from **strong, lightweight material (like carbon fibre)** to withstand **extreme speeds and force**s without breaking.

Read More: **India's Nuclear Programme**

Mahabodhi Temple

Buddhist monks under **the All India Buddhist Forum (AIBF)** have launched protests at **Bodh Gaya's Mahabodhi Temple (Mahavihara)** demanding the repeal of the **Bodh Gaya Temple Act (BTA), 1949.**

➢ **Provisions of the Act under Spotlight:**

○ The BTA created an **eight-member management committee** with **equal representation from Hindus and Buddhists**.

● It appointed the **district magistrate as the ex-officio chairperson.**

○ Since the district magistrate has traditionally belonged to the Hindu majority, this led to a **functional Hindu majority in the committee.**

● Buddhist bodies have long **demanded full control over the Mahabodhi Temple.**

➢ **Mahabodi Temple:**

○ **Emperor Ashoka** worshiped at the Bodhi tree and **built the Mahabodhi Temple in the 3rd century BCE.**

● The temple remained a Buddhist site through **the Pala period** and was visited by **Chinese traveler Hiuen Tsang in 629 AD.**

● Following **Bakhtiyar Khilji's invasion** in the 13th century, Buddhism declined in the region.

- The present Temple dates to **5th–6th century CE (Late Gupta period);** made entirely of brick.
  - **In 1590, a Hindu monk** established the **Bodh Gaya mutt**, bringing the temple under Hindu control.
  - After Independence, **the BTA (1949) transferred** control from the Hindu head to **a shared management committee.**
- **Architectural Features:** Shikhara,Vajrasana (Diamond Throne), Chaitya niches, amalaka, kalasha, Sculpted balustrades, Buddha images, votive stupas.
- **Seven Sacred Sites** include **Animeshlochan Chaitya, Ratnachakrama, Lotus Pond, Ajapala Nigrodh Tree, Ratnaghar Chaitya** etc., marking Buddha's 7 weeks after Enlightenment.

Read More: **[Buddhism's Global Legacy](#)**

Fluoride Contamination

Excess **Fluoride** in Sonbhadra's groundwater (Uttar Pradesh), has triggered a growing public health crisis.

➤ **Fluoride:** It is a highly reactive element that does not occur in elemental form in nature.
- It makes up **0.3 g/kg of the Earth's crust** and is found as fluoride (oxidation state -1) in minerals like fluorspar, cryolite, and fluorapatite.

➤ **Major Uses:** Widely used in aluminium production, and as **fluxes in steel and glass fibre industries.** They are also released during the manufacture of phosphate fertilizers, bricks, tiles, and ceramics.
- Compounds like fluorosilicic acid, sodium hexafluorosilicate, and sodium fluoride are used in **municipal water fluoridation.**

➢ **Health Impacts:** Fluoride has a dual impact, it is beneficial in small amounts **(prevents dental caries),** but harmful in excess (causes **dental fluorosis** (mottling of teeth enamel, mainly in children) and **skeletal fluorosis** (bone/joint issues)).

  ❍ As per the <u>**Bureau of Indian Standards,**</u> the safe fluoride level in water is 1 to 1.5 mg/L (milligrams per liter), levels above this are considered hazardous to health.
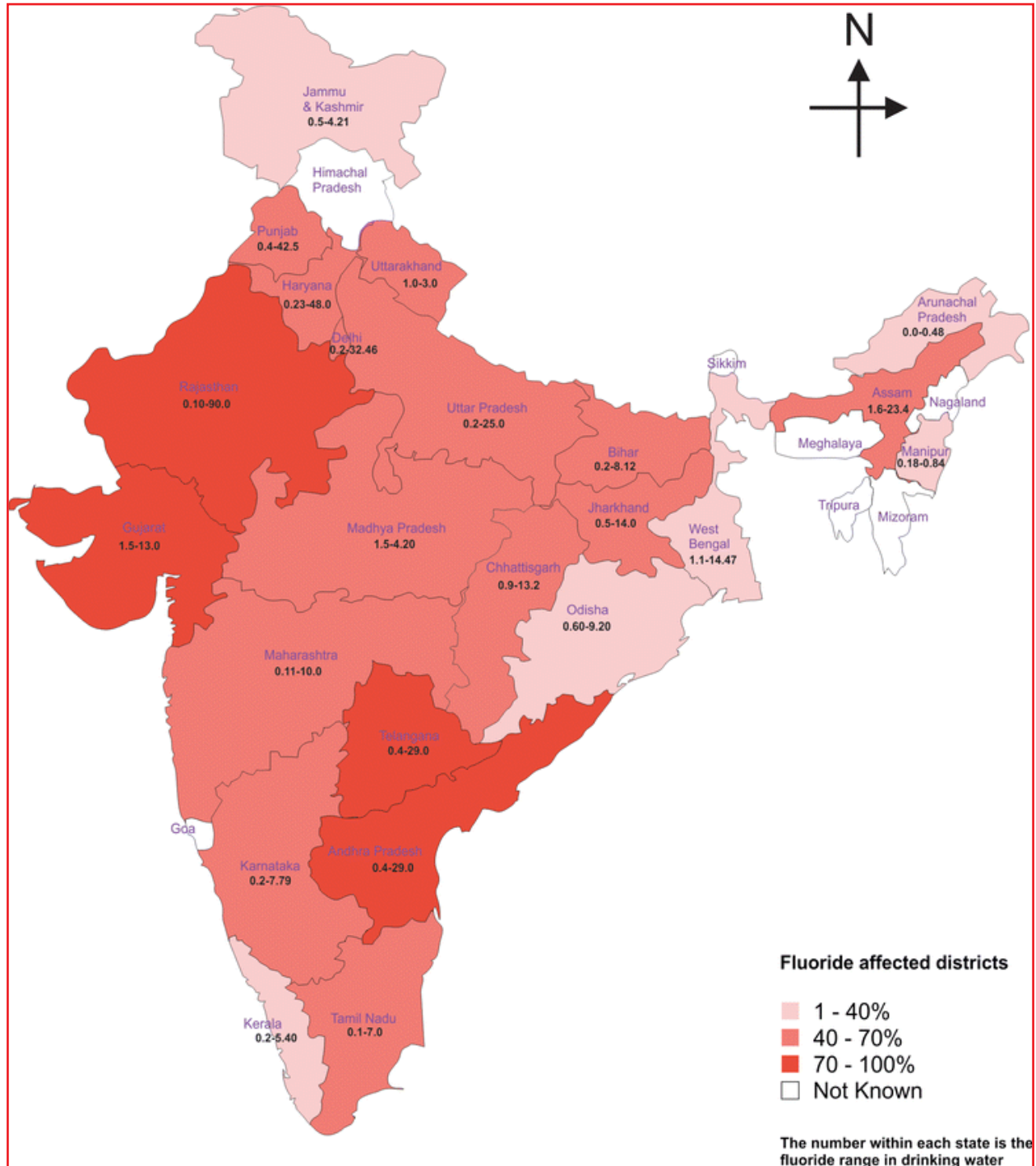
Fluoride affected districts

- 1 - 40%
- 40 - 70%
- 70 - 100%
- Not Known

The number within each state is the fluoride range in drinking water

➢ **Schemes for Fluoride Control in India:** India launched the **National Programme for Prevention and Control of Fluorosis (NPPCF)** during the 11th Five Year Plan. Additionally, the **Jal Jeevan Mission** aims to ensure safe drinking water.

Read more: Fluoride & Iron Removal technology of CMERI

Pipalapanka Dam Threat to Rushikulya River

The Odisha government's revived plan to build a dam at **Pipalapanka** has sparked protests, as locals and environmentalists accuse it of endangering the **Rushikulya river** to favour industries.

➢ **Rushikulya River:**
   ○ The Rushikulya River is a **major river in Odisha**, flowing primarily through the **Kandhamal, Ganjam, and Boudh districts.**
   ○ Rushimala Hills part of the Daringbadi hills of the **Eastern Ghats** range.
      ● Daringbadi, where the river originates, is called the ' Kashmir of Odisha '
      ● Rushikulya River does **not form a delta at its mouth.**
   ○ **Tributaries** such as **Jarau, Badanadi, Baghua, Dhanei, and Ghodahada** once ensured perennial flow but are now weakened due to damming.
      ● Activists warn that **illegal sand mining** and **industrial projects** have further endangered the river's health.
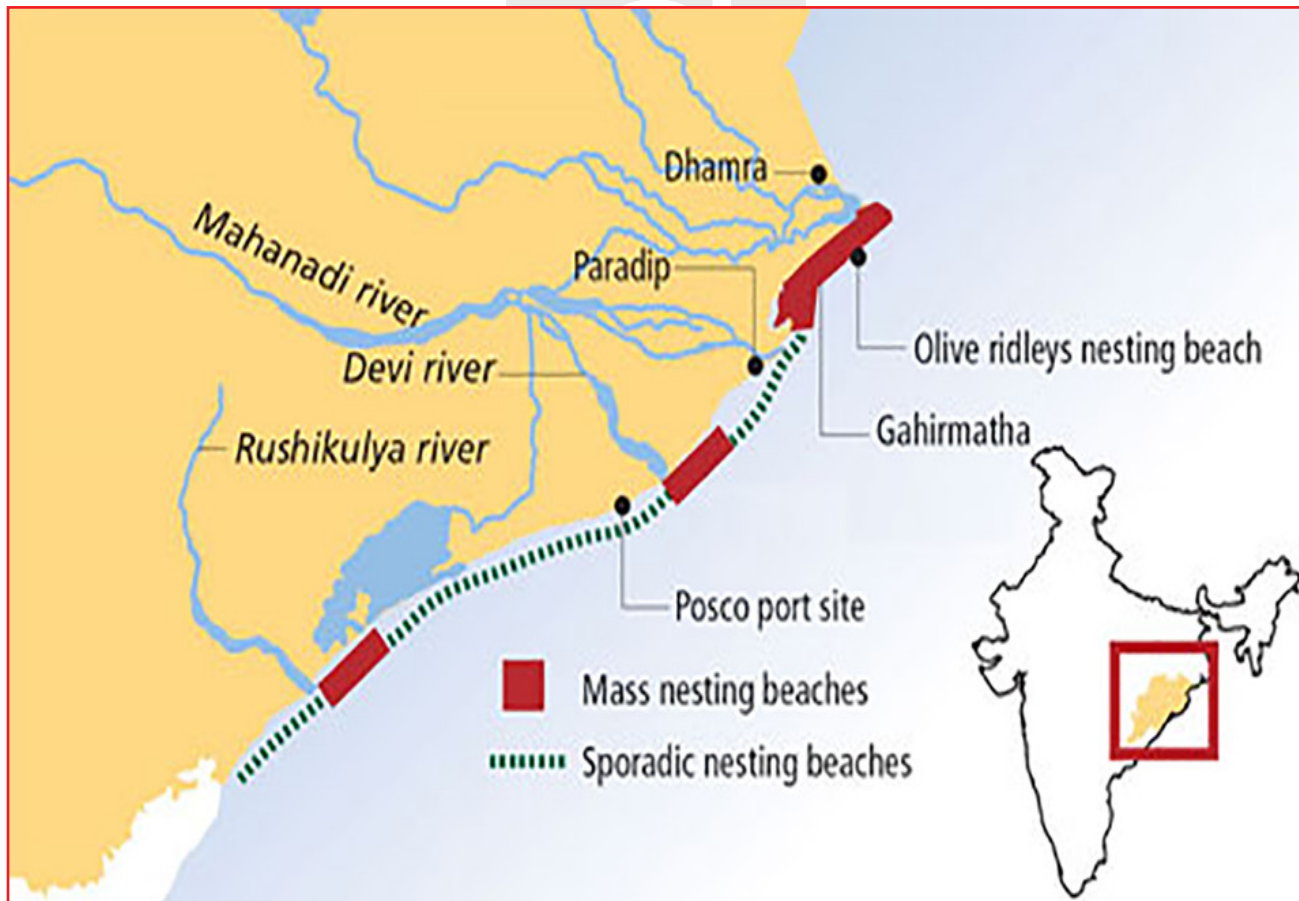
- ➢ **Olive Ridley Turtle Nesting Site:**
  - ❍ At the river's mouth lies Rushikulya Beach, a globally important site for **Olive Ridley Turtle** nesting.
    - ● Each year, from January to March, thousands of turtles arrive for mass nesting — a phenomenon known as **Arribada.**
  - ❍ Activists fear that the dam would exacerbate salinity intrusion from the Bay of Bengal and reduce fish yield due to freshwater depletion.
    - ● Climate change-induced rising temperatures are skewing Olive Ridley turtle sex ratios, producing more females and endangering species survival.
- **Read More: Olive Ridley Turtles**

Diego Garcia & Chagos Islands

The US has deployed six B-2 stealth bombers to **Diego Garcia** amid rising tensions with Iran.

- ➢ Located in the **Indian Ocean,** Diego Garcia is the **only major US base in the region,** enabling **strategic power projection** across Asia, Africa, and the Middle East.

Chagos Archipelago and Diego Garcia

- ➢ **Chagos Archipelago:**
  - ❍ **Location:** It is situated **500 km south of the Maldives** in the **Indian Ocean,** and consists of **58 islands.**
  - ❍ **History:** It was inhabited in the late 18th century when the **French brought enslaved African and Indian laborers** to work on **coconut plantations.**
    - ● Under the **1814 Treaty of Paris,** France ceded the **Chagos Archipelago, along with Mauritius, to Britain,** marking the beginning of **British control over the region.**
    - ● In **1965**, Britain **detached** the **Chagos Islands from Mauritius** to create the **British Indian Ocean Territory (BIOT)**, compensating Mauritius with a 3 million-pound grant.
      - ■ **Creole-speaking Chagossians** were the **original inhabitants** who were **forcibly displaced in the 1960s–70s** to set up a **US military base on Diego Garcia.**
    - ● Despite Mauritius gaining independence in 1968, the **Chagos Archipelago remained under British control.**
- ➢ **Diego Garcia:**
  - ❍ It is **coral atoll** and the **largest island of the Chagos Archipelago**, located **7° south of the equator**. It was **leased to the US and UK in 1967** and became a **military base in 1986.**
  - ❍ In 2024, the **UK agreed to transfer sovereignty of the Chagos Islands to Mauritius** while retaining **control of the military base on Diego Garcia** under a **99-year lease**.
    - ● This followed the 2019 **International Court of Justice (ICJ)** ruling supporting **Mauritius' sovereignty claims.**
  - ❍ It played a significant role in the **Gulf War, Iraq and Afghanistan wars,** and **post-9/11 operations-** highlighting the Indo-Pacific's strategic importance.

INDIA

Lakshadweep

SRI LANKA

INDIAN OCEAN

MALDIVES

Chagos Islands

Read More: Chagos Archipelago and Diego Garcia Island

NITI NCAER States Economic Forum Portal

The **Union Finance Ministe**r launched the **"NITI NCAER States Economic Forum" portal**, developed by **NITI Aayog** in collaboration with the **National Council of Applied Economic Research (NCAER).**

➢ **About NITI NCAER States Economic Forum Portal:** The portal is a **comprehensive repository of 30 years (1990–91 to 2022–23) of data on Indian states**, covering demography, economy, fiscal indicators, health, education, and expert research on state finances.

➢ **4 Main Components of the Portal:**

  ❍ **State Reports**: It summarizes the **macro and fiscal landscape of 28 States,** highlighting indicators in demography, economic structure, socio-economic, and fiscal areas.

  ❍ **Data Repository:** Offers **direct access to a comprehensive database categorized under five key verticals** — Demography, Economic Structure, Fiscal Indicators, Health, and Education.

  ❍ **State Fiscal and Economic Dashboard**: Provides **graphical representations** of key economic variables and **quick access to raw data and summary tables.**

  ❍ **Research and Commentary**: It offers extensive **research on State finances** and **critical aspects of fiscal policy** and financial management at the State and national levels.

➢ **Significance of the Portal:**

  ❍ **User-Friendly & Comparative Tool**: Enables **benchmarking of states** against each other and the national average.

  ❍ **Aid for Policymaking**: Supports evidence-based policymaking through **historical trends** and **real-time analytics**.

  ❍ **One-Stop Research Hub**: Acts as a **centralized platform** for scholars, policymakers, and stakeholders to access long-term data in a consolidated manner.

Read More: Forging the Future of Federalism in India

Euphaea wayanadensi

A new damselfly species, *Euphaea wayanadensis,* has been discovered in Kerala's **Wayanad region of the Western Ghats**, marking an important addition to India's **biodiversity records**.

➢ **Scientific Significance**: The species is **Kerala's 191st *odonate* species** and the **223rd recorded species** in the Western Ghats.

➢ **Unique Characteristics**: Longer black patch on hind wings, especially in males, setting it apart visually.

  ❍ Broader and uninterrupted humeral and antehumeral stripes in the thorax region of males, which are key taxonomic identifiers.

➢ **Habitat Preferences**: The species prefers **fast-flowing rocky streams** with **aquatic vegetation** in areas surrounded by **evergreen and semi-evergreen forests**.

  ❍ Observed year-round except in the **dry season (March–April)**, it has a **highly restricted distribution**, necessitating **conservation measures**.

Western Ghats

One of the four biodiversity hotspots of India; recognised as a UNESCO WHS (2012)

Rivers (originating)
- West-flowing: Periyar, Bharathappuzha, Netravati, Sharavathi, Mandovi
- East-flowing: Godavari, Krishna, Kaveri, Tunga, Bhadra, Bhima, Malaprabha, Ghataprabha, Hemavathi, Kabini

Endemic Species
- Nilgiri tahr (IUCN Status - EN)
- Lion-tailed macaque (IUCN Status - EN)

Imp Protected Areas
- Biosphere Reserves - Agasthyamala and Nilgiri
- NP - Silent Valley, Bandipur, Eravikulam, Wayanad-Mudumalai, Nagarhole
- TR - Kalakad-Mundanthurai, Periyar

Imp Passes
- Thal Ghat Pass (Kasara Ghat)
- Bhor Ghat Pass
- Palakkad Gap (Pal Ghat)
- Amba Ghat Pass
- Naneghat Pass
- Amboli Ghat Pass

Significance
- Hydroelectricity production
- Influences Indian monsoon weather patterns
- Carbon sequestration (neutralise ~4 MT of carbon every year)
- One of the 8 global hottest hotspots of biodiversity (due to richness in species and endemism)
- Rich in iron, manganese and bauxite ores, timber, pepper, cardamom, oil palm and rubber
- Sizeable indigenous population (including PVTGs)
- Important tourism/pilgrimage centres

Major Threats
- Mining, Industrialisation
- Massive extraction of forest produce
- Human-wildlife conflict, encroachment, illegal hunting
- Livestock grazing, deforestation
- Large hydropower projects
- Climate change

Imp Committees
- Gadgil Committee (2011) (Western Ghats Ecology Expert Panel)
  - Recommendation: All of WG be declared as Ecological Sensitive Area (ESA) with only limited development allowed in graded zones.
- Kasturirangan Committee (2013)
  - Recommendation: Instead of whole, only 37% of the total area of WG be brought under ESA + complete ban on mining, quarrying and sand mining be imposed in ESA.

Names
- Sahyadri – northern Maharashtra; Sahya Parvatham – Kerala

Diverted views about Mt. type
- View 1: Block Mt. formed due to down warping of a part of land into Arabian Sea
- View 2: Not true mt. rather the faulted edge of Deccan Plateau

Major Rocks
- Basalt, granite gneiss, khondalites, metamorphic gneisses, crystalline limestone, iron ore

Geographical Extent
- Satpura (in north) to the end of TN at Kanyakumari (in south)

Mt. Ranges
- Niligiri ranges, Shevaroys and Tirumala range
- Highest peak – Anamudi (Kerala)

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Read more: Platygomphus Benritarum

Chandrayaan's ChaSTE

India's **Chandrayaan-3 mission's** ChaSTE (Chandra's Surface Thermophysical Experiment) became the first-ever instrument to successfully measure **subsurface temperature near the Moon's south pole.**

➤ ChaSTE was deployed by the **Vikram lander** after Chandrayaan-3's successful lunar landing in **August 2023.**
- ○ The **ChaSTE probe features 10 temperature sensors spaced 1 cm apart** along its needle, with a **rotation-based deployment mechanism**, rather than a hammering one.

○ The probe successfully **descended up to 10 cm** into the lunar surface and **collected thermal data until September, 2023**.

○ The **data suggested the presence of more water ice** near the south pole than previously estimated, a crucial discovery for future lunar missions.

○ **ChaSTE's success was attributed to its rotating probe mechanism**, which proved more effective than the hammering technique used by earlier missions.

CHANDRAYAAN 3

India's 3rd lunar mission; a successful attempt at achieving a soft landing on lunar south

BRIEF HISTORY

Lunar Mission	Aim	Launch Vehicle	Success
Chandrayaan 1 (2008)	Create a 3D atlas of moon & Mineralogical mapping	PSLV ~ C11	Detection of water and hydroxyl on lunar surface
Chandrayaan 2 (2019)	Exploring lunar south pole	GSLV MkIII-M1	Lander and rover crashed but orbiter successfully collected data

COMPONENTS

- Lander - **Vikram**; Rover - **Pragyan** (same as Chandrayaan 2)
  ▸ Both designed to last for 14 days; not supposed to come back to the earth
- Spectro-polarimetry of Habitable Planet Earth **(SHAPE)**
  ▸ An experimental payload in propulsion module
  ▸ Study spectro-polarimetric signatures of Earth (near-infrared wavelength range)

ASPECTS TO STUDY

- Lunar quakes
- Thermal properties of lunar surface
- Changes in plasma near the surface
- Accurately measuring distance b/w Earth and the moon

MISSION LIFE

- 1 lunar day (~14 Earth days)

LAUNCH VEHICLE

- LVM3 - M4

India became the 1st country to successfully land on Lunar south pole and 4th to achieve soft-landing on Lunar surface (after US, Russia and China)

Why Chandrayaan 3 Succeeded?

- A "failure-based design", unlike the "success-based design" of Chandrayaan-2
  ▸ Even if all the sensors failed and engines stopped, **Vikram was sure to make the landing**
  ▸ Provision of **multiple attempts** for landing if attempt 1 failed
- Developed accordingly to **rule out the scenario of crash landing**
  ▸ Expanded landing area for more flexibility to land safely
  ▸ Equipped with more fuel to enable longer-distance travel

Importance of Lunar South Pole

- Vastly different, more **challenging terrain** compared to lunar equatorial region
- Potential repositories of valuable **information about early Solar System**
- Impact **future deep space exploration** significantly
- **Water may be concentrated** in the moon's southern hemisphere

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➢ **Previous Missions: ESA's Philae lander (2014)** couldn't deploy the MUPUS (Multi-Purpose Sensors for Surface and Subsurface Science) thermal probe due to an awkward landing on comet 67P.

  ❍ **NASA's InSight (2018) on Mars** also failed to gather subsurface data due to mechanical issues with the Heat Flow and Physical Properties Package (HP3) instrument.

Read more: Chandrayaan-3 Successfully Lands on Moon's South Pole

Denmark Reaffirms Greenland's Sovereignty

Recently, **Denmark's Prime Minister** dismissed U.S. suggestions regarding the annexation of Greenland, emphasizing that such **actions are unacceptable** even when justified on the grounds of national security.

➢ Greenland holds strategic significance for the U.S. due to the **Pituffik Space Base**, vital for **missile defense** and positioned along the **shortest route between North America and Europe.**

➢ **Greenland's rich mineral resources**, including **rare earth minerals,** attract US interest.

➢ **Greenland:** It is the **world's largest island**, lying in the **North Atlantic Ocean,** between **North America** and **Europe**.

  ❍ It features major mountain ranges like the **Watkins Range and Stauning Alps**, and rivers such as **Borglum, and Majorqaq**.

  ❍ It has an **Arctic climate** with **over 80% ice cover (up to 4 km thick),** harsh **winters (-50°C)**, **short summers (10–15°C)**, and **2 months of continuous daylight.**

  ❍ It functions as an **autonomous territory** under the **Kingdom of Denmark**, with **self-government and its own Parliament (***Inatsisartut***).**

Read More: US Territorial Acquisitions and Interest in Greenland

Audible Enclaves and PAL Technology

Sound waves are **longitudinal,** propagating through **compression and rarefaction**, but they also spread due to **diffraction**, leading to **dispersion** (which **increases with frequency**), making **precise sound delivery** to a **specific individual difficult in noisy environments.**

- ➢ However, **audible enclaves** and **parametric array loudspeakers (PAL)** solve this by focusing sound into **narrow beams, ensuring only the intended listener hears it.**
- ➢ **Audible Enclaves (AE):**
- ➢ These are **focused pockets of sound** created using **2 high-frequency waves** that are individually inaudible but produce **audible sound at specific locations** through **nonlinear interactions**.
  - ○ This ensures **precision sound delivery** without external disturbance, enhancing **privacy and customization**.
- ➢ **PAL:** PAL uses **high-frequency ultrasonic waves modulated with an audio signal** to create a **highly directional sound beam**, ensuring only targeted listeners hear the audio.
  - ○ By **self-demodulating** in the air, they generate focused sound while preventing unwanted dispersion.
- ➢ **Applications of PAL and AE: PAL** and **AE** find applications in **museums, retail, public announcements,** immersive entertainment, assistive technology, and **security, offering precise audio** without disturbing surrounding areas.

Devaraya I and Vijayanagara Empire

Rare **15th-century copper plates** from **Devaraya I's** coronation were unveiled in Bengaluru, providing key historical details on the **Sangama Dynasty** and **Vijayanagara Empire.**

- ➢ **Key Features of the Plates:**
  - ○ Dated to **Saka 1328 (1406 CE)**, these copper plates from the **reign of Devaraya I (1406–1422)** are inscribed in **Sanskrit, Kannada, and Nāgarī scripts,** and feature a **Vamana seal instead of** the traditional **Varaha emblem** of the Vijayanagara Empire
    - Plates also trace the **Sangama Dynasty's lineage** from Chandra, Yadu, Sangama, and his five sons **including Harihara and Bukka.**
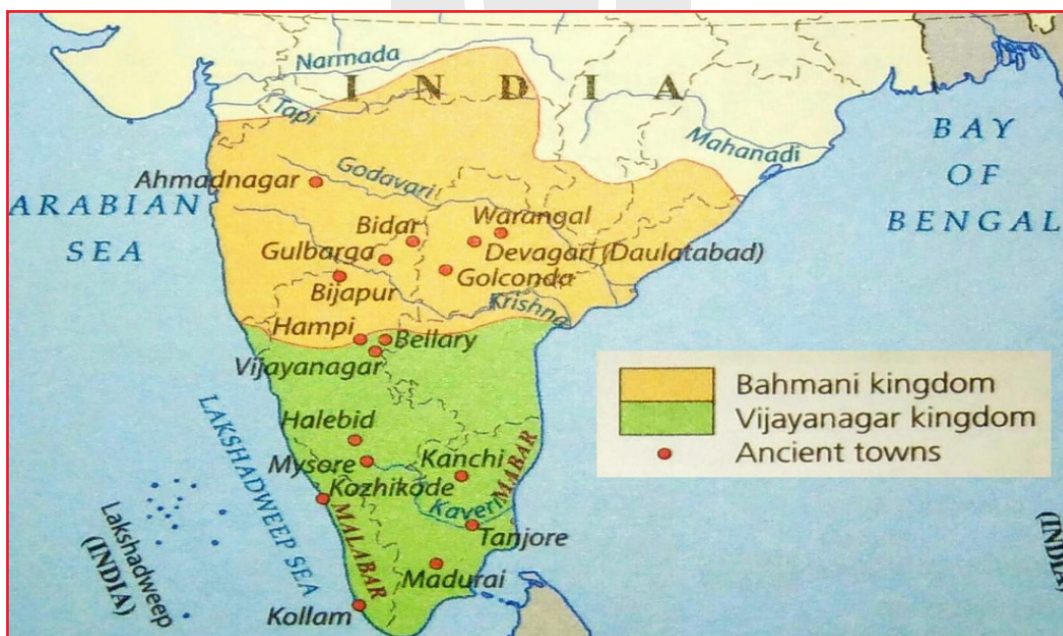
  - ○ Issued during the **coronation of King Devaraya I (son of Harihara),** the copper plates also **confirm the previously unverified date of his coronation.**
    - It also **records the land grant** named as *Devarāyapura-agrahāra.*
- ➢ **Sangama Dynasty:** The Dynasty **founded the Vijayanagara Empire** and ruled from 1336 to 1485 CE, with **Hampi as its capital.**

- ❍ **Devaraya I** was a prominent ruler of the **Dynasty,** other being **Harihara I**, **Harihara II** and **Devaraya II.**
  - ❍ **Italian traveller Nicolo Conti** visited the court of Devaraya I.
- ➢ **Vijayanagara Empire:** The Empire **(1336–1646)**, founded by **Harihara I and Bukka Raya I**, was ruled by **4 dynasties-Sangama, Saluva, Tuluva** and **Aravidu.**
  - ❍ The **Battle of Talikota (1565)** led to a decisive **defeat of the Vijayanagara Empire** by the **Deccan Sultanates,** leading to its decline.
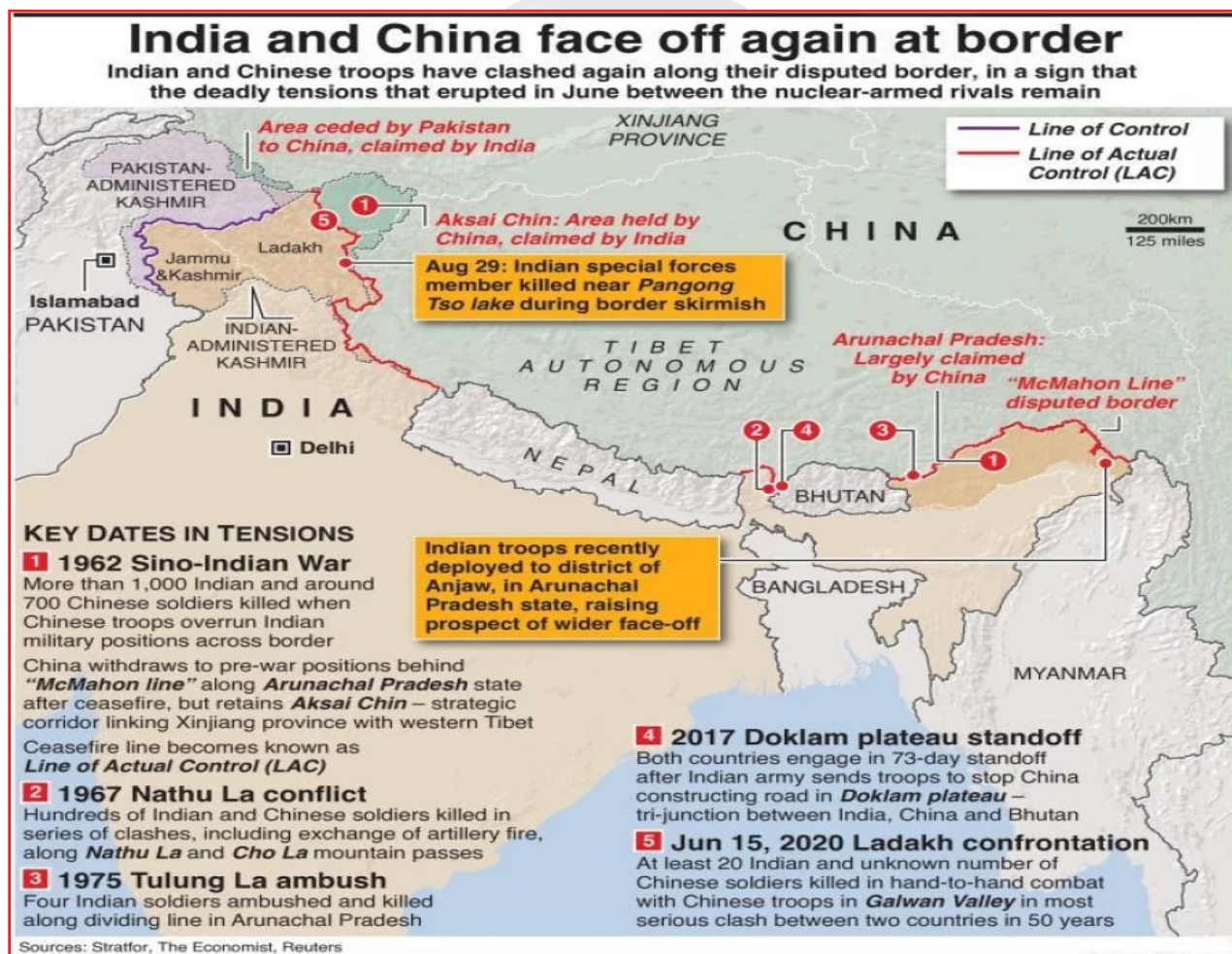 - **Read More:** **Copper Plates Discovered from Vijayanagara Kingdom, Vijayanagar King Krishnadevaraya**

75 Years of India-China Relations

On **1st April 2025**, **India and China** marked **75 years of diplomatic ties**, established on **1st April 1950.**

- ➢ The Chinese President described India-China ties as a **"Dragon-Elephant Tango"**, symbolizing **coexistence, shared growth** over rivalry.

75 Years of India-China Diplomacy

- ➢ **India-China relations** have evolved from **ancient cultural and trade exchanges,** including the spread of **Buddhism via the Silk Road,** to **post-independence (1950s)** symbolised by the **"Hindi-Chini Bhai-Bhai" spirit.**

India and China face off again at border

Indian and Chinese troops have clashed again along their disputed border, in a sign that the deadly tensions that erupted in June between the nuclear-armed rivals remain

Area ceded by Pakistan to China, claimed by India

XINJIANG PROVINCE

Line of Control
Line of Actual Control (LAC)

PAKISTAN-ADMINISTERED KASHMIR

Aksai Chin: Area held by China, claimed by India

CHINA

200km / 125 miles

Islamabad PAKISTAN

Jammu & Kashmir   Ladakh

Aug 29: Indian special forces member killed near *Pangong Tso lake* during border skirmish

INDIAN-ADMINISTERED KASHMIR

TIBET AUTONOMOUS REGION

Arunachal Pradesh: Largely claimed by China

"McMahon Line" disputed border

INDIA

◼ Delhi

NEPAL

BHUTAN

KEY DATES IN TENSIONS

1 1962 Sino-Indian War
More than 1,000 Indian and around 700 Chinese soldiers killed when Chinese troops overrun Indian military positions across border

China withdraws to pre-war positions behind *"McMahon line"* along *Arunachal Pradesh* state after ceasefire, but retains *Aksai Chin* — strategic corridor linking Xinjiang province with western Tibet

Ceasefire line becomes known as *Line of Actual Control (LAC)*

2 1967 Nathu La conflict
Hundreds of Indian and Chinese soldiers killed in series of clashes, including exchange of artillery fire, along *Nathu La* and *Cho La* mountain passes

3 1975 Tulung La ambush
Four Indian soldiers ambushed and killed along dividing line in Arunachal Pradesh

Indian troops recently deployed to district of *Anjaw,* in Arunachal Pradesh state, raising prospect of wider face-off

BANGLADESH

MYANMAR

4 2017 Doklam plateau standoff
Both countries engage in 73-day standoff after Indian army sends troops to stop China constructing road in *Doklam plateau* — tri-junction between India, China and Bhutan

5 Jun 15, 2020 Ladakh confrontation
At least 20 Indian and unknown number of Chinese soldiers killed in hand-to-hand combat with Chinese troops in *Galwan Valley* in most serious clash between two countries in 50 years

Sources: Stratfor, The Economist, Reuters

- The **Sino-Indian War (1962)** led to a diplomatic freeze, but ties **normalized in the 1980s–2000s** through **1993 Agreement on Peace and Tranquility**, **1996 Agreement on Military Confidence Building Measures (CBMs)** and growing trade.
- India and China maintain robust **economic ties**, with bilateral trade reaching **USD 118.4 billion in 2023–24**, and **investments** of over **USD 3.5 billion in Indian unicorns**.
- **Cultural ties** are reinforced through **academic exchanges**, and events like **Tagore's centenary seminar in 2025.**
- Multilaterally, they collaborate in **BRICS**, **SCO**, **G-20** and support initiatives like the **International Solar Alliance (ISA).**
- Key issues include the **undefined 3,488 km LAC** causing **frequent clashes such as Doklam (2017)** and **Galwan (2020) and strategic concerns** over **China's BRI** and **CPEC** through **PoK**.

Read More: India-China Relations: Crossroads & the Road Ahead

Tiger TRIUMPH 2025

On 1st April 2025, the **Indian Navy** inaugurated the **4th edition of the bilateral joint Humanitarian Assistance and Disaster Relief (HADR)** amphibious exercise, **Tiger TRIUMPH 2025**.

- The **exercise, to be conducted in two phases**, aims to strengthen U.S.-India strategic maritime cooperation and reinforce their defense partnership.

INDIA-US PARTNERSHIP

Economic Relations
- US became India's biggest trading partner in 2022-23 followed by China and UAE
- The bilateral trade has increased by 7.65% in 2022-23 (compared to 2021-22)

Defence Cooperation
- India-US Defence Acceleration Ecosystem (INDUS-X), 2023: Start-ups and tech companies to collaborate on the co-development and co-production of advanced technologies
- Fighter Jet Deal, 2023: GE's F414 engine technology and manufacturing will be transferred for India's Tejas Mk2 jet, enhancing its indigenous capabilities
- Defence Technology and Trade Initiative (DTTI), 2012: To facilitate collaboration in defence manufacturing, research and development, and technology transfer
- New Framework for India-US Defence Relations, 2005: Updated for 10 years in 2015

India intends to procure armed MQ-9B SeaGuardian UAVs

Science & Technology
- Initiative on Critical and Emerging Technologies (iCET), 2022: Cooperation on CETs in areas including AI, quantum computing, semiconductors and wireless telecommunications
- Critical Minerals Partnership: Recently, India joined the US-led Minerals Security Partnership (MSP) to boost global critical energy and minerals supply chains
- Collaboration in Space: NASA to train ISRO astronauts, aiming for a joint International Space Station (ISS) mission in 2024
  - Artemis Accord: A US-led alliance seeking to facilitate international collaboration in planetary exploration and research; signed by India
  - NASA-ISRO Synthetic Aperture Radar (NISAR): For understanding changes in Earth's ecosystems and other environmental changes

Civil Nuclear Deal
- Civil Nuclear Cooperation: Bilateral civil nuclear cooperation agreement signed in October 2008

Energy & Climate Change
- Joint Clean Energy Research and Development Centre (JCERDC), 2010: To promote clean energy innovations by teams of scientists from India and the United States
- Clean Energy Agenda 2030 Partnership: Launched at the Leaders climate summit 2021
- Global Biofuel Alliance (India, Brazil and US), 2023: Aimed at facilitating cooperation and intensifying the use of sustainable biofuels, including in the transportation sector

Security
- Counter-Terrorism Cooperation Initiative, 2010: To expand collaboration on counter-terrorism, information sharing and capacity building

Four Foundational Agreements:
- General Security of Military Information Agreement (GSOMIA), 2002: Allows militaries to share intelligence gathered by them
  - Industrial Security Annex, 2019 is a part of GSOMIA
- Logistics Exchange Memorandum of Agreement (LEMOA), 2016: Both countries gain access to designated military facilities for refuelling and replenishment.
- Communication Compatibility and Security Agreement (COMCASA), 2018: A legal framework for the transfer of highly sensitive communication security equipment from the US to India
- Basic Exchange and Cooperation Agreement for Geospatial Intelligence (BECA), 2020: Allow both countries to share geospatial and satellite data with each other

In 2015, both countries issued Delhi Declaration of Friendship and adopted a Joint Strategic Vision for Asia-Pacific and the Indian Ocean Region

Popular Visa Among Indians include H-1B, L. Indian citizens set to become largest foreign student community in the US (20% growth in 2022)
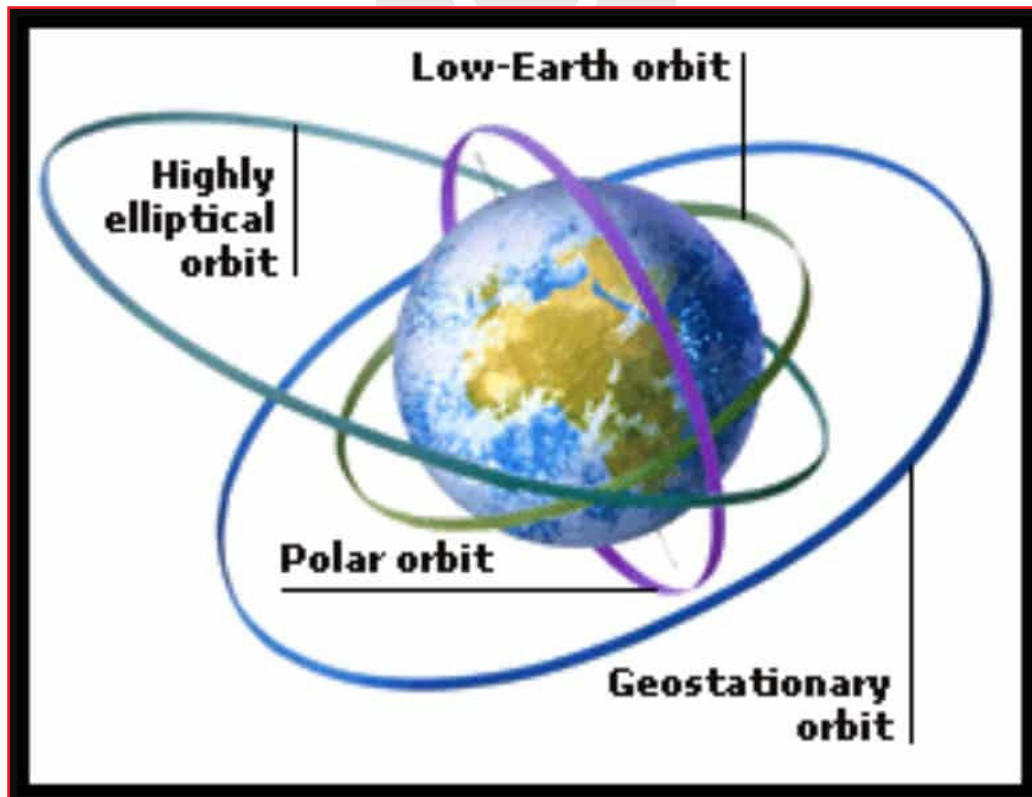
Drishti IAS

- ➤ **Harbour Phase:** Held in Visakhapatnam, this phase focuses on planning **sea-based training exercises** and includes sessions on special operations, and multi-domain operations across **air, maritime, cyber, and space.**
- ➤ **Sea Phase:** Bilateral forces will conduct **maritime, amphibious, and HADR operations** through a Joint Combined Command and Control Center.
  - ❍ The phase concludes with the establishment of a **humanitarian relief and medical response camp** (with air-portable **BHISMA** medical equipment), following an amphibious landing at Kakinada (Andhra Pradesh).
- ➤ **Special Operations Forces** from all three services, along with cyber and space specialists, will participate in the exercise and showcase the **air-portable BHISMA medical equipment.**
- ➤ **Other joint exercises** between India and the U.S. include **Yudh Abhyas** (military), **Cope India** (air) and **Vajra Prahar.**
- ➤ **India-US Relations:**

Read More: India - US COMPACT Initiative

Fram2 Mission and Polar Orbit

SpaceX has launched the **Fram2 mission,** which lifted off aboard a **SpaceX Crew Dragon capsule** from NASA's Kennedy Space Center in Florida.

- ➤ This private spaceflight is the **first human mission to follow a polar orbit** (a trajectory never before traveled by humans) and aims to conduct research on spaceflight's impact on the **human body during a free-flying mission.**
- ➤ **Polar Orbit:** It is a type of **low Earth orbit (200–1000 km altitude)** where satellites travel around Earth from, roughly, **one pole to the other** (may deviate up to 10 degrees from exact polar orbit), rather than from west to east.
  - ❍ These **orbits are ideal for global Earth observation** as they provide complete surface coverage.

➢ **Traveling Through Polar vs Equatorial Orbit:**

Aspect	Polar Orbit	Equatorial Orbit
Radiation Exposure	**Higher,** due to weaker magnetic field at poles	Lower, protected by Earth's magnetic field
Fuel Requirements	**Higher, no rotational boost, more energy-intensive**	Lower, **benefits from Earth's eastward rotation**
Rescue and Recovery	**More complex, remote polar regions**, delayed support	Easier, established **recovery zones like Atlantic/Pacific**
Communications	Challenging, **limited ground stations** at poles, mitigated recently	Easier, **mid-latitude ground stations** well-supported
Historical Use	**Rare for crewed, common for satellites**, past projects canceled	**Common, e.g., ISS, Shuttle missions**, well-established

Read more: **India's Satellite Launch by SpaceX**

Public Disclosure of Judges Assets

The **Supreme Court (SC)** resolved that all its **judges will publicly declare their assets to the CJI** for publication on the court's website, following the discovery of large sums of cash at a Delhi High Court judge's residence that reignited the debate on asset disclosure.

➢ **SC on Judges' Asset Disclosure:**
  ○ **Legal Status:** Judges are **not legally bound** to disclose assets publicly.
  ○ **1997 SC Resolution:** Judges must declare assets to the **CJI**, but **not publicly.**
  ○ **2009 SC Decision: Allowed voluntary asset disclosure** on the SC website**, but not mandatory.**
  ○ **2019 SC Ruling:** Held that **judges' assets are not personal information**, bringing them under **RTI Act.**
➢ **High Court Scenario:** As of March 2025, only **97 out of 770 (13%) HC judges** have publicly declared assets.
  ○ Several HCs (Allahabad, Rajasthan, Bombay, Gujarat, Andhra Pradesh, Uttarakhand) **strongly opposed public disclosure** and **refused RTI requests** on judges' assets.
➢ **Comparison with Other Public Servants: Rule 16(1)** of the **All India Services (Conduct) Rules, 1968**, mandates that civil servants must declare their assets annually.
  ○ Asset disclosure was made **mandatory for political candidates during elections (*ADR v. UoI, 2002*).**
  ○ **MPs/MLAs** are required to submit their **declarations to the Speaker (Lok Sabha)** or the Chairperson (Rajya Sabha), ensuring public access.
  ○ **Union Ministers** are required to declare assets to the **PMO** with information often published online.

Read More: **Asset Declaration of Judges**

Death Anniversary of Shyamji Krishna Verma

The **Prime Minister** paid tributes to the **great freedom fighter Shyamji Krishna Verma** on his death anniversary (30th March).

➤ **Shyamji Krishna Varma:** He was an **Indian revolutionary, patriot, lawyer, and journalist,** born on **4ᵗʰ October 1857, in Mandvi, Gujarat.**

   ○ In London, he established the **Indian Home Rule Society in 1905** which aimed to inspire young Indians to engage in revolutionary activities against British rule.

   ○ He also founded the **India House**, and **The Indian Sociologist** *(The journal)* which developed as an organised meeting point for **radical nationalists** among Indian students in Britain and one of the most **prominent centres for revolutionary Indian nationalism outside India.**

   ○ He was the **first President of the Bombay Arya Samaj** and influenced **Veer Savarkar.**

   ○ In response to British criticism, Varma transitioned from England to Paris and subsequently settled in Geneva during **World War I**, where he remained until his **death on 30ᵗʰ March 1930.**

   ○ A **memorial called Kranti Teerth** dedicated to him was built and inaugurated in 2010 near Mandvi.
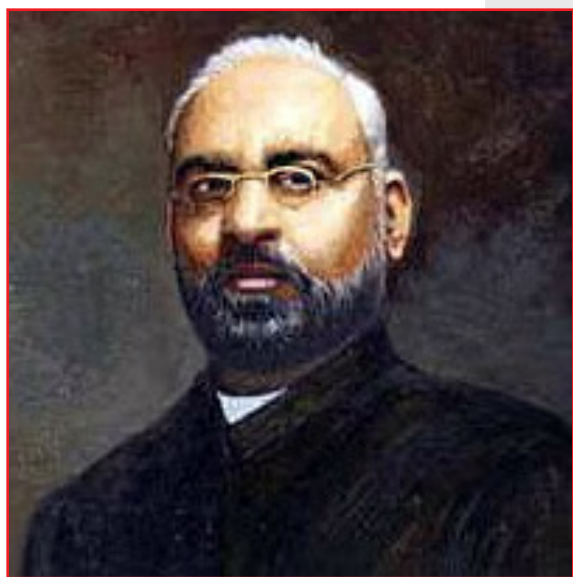
AFSPA Extension in Northeast States

The Central government extended the **'disturbed area' status** under **the Armed Forces (Special Powers) Act (AFSPA), 1958** across **Manipur**, excluding areas under 13 police stations in five districts, for another six months.

➤ The Centre also **extended AFSPA in parts of Nagaland and Arunachal Pradesh** until **30ᵗʰ September 2025.**

➤ **AFSPA:** It was passed by Parliament in September 1958 and implemented in response to escalating violence in the **northeastern states**, which the state governments were unable to control.

   ○ It enables **certain special powers to be conferred upon members of the armed forces** in **"disturbed areas."**

   ○ Both the **state and Union governments can issue notifications** declaring certain areas as "disturbed", granting the armed forces the authority under AFSPA.

   ○ In **disturbed areas**, armed forces **personnel are empowered to use force** (even lethal), arrest without warrant, and conduct searches without warrant to maintain public order and tackle threats.

   ○ Under AFSPA, **armed forces personnel are protected from legal proceedings** for actions taken under the Act, **unless prior sanction is obtained from the Central Government.**

Read More: Armed Forces (Special Powers) Act, 1958 (AFSPA), Violence in Manipur, Naga Insurgency

Transgenic Research

Transgenic research has gained significant attention, particularly regarding the use of **transgenic mice** in scientific studies, focusing on their uses and importance in advancing scientific research.

➤ **Transgenic research:** It involves altering the genomes of organisms by introducing foreign **Deoxyribonucleic Acid (DNA)** sequences from another species, typically in a laboratory setting.

   ○ The term "transgenic" comes from the root word "trans" meaning "across" or "from one to another," and "genic," which refers to genes.

   ○ This research creates transgenic animals, plants, and microorganisms for genetic studies, disease modeling, and biotechnology advancements.

   ○ **Transgenic mice** are commonly used in genetic studies to explore gene functions, disease mechanisms, and their roles in **cancer research,** genetic disorders, and reproductive health, contributing to advancements in biotechnology and agriculture.

➢ **Transgenic Research in India:** Cotton is the only transgenic crop that is being commercially cultivated in India.

○ The **Genetic Engineering Appraisal Committee (GEAC)** is the apex body under the **Ministry of Environment, Forest and Climate Change** responsible for evaluating the environmental impact of research and industrial use of hazardous microorganisms and recombinants.
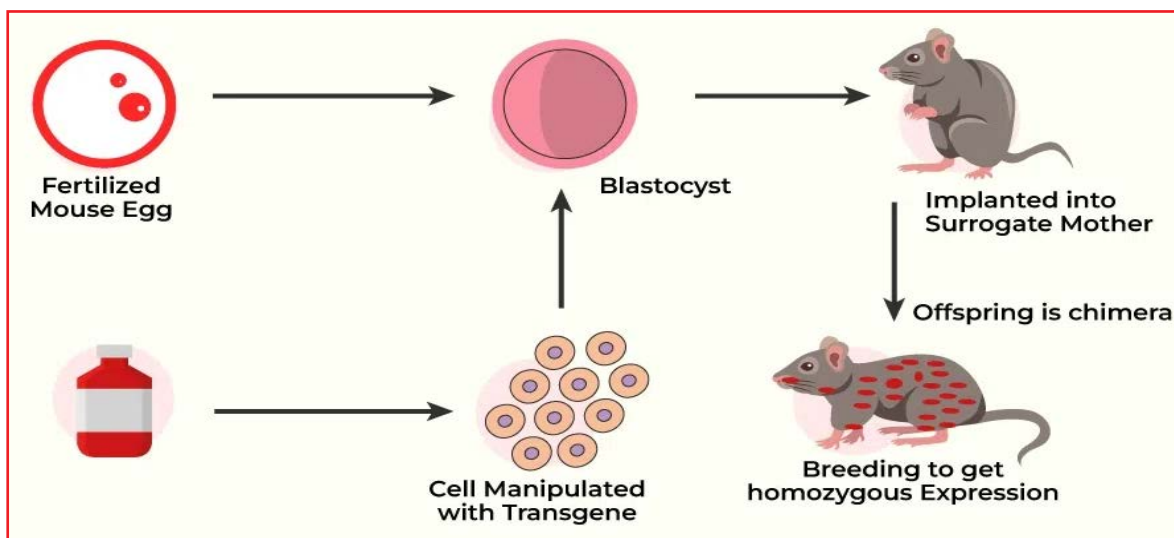
Read more: Transgenic Crops

Tribhuvan Sahkari University Bill 2025

The **Lok Sabha** passed the **Tribhuvan Sahkari University Bill, 2025,** which will establish **India's first national cooperative university** to advance education and training in the **cooperative sector.**

➢ Named after **Amul founder Tribhuvan Kashibhai Patel,** the university will be established in Gujarat with nationwide jurisdiction for cooperative training institutes, offering degree, diploma, and PhD courses to certify 8 lakh people annually.

○ The university will be registered under the **Societies Registration Act, 1860.**

➢ The need for a cooperative university is driven by the limited reach of training programs from institutions like **National Cooperative Development Corporation (NCDC)** and the **National Cooperative Union of India (NCUI),** despite the sector's vast size.

➢ **Cooperative Sector:** It consists of member-owned organizations that aim to meet shared needs through mutual assistance and equitable resource distribution, fostering rural development and financial inclusion.

○ The **Constitution (97th Amendment) Act, 2011,** made the right to form cooperative societies a **Fundamental Right** by inserting the term "cooperative societies" into Article 19(1)(c) of the Constitution.

○ The cooperative sector in India is regulated by the **Cooperative Societies Act, 1912, Multi-State Cooperative Societies Act, 2002.**

● The MSCS (Amendment) Act, 2023 enhances governance and transparency in multi-state cooperatives.

Read more: Cooperative Movement in India

Birth Anniversary of Shree Harichand Thakur

The **Prime Minister** paid tribute to **Shree Harichand Thakur (1812-1878)** on his **214th birth anniversary (27th March 2025)** and extended best wishes for the **Matua Dharma Maha Mela 2025.**

- ➢ **Harichand Thakur:** A **Bengal-based social reformer**, he founded the **Namasudras (Matuas) sect,** a **reformist Vaishnavite movement** opposing caste oppression, attracting **marginalized communities** like **Namasudras, Malis, and Telis.**
  - ○ Born in **Orakandi, Bangladesh,** into a **Scheduled Caste (SC)** peasant family, he was revered as an **avatar of Vishnu/Krishna.**
  - ○ His son **Guruchand Thakur** later worked with missionary **Cecil Silas Mead** to reclassify **Chandalas (lower caste) as Namasudras.**
- ➢ **Matuas:** A **socio-religious group** originally from **East Pakistan (now Bangladesh)**, many **migrated to India** after the <u>**Bangladesh Liberation War 1971**</u> due to religious persecution.
  - ○ The Matuas make up **17.4% of West Bengal's SC population**, second to **Rajbanshis.**
  - ○ The **Matua Dharma Maha Mela** celebrates their heritage. The community has embraced the implementation of the <u>**CAA Act.**</u>
- **Read More:** <u>Matua Community</u>.

5 Years of National Technical Textiles Mission

The <u>National Technical Textiles Mission (NTTM)</u>, launched in **2020** by the **Ministry of Textiles,** aims to position India as a **global leader in technical textiles** by **2025-26** has **completed 5 years.**

- ➢ **Technical Textiles:** <u>Technical textiles</u> are **functional fabrics** made from **natural and synthetic fibers,** used across industries like **defense, healthcare, infrastructure, automotive, medicine etc.**
  - ○ **Examples:** Mosquito nets, seat belts, helmets, fireproof jackets, and sanitary napkins.7

Textile Industry Overview

Projected Growth — Industry To Reach US$350 Billion By 2030.

Global Standing — 6th Largest Textile Exporter

Economic Contribution — 2% of India's GDP, 10% Of Industrial Production

Textile Import Decreased — (US$10,481 Mn) FY 2022-23 → 15% → (US$8,946 Mn) FY 2023-24
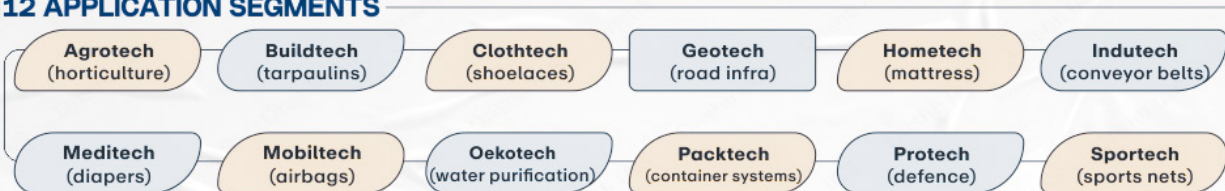
➢ **NTTM:** Launched for a period from **2020-21 to 2025-26,** the **mission** focuses on promoting r**esearch, market growth, exports, and skill development** in key sectors like **agriculture, healthcare, and infrastructure in technical textiles**.

○ **Key Components**: Supporting R&D for new materials, promoting market adoption, strengthening exports, and training 50,000 individuals through skill development programs.

➢ **Schemes Related to the Textile Sector:** PM MITRA Park Scheme, Amended Technology Upgradation Fund Scheme (ATUFS), Scheme for Integrated Textile Parks (SITP), SAMARTH Scheme, Power-Tex India.

○ **PM Mega Integrated Textile Regions and Apparel (PM MITRA) Park Scheme:** Launched **to create integrated textile parks under** PPP mode via SPVs, with facilities like processing units and design centres.

● Inspired by the **5F vision (*Farm to Fibre to Factory to Fashion to Foreign*)**, it aims to boost competitiveness, cut logistics costs, and generate jobs in the textile sector.

TECHNICAL TEXTILE

Technical or engineered textiles are defined as products, materials, and fibres that are used for functional rather than aesthetic purposes.

12 APPLICATION SEGMENTS

- Agrotech (horticulture)
- Buildtech (tarpaulins)
- Clothtech (shoelaces)
- Geotech (road infra)
- Hometech (mattress)
- Indutech (conveyor belts)
- Meditech (diapers)
- Mobiltech (airbags)
- Oekotech (water purification)
- Packtech (container systems)
- Protech (defence)
- Sportech (sports nets)

SIZE OF TECHNICAL TEXTILES MARKET
- Indian - USD 23 bn (2023)
- Global - USD 202.93 bn (2023)

EMPLOYMENT STATUS
- Contributes 2.3% to India's GDP
- 13% of industrial production, 12% export earnings

LEADING COUNTRIES
- China, US and Germany (60% of annual output)
- India - 5th largest producer (however, <2% share in global export market)

NATIONAL POLICIES AND SCHEMES
- National Technical Textiles Mission (NTTM)
- Technology Mission for Technical Textiles (TMTT)
- Technology Upgradation Fund Scheme (TUFS)
- Scheme for Integrated Textile Parks (SITP)
- PLI Scheme

FDI POLICY IN INDIA
- 100% FDI approved under automatic route
- Mauritius, Belgium - Top 2 FDI sources

OTHER INITIATIVES
- Textile Research Associations (TRAs)
- Centres of Excellence (COEs)
- Focus Incubation Centres

CHALLENGES FOR INDIA'S TECHNICAL TEXTILES INDUSTRY
- Inadequate production of High Performance Fibres
- Lack of entrepreneurship-culture and absence of skill-training
- Lack of globally-aligned quality standards
- Inadequate R&D facilities

Drishti IAS

Read More: National Technical Textiles Mission

IOS Sagar and AIKEYME

The Indian Navy has announced its maiden initiatives of **Indian Ocean Ship (IOS) Sagar** and **Africa India Key Maritime Engagement (AIKEYME)**, which are aimed at consolidating Indian Navy's stature as the **'Preferred Security Partner' and 'First Responder'** in <u>Indian Ocean Region (IOR)</u> and advancing the vision of <u>Mutual and Holistic Advancement for Security Across the Regions (MAHASAGAR).</u>

➢ **IOS Sagar:** INS Sunayna is being deployed to the Southwest IOR with a combined crew of India and **nine Friendly Foreign Countries** (Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka , South Africa).

   ○ **INS Sunayna** will visit Dar-es-Salaam (Tanzania), Nacala (Mozambique), Port Louis (Mauritius), Port Victoria (Seychelles), and Male (Maldives) for joint <u>Exclusive Economic Zones</u> surveillance.

   ○ The participants of IOS Sagar are also planned to witness harbour phase activities of Exercise AIKEYME at Dar-es-Salaam, Tanzania.

➢ **AIKEYME:** It is co-hosted by India and Tanzania, with its first edition in April 2025 at **Dar-es-Salaam, Tanzania.**

   ○ The exercise involves **11 nations,** including Comoros, Djibouti, Eritrea, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa, India, and Tanzania.

   ○ Includes training on anti-piracy operations, Search and Rescue (SAR), seamanship skills, visit board search and seizure (VBSS), and helicopter operations.

➢ **INS Sunayna:** It is an Offshore Patrol Vessel, stationed at Southern Naval Command (Kochi).

Read more: <u>Building a Secure and Prosperous Indian Ocean Region</u>