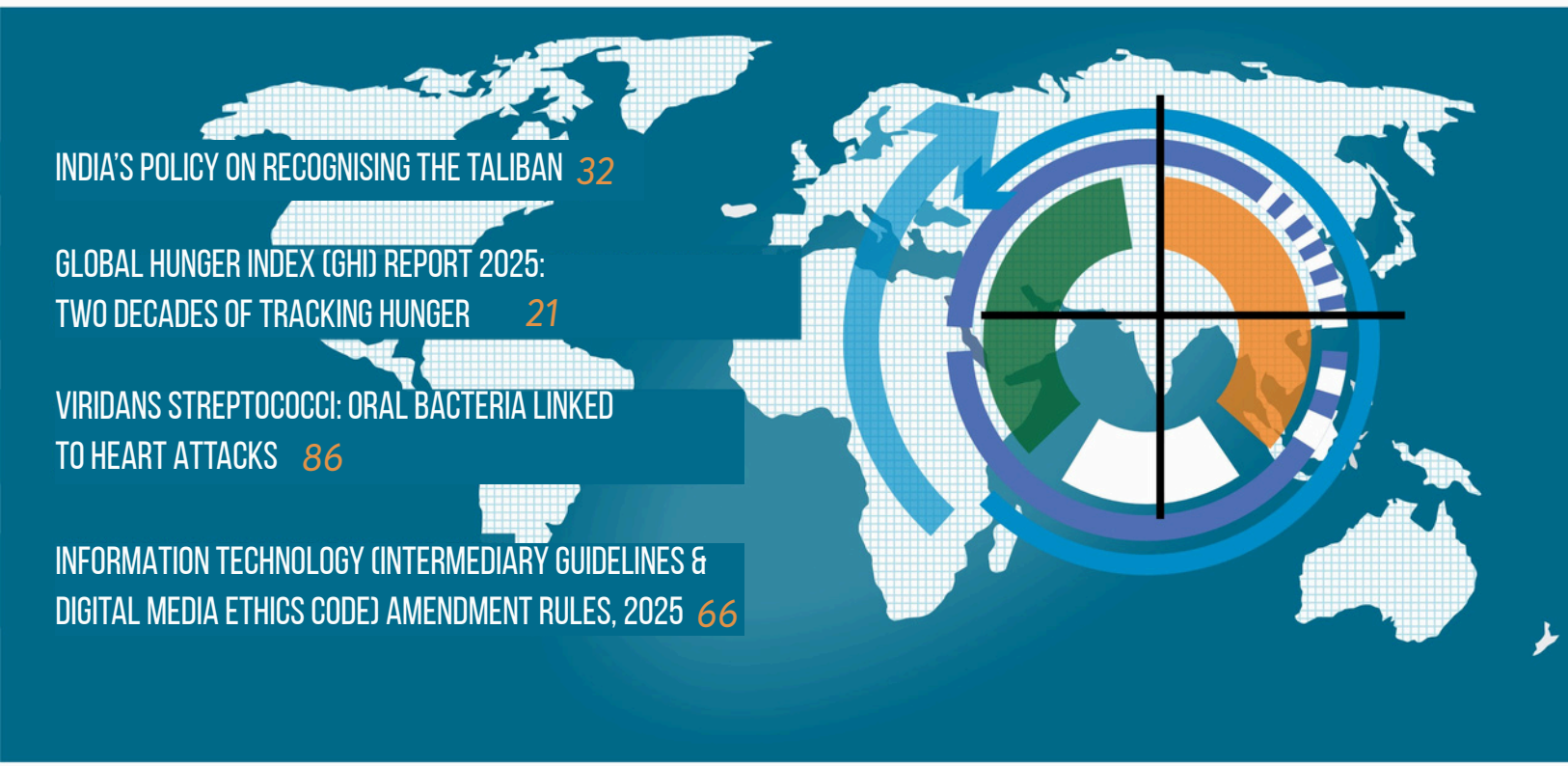
CIVIL SERVICES EXAMINATION

focus

MONTHLY NOTES BY RAU'S



CURRENT AFFAIRS ANALYSIS

logical. simple . targeted analysis & explanation of relevant news

DATA

Factual data & summaries for Prelims

EXAM-ORIENTED NOTES

Examination-oriented and clear

NOVEMBER 2025

RAU'S IAS STUDY CIRCLE

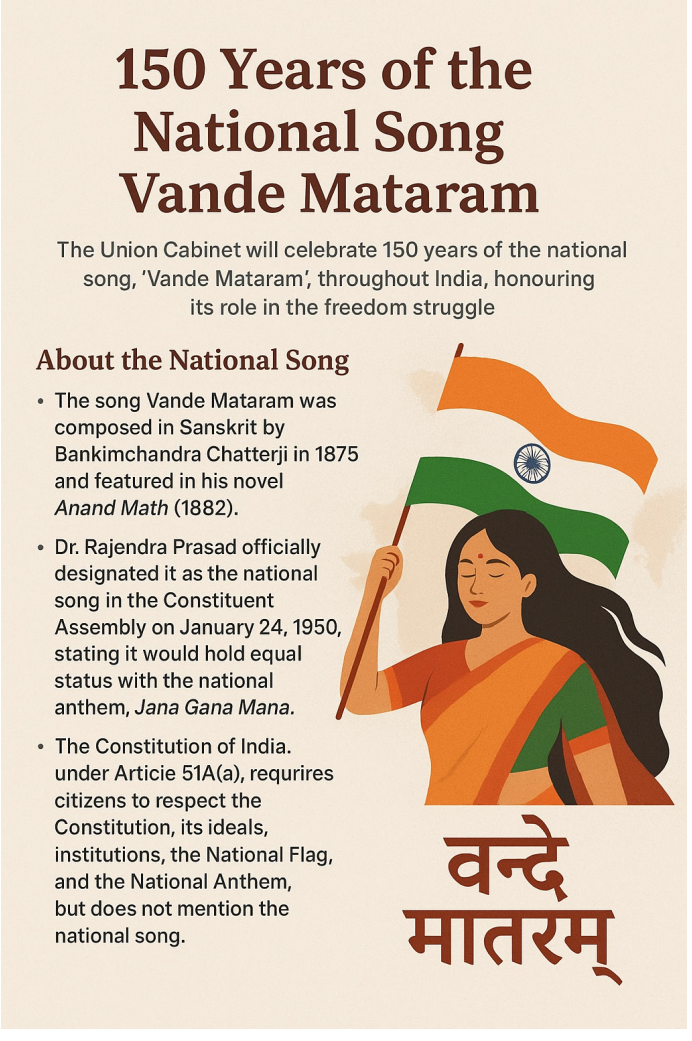
Since 1953

CONTENTS

HISTORY, CULTURE & HERITAGE

GS PAPER 1

150 YEARS OF THE NATIONAL SONG — *VANDE MATARAM*



CONTEXT:

The Union Cabinet has announced a year-long celebration marking **150 years of India's national song, *Vande Mataram***, to honour its historical and cultural significance in the nation's freedom struggle.

ABOUT *VANDE MATARAM*

Composed in **Sanskrit by Bankimchandra Chatterji in 1875**, *Vande Mataram* first appeared in his patriotic novel *Anand Math* (1882). The song became a rallying cry for freedom fighters, symbolizing devotion to the motherland and inspiring countless Indians during the national movement.

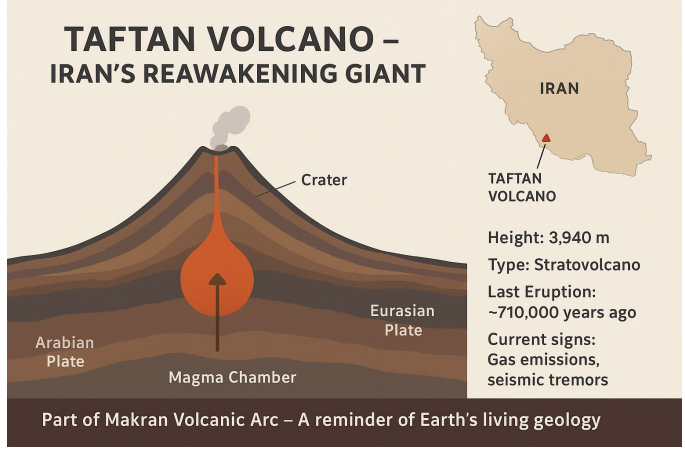
On **January 24, 1950**, Dr. **Rajendra Prasad**, the first President of India, declared *Vande Mataram* as the **National Song** of India, granting it **equal status with the National Anthem**, *Jana Gana Mana*.

Although **the Constitution of India**, under **Article 51A(a)**, enjoins citizens to respect the Constitution, its ideals, institutions, the National Flag, and the National Anthem, it **does not specifically mention the National Song**. Nevertheless, *Vande Mataram* remains deeply revered as a symbol of India's unity, sacrifice, and spirit of independence.

SIGNIFICANCE:

The 150th anniversary celebration aims to rekindle the spirit of patriotism and pay tribute to *Vande Mataram*—a song that continues to evoke pride and remind citizens of India's collective struggle for freedom.

TAFTAN VOLCANO REAWAKENS AFTER 700,000 YEARS



CONTEXT:

According to reports from *Live Science (LS)*, the **Taftan Volcano** in **southeastern Iran** appears to have shown renewed activity after nearly **700,000 years of dormancy**. Scientists have detected increased geothermal emissions and seismic tremors in the region, suggesting reactivation within the long-dormant volcanic system.

ABOUT TAFTAN VOLCANO:

- **Location:**
- Situated in **Sistan–Baluchestan Province** of **southeastern Iran**, near the **Pakistan border**, Taftan is the **highest volcano in Iran** and one of the few active ones in the **Makran volcanic arc**.
- **Elevation:**
- Approximately **3,940 meters (12,927 feet)** above sea level.
- **Volcano Type:**
- **Stratovolcano (Composite Cone)** — built up by successive eruptions of **lava flows**, **ash**, and **pyroclastic material**.
- **Tectonic Setting:**
- Lies within the **Alborz–Makran volcanic belt**, where the **Arabian Plate** is being subducted beneath the **Eurasian Plate**.
- This subduction process generates magma that feeds volcanoes like Taftan.
- **Geological Features:**
  - Active **hydrothermal vents** and **fumaroles** continuously emit **sulphur gases**.
  - Presence of **sulphur deposits**, **hot springs**, and **altered rocks** around the summit indicates ongoing geothermal activity.
  - The last confirmed eruption occurred around **710,000 years ago**, during the **Pleistocene epoch**.

UNDERSTANDING STRATOVOLCANOES (COMPOSITE CONES):

- **Structure:**
- Tall, steep-sided cones composed of alternating layers of **lava**, **ash**, and **tephra**.
- **Magma Composition:**
- Typically **andesitic**, sometimes **basaltic to rhyolitic** — rich in silica, causing viscous magma and **explosive eruptions**.
- **Eruption Style:**
- Highly **explosive**, often producing **pyroclastic flows** and **ash clouds** that can travel large distances.
- **Tectonic Environment:**
- Common in **subduction zones** — regions where an oceanic plate sinks beneath a continental plate.
- **Famous Examples:**
  - **Mount Fuji (Japan)**
  - **Mount Vesuvius (Italy)**
  - **Volcán de Fuego (Guatemala)**
  - **Mount St. Helens (USA)**

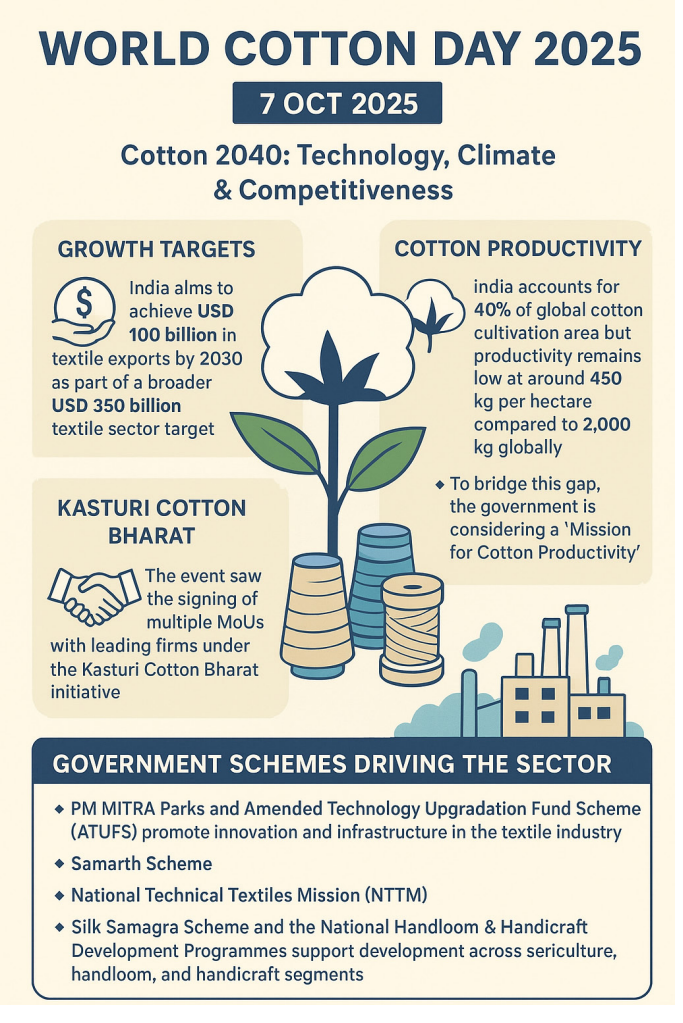
SIGNIFICANCE OF TAFTAN'S REACTIVATION:

- **Geological Insight:**
- Offers rare evidence of **volcanic reawakening** in the **Makran arc**, a region otherwise known for **earthquakes and subduction-related hazards**.
- **Regional Impact:**
- Increased geothermal activity could pose risks to **local settlements** and **infrastructure** but also offers **geothermal energy potential**.
- **Scientific Relevance:**
- Helps in studying the **Arabian–Eurasian plate interaction**, crucial for understanding seismic and volcanic hazards across **Iran, Pakistan, and Afghanistan**.

CONCLUSION:

The potential reawakening of **Taftan Volcano** underscores the dynamic nature of the **Earth's lithosphere**. While dormant for nearly a million years, its renewed activity reminds us that even ancient volcanic systems remain geologically alive — warranting close monitoring and regional preparedness.

WORLD COTTON DAY 2025: TOWARDS SUSTAINABLE AND COMPETITIVE GROWTH



CONTEXT:

The Ministry of Textiles celebrated *World Cotton Day 2025* on **7 October 2025**, under the theme *"Cotton 2040: Technology, Climate & Competitiveness."* The event highlighted India's commitment to boosting cotton productivity, sustainability, and export competitiveness in the global textile market.

KEY HIGHLIGHTS

India aims to achieve **USD 100 billion in textile exports by 2030**, contributing to a broader **USD 350 billion textile sector target**. The celebration underscored the role of innovation and climate-smart practices in achieving these ambitious goals.

Despite being the **largest cotton cultivator**, covering **40% of the global cotton area**, India's **productivity remains low** at around **450 kg per hectare**, compared to the **global average of 2,000 kg/ha**. To address this gap, the government is considering a **"Mission for Cotton Productivity"** to promote high-yield varieties, precision farming, and better soil and water management.

KASTURI COTTON BHARAT

A key highlight was the signing of multiple **Memoranda of Understanding (MoUs)** with leading textile firms under the **Kasturi Cotton Bharat initiative**, which seeks to brand Indian cotton globally on par with **Egyptian Giza** and **American Supima** for purity, quality, and sustainability.

The initiative also integrates traceability systems to ensure transparency across the cotton value chain.

GOVERNMENT SCHEMES DRIVING THE SECTOR

Several ongoing schemes complement the cotton and textile ecosystem:

- **PM MITRA Parks** and the **Amended Technology Upgradation Fund Scheme (ATUFS)** promote innovation, green manufacturing, and infrastructure modernisation.
- **Samarth Scheme** provides demand-driven, placement-linked skilling to textile workers.
- **National Technical Textiles Mission (NTTM)** focuses on innovation and market expansion in technical textiles.
- **Silk Samagra Scheme**, and **National Handloom & Handicraft Development Programmes** support diversification across sericulture, handloom, and handicraft sectors.

All these initiatives are aligned with the **5F Vision** — *Farm to Fibre to Factory to Fashion to Foreign* — ensuring a seamless value chain from cultivation to export.

TEXTILE SECTOR SNAPSHOT

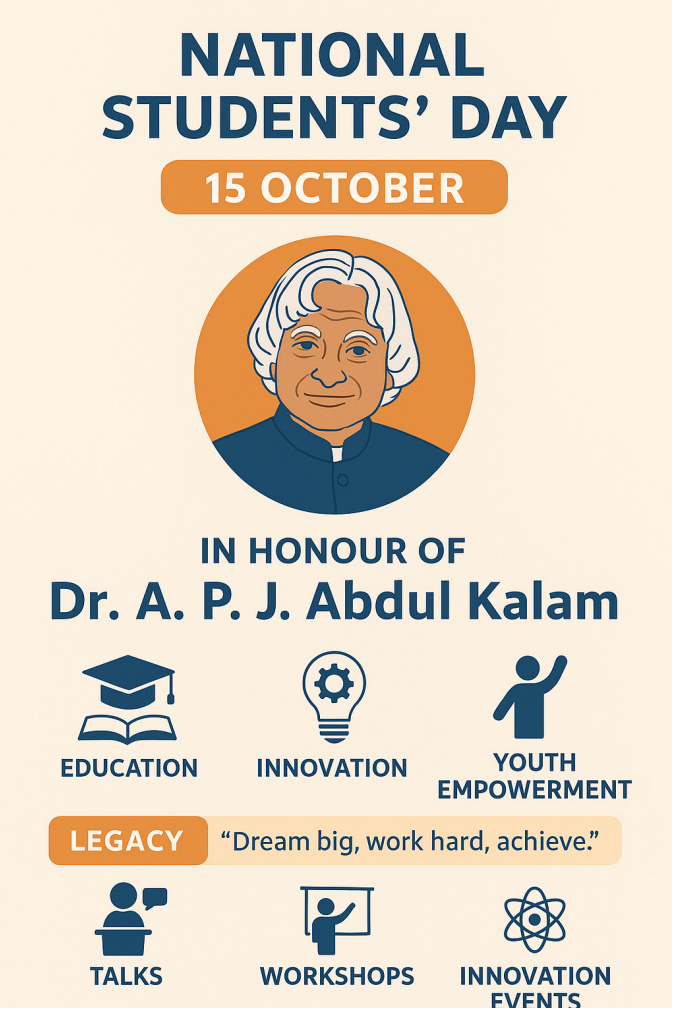
The textile sector contributes **2.3% to India's GDP**, **13% to industrial production**, and **12% to exports**, making it one of the largest employment generators. India is the **second-largest producer of cotton** (23.8% global share), the **largest producer of jute**, and **second in man-made fibres**.

The industry's **market size**, estimated at **USD 174 billion in 2024**, is projected to reach **USD 350 billion by 2030**, with domestic consumption forming nearly **80%** of the total demand.

Conclusion

World Cotton Day 2025 reaffirmed India's vision to transform its textile ecosystem through sustainability, technology, and competitiveness. Bridging the productivity gap and strengthening branding under initiatives like *Kasturi Cotton Bharat* will be crucial for achieving global leadership in cotton and textiles.

NATIONAL STUDENTS' DAY – HONOURING DR. A. P. J. ABDUL KALAM



CONTEXT:

India observes **National Students' Day on October 15** every year to commemorate the birth anniversary of **Dr. A. P. J. Abdul Kalam** — former President, eminent scientist, and one of India's most inspiring teachers. The day celebrates his deep commitment to **education**, **youth empowerment**, and **nation-building**.

ABOUT NATIONAL STUDENTS' DAY:

- **Date:** October 15
- **Declared by:** Government of India in 2010
- **Objective:** To inspire students to pursue knowledge, innovation, and leadership — values that Dr. Kalam championed throughout his life.
- The day is marked by **seminars, workshops, lectures**, and various educational initiatives across schools and universities.

ABOUT DR. A. P. J. ABDUL KALAM:

- **Full Name:** Avul Pakir Jainulabdeen Abdul Kalam
- **Born:** 15 October 1931, Rameswaram, Tamil Nadu
- **Profession:** Aerospace Scientist, 11th President of India (2002–2007)
- **Known as:** *"People's President"* & *"Missile Man of India"*
- Played a key role in India's **missile and nuclear programmes**, including **Pokhran-II** nuclear tests.
- A passionate advocate for education, Dr. Kalam inspired millions through his books, including *"Wings of Fire"* and *"Ignited Minds."*
- He believed, *"Dream, dream, dream. Dreams transform into thoughts and thoughts result in action."*

LEGACY AND RELEVANCE:

- Dr. Kalam viewed **students as the foundation of national progress**.
- He emphasized **scientific temperament**, innovation, and moral values.
- His teachings continue to inspire **educational reforms** and youth-led initiatives in India.
- The day serves as a reminder of the **transformative power of education** in shaping a self-reliant and developed nation.

GOVERNMENT & INSTITUTIONAL CELEBRATIONS:

- Educational institutions organize interactive sessions on leadership and innovation.
- Scholarships and student innovation challenges are launched to **encourage young talent**.
- Inspirational talks highlight Dr. Kalam's vision of **"Developed India 2020."**

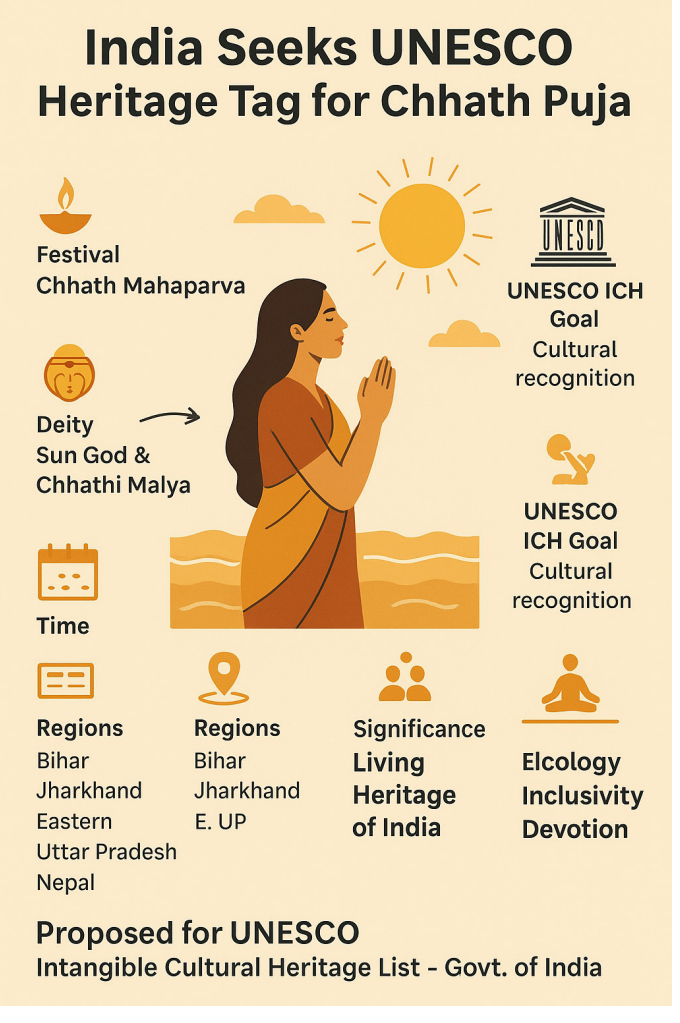
CONCLUSION:

National Students' Day is more than just a tribute — it is a **call to action for students** to dream big and contribute to building a progressive India. Honouring Dr. Kalam's vision, the day reinforces the role of youth as changemakers and future leaders.

DID YOU KNOW?

Dr. Kalam spent his last moments addressing students at IIM Shillong in 2015 — a testament to his lifelong dedication to education.

INDIA ADVOCATES FOR UNESCO RECOGNITION OF CHHATH PUJA



CONTEXT

Prime Minister Narendra Modi recently announced that the Government of India is pursuing UNESCO's *Intangible Cultural Heritage* (ICH) status for *Chhath Mahaparva*. The proposal underscores India's efforts to globally recognise

its diverse living traditions rooted in ecological balance and cultural inclusivity.

UNESCO'S INTANGIBLE CULTURAL HERITAGE (ICH) FRAMEWORK

UNESCO established the *Intangible Cultural Heritage List* in 2008 under the *2003 Convention for the Safeguarding of Intangible Cultural Heritage*.

- It recognises **living traditions**, **performing arts**, **rituals**, and **cultural practices** that reflect community identity and continuity.
- India already has 15 elements inscribed on this list, including Yoga, Kumbh Mela, Durga Puja, and Nowruz.

ABOUT CHHATH MAHAPARVA

Chhath Mahaparva, also known as *Chhath Puja*, is one of the oldest and most revered Hindu festivals dedicated to **Surya (Sun God)** and **Chhathi Maiya**, considered the goddess of fertility and well-being.

- **Duration:** Four days —
  1. **Nahay–Khay:** Ritual purification and preparation of traditional food.
  2. **Kharna:** Devotees observe a day-long fast followed by a sacred meal.
  3. **Sandhya Arghya:** Offering to the setting Sun.
  4. **Usha Arghya:** Morning offerings to the rising Sun, concluding the festival.
- **Observances:** Devotees stand in rivers or ponds to make offerings to the Sun. The ritual reflects *discipline*, *cleanliness*, and *devotion to nature*.
- **When Celebrated:** During *Kartik month* (October–November).
- **Where Celebrated:** Predominantly in *Bihar, Jharkhand, Eastern Uttar Pradesh*, and *Nepal*, as well as among the *Indian diaspora* worldwide.

CULTURAL AND ECOLOGICAL SIGNIFICANCE

- Promotes **environmental awareness**, as rituals take place in natural water bodies, reinforcing river conservation.
- Encourages **social inclusivity** — people from all castes and backgrounds participate equally.
- Symbolises **gratitude to the Sun** for sustaining life on Earth.
- Embodies **self-discipline** and **communal harmony**, reinforcing social unity.

WHY UNESCO RECOGNITION MATTERS

- Would bring **global recognition** to one of India's most eco-conscious festivals.
- Strengthens India's **soft power** and showcases its cultural diversity.
- Promotes **sustainable cultural tourism** and community-led preservation of traditions.

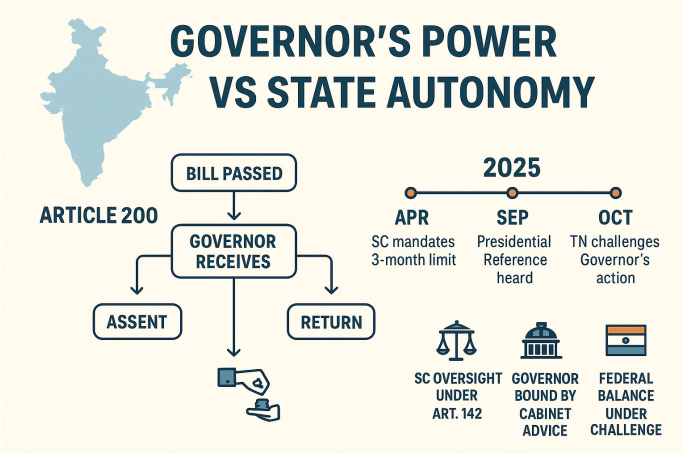
CONCLUSION

Chhath Puja, deeply rooted in India's civilizational ethos, reflects a harmonious relationship between humanity and nature. Its proposed inclusion in UNESCO's Intangible Cultural Heritage list would affirm India's commitment to preserving and celebrating its vibrant living traditions on the world stage.

POLITY, GOVERNANCE & SOCIAL JUSTICE

GS PAPER 2

TAMIL NADU CHALLENGES GOVERNOR'S REFERRAL OF UNIVERSITY BILL TO PRESIDENT



CONTEXT

The Tamil Nadu government has moved the **Supreme Court** against Governor R.N. Ravi's decision to **reserve the Kalaignar University Bill, 2025, for the President's consideration**, calling it a violation of constitutional norms and federal principles.

BACKGROUND

- The **Kalaignar University Bill, 2025**, passed by the Tamil Nadu Legislative Assembly, aims to establish a **new state university**.
- Instead of granting assent, the **Governor reserved the Bill** under **Article 200** of the Constitution.
- The **State Government's Petition** argues that the Governor must act **on the aid and advice of the Council of Ministers**, not independently.

JUDICIAL CONTEXT

- The challenge comes amid a pending **Presidential Reference** before the Supreme Court (heard on **September 9, 2025**), seeking clarity on the **extent of the Governor's discretion** under Article 200.
- In **April 2025**, the Supreme Court ruled that **Governors and the President must act on Bills within three months** of presentation.
- Tamil Nadu's petition stresses that the Governor's inaction and referral **undermines legislative supremacy** and **federal balance**.

CONSTITUTIONAL FRAMEWORK

Article 200 – Assent to Bills

The Governor may:

1. **Give assent**,
2. **Withhold assent**,
3. **Return the Bill** for reconsideration (if not a Money Bill), or
4. **Reserve it for the President's consideration**.

However, this discretion is **not absolute**.

The Supreme Court in **Nabam Rebia v. Deputy Speaker (2016)** held that the Governor must act **in harmony with the elected government's advice**.

ARTICLE 142 – ENFORCEMENT POWERS OF SC

Empowers the **Supreme Court** to pass necessary orders for **complete justice**, including setting timelines for assent to Bills.

ARTICLE 143(1) – PRESIDENTIAL REFERENCE

Allows the **President** to seek the **Supreme Court's advisory opinion** on constitutional issues—currently invoked to clarify the Governor's role.

SIGNIFICANCE

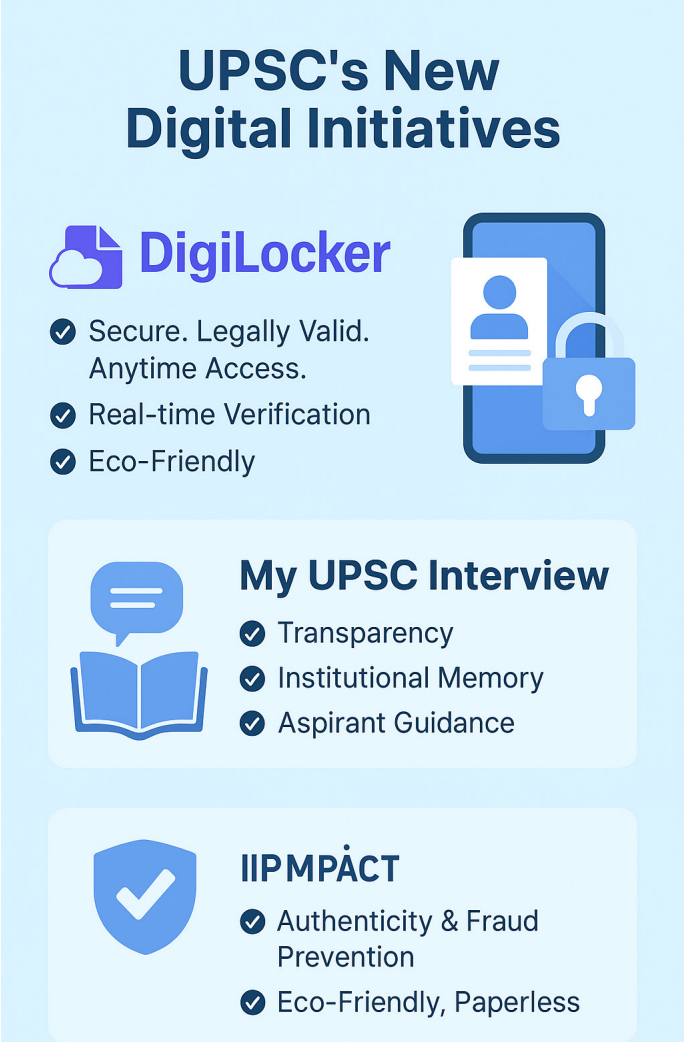
- The case highlights **Centre-State tensions** over **gubernatorial powers**.
- It could define the **limits of discretionary authority** of Governors vis-à-vis elected State governments.
- A final verdict will influence **federal relations**, **legislative autonomy**, and the **efficiency of governance** in the States.

CONCLUSION

The Tamil Nadu government's plea marks another chapter in the ongoing debate over the **Governor's constitutional role**.

The Supreme Court's ruling will not only impact Tamil Nadu but also set a precedent for **Governor–State relations across India**, ensuring **constitutional balance and cooperative federalism**.

DIGILOCKER & UPSC'S NEW INITIATIVES



CONTEXT

The **Union Public Service Commission (UPSC)** has announced that caste, income, and disability certificates of candidates will now be verified through **DigiLocker** to prevent forged submissions. As part of its **centenary celebrations**, UPSC has also launched the **"My UPSC Interview" anecdote portal** for serving and retired officers.

ABOUT DIGILOCKER

- **What is it?** A flagship initiative under the **Digital India Mission** offering citizens a secure, cloud-based platform for accessing and sharing authentic digital documents.
- **Launched by:** Ministry of Electronics and Information Technology (**MeitY**).
- **Aim:** Digital empowerment, paperless governance, and faster service delivery through legally valid digital documents.

KEY FEATURES

- **Digital Document Wallet:** Stores Aadhaar, PAN, driving license, caste, and educational certificates in digital format.
- **Legally Recognised:** Equivalent to originals under Rule 9A of IT Rules, 2016.
- **Citizen-Centric:** Anytime, anywhere access with user consent for sharing.
- **Real-Time Verification:** Documents are fetched directly from issuing authorities, ensuring authenticity.
- **Eco-Friendly:** Reduces paperwork and administrative burden.

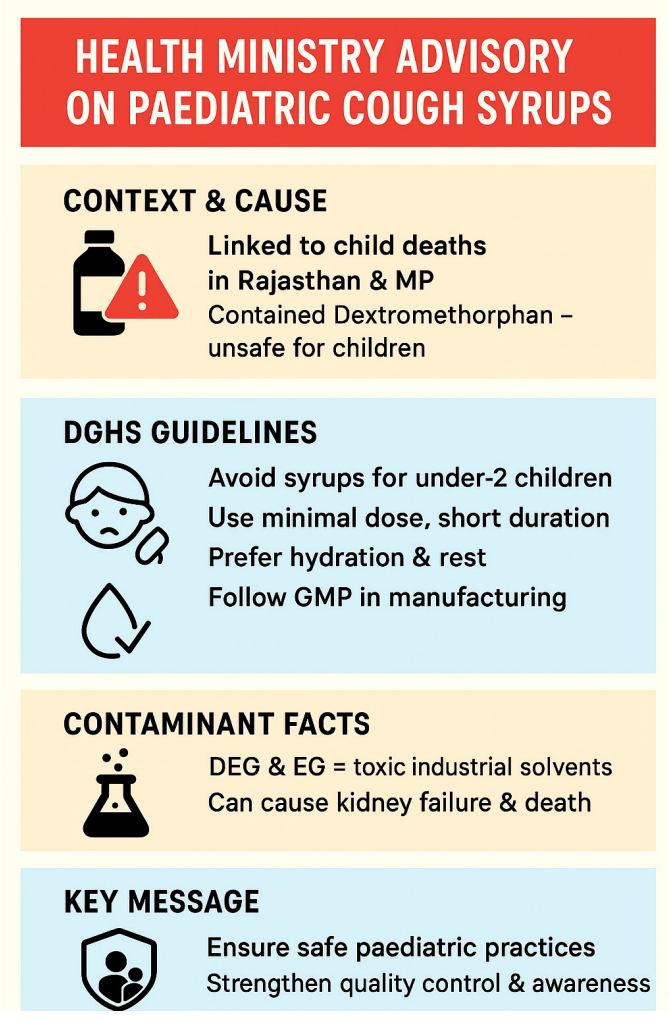
UPSC'S "MY UPSC INTERVIEW" PORTAL

- **What is it?** A digital platform launched during UPSC's centenary year (2026) inviting serving and retired civil servants to share their **interview experiences**.
- **Objective:**
  - Build a repository of real-life anecdotes for aspirants.
  - Enhance transparency in recruitment.
  - Preserve institutional memory.
- **Outcome:** Selected entries will be compiled and published in 2026 as part of centenary celebrations.

SIGNIFICANCE

- **For Candidates:** Ensures authenticity of submitted documents and prevents fraudulent claims.
- **For UPSC:** Improves efficiency, transparency, and trust in the recruitment process.
- **For Governance:** Promotes paperless, sustainable practices in line with **Digital India goals**.

HEALTH MINISTRY ADVISORY ON COUGH SYRUPS FOR CHILDREN



CONTEXT:

The **Directorate General of Health Services (DGHS)** under the **Ministry of Health and Family Welfare** has issued a fresh advisory to all States and Union Territories on the **rational use of cough syrups in children**. The move comes after reports of **child deaths in Rajasthan and Madhya Pradesh**, allegedly linked to syrups containing **Dextromethorphan**.

ABOUT DEXTROMETHORPHAN

- **Dextromethorphan (DXM)** is a **cough suppressant** used in many over-the-counter syrups.
- It acts on the brain's cough centre to reduce coughing but can cause **serious side effects** in children — such as drowsiness, breathing difficulty, and accidental overdose.
- Long-term effects on the **developing brain** remain unclear, making it unsafe for paediatric use.

KEY GUIDELINES ISSUED BY DGHS

- **Avoid Routine Use:** Most coughs in children are **self-limiting** and do not require medication.
- **Age Restriction:** Cough syrups must **not be prescribed for children below two years**.
- **Clinical Evaluation:** For older children, use only after proper medical evaluation — with **accurate dosage** and for the **shortest possible duration**.
- **Avoid Polypharmacy:** Syrups containing **multiple drug combinations** should be avoided.
- **Non-Drug Remedies:** Encourage **hydration, steam inhalation, and rest** as safer alternatives.
- **Pharma Compliance:** Manufacturers must strictly follow **Good Manufacturing Practices (GMP)** and use **pharmaceutical-grade excipients**.

CONTAMINATION AND SAFETY INVESTIGATIONS

- The Health Ministry clarified that syrups linked to the incidents were **free from diethylene glycol (DEG)** and **ethylene glycol (EG)** — two highly toxic industrial chemicals responsible for several global poisoning incidents.
- **In Rajasthan**, the formulation in question contained **Dextromethorphan**, which is **not recommended for children** under national and WHO safety standards.

CHEMICAL TOXICITY EXPLAINED

- **Diethylene Glycol (DEG):** Used in antifreeze; causes **kidney failure, neurological damage, and death**.
- **Ethylene Glycol (EG):** Another toxic antifreeze component that leads to **acute kidney injury** if ingested.

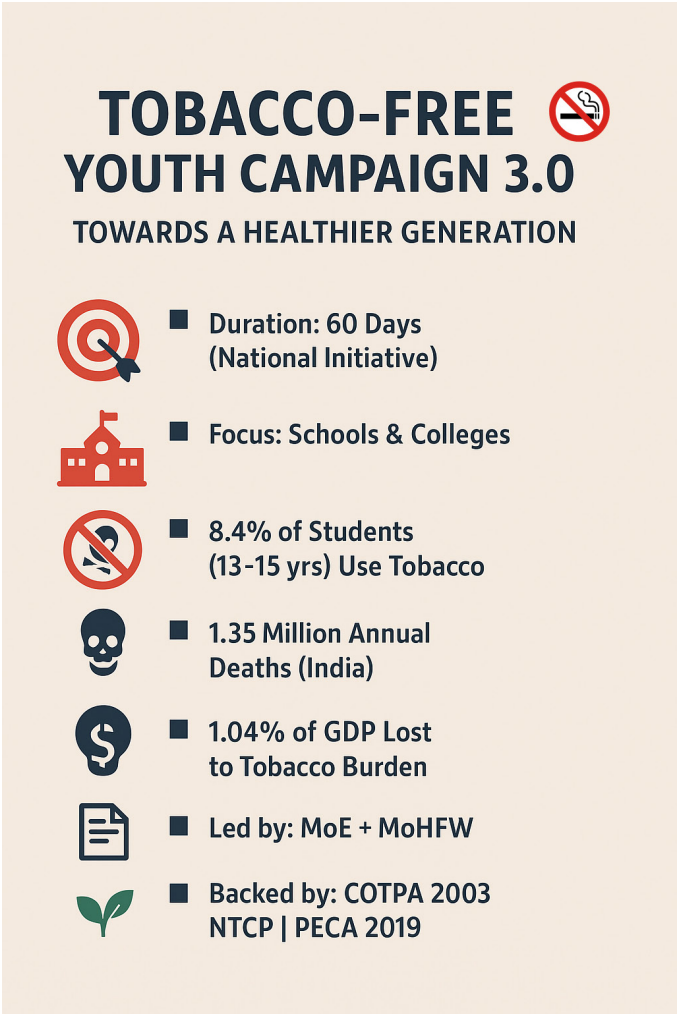
SIGNIFICANCE

- Reinforces **paediatric drug safety** and the need for **rational prescription practices**.
- Aims to prevent **avoidable child fatalities** from inappropriate or contaminated medicines.
- Strengthens **pharmaceutical quality control** and **public health accountability**.

CONCLUSION:

The DGHS advisory highlights India's growing vigilance in **paediatric pharmacovigilance**. Rational use of medicines, strict enforcement of safety standards, and public awareness are key to protecting children from preventable drug-related tragedies.

TOBACCO-FREE YOUTH CAMPAIGN 3.0



CONTEXT:

The **Ministry of Education** and the **Ministry of Health & Family Welfare** jointly launched the **Tobacco-Free Youth Campaign 3.0** to promote a tobacco-free lifestyle among India's youth. The campaign is a 60-day national initiative aimed at empowering students to make informed health choices and support a **tobacco-free India** under the *Viksit Bharat@2047* vision.

OBJECTIVE:

The campaign seeks to:

- **Educate** students about the harmful effects of tobacco use.
- **Encourage quitting** and prevent initiation among young people.
- **Reinforce healthy habits** in schools, colleges, and universities.
- **Strengthen enforcement** of the *Tobacco-Free Educational Institutions (ToFEI) Guidelines*.

KEY ACTIVITIES:

- **Awareness Drives:** Rallies, debates, and cultural events to sensitize students.
- **Pledge Ceremonies:** Mass pledges across schools and higher education institutions to remain tobacco-free.
- **Counselling & Support:** Workshops and sessions to help users quit tobacco.
- **Monitoring & Compliance:** Strengthening ToFEI guidelines through inspections and awareness posters on campuses.

SIGNIFICANCE:

The campaign complements earlier government efforts such as the **National Tobacco Control Programme (NTCP)** and **COTPA 2003**, reinforcing India's long-term goal of achieving a **tobacco-free generation**. It also aligns with the **WHO Framework Convention on Tobacco Control (FCTC)**, to which India is a signatory.

TOBACCO CONSUMPTION IN INDIA:

- **Prevalence:** Over **270 million tobacco users** (WHO 2025 Report).
- **Youth Use:** Around **8.4% of students aged 13–15 years** currently use tobacco (Global Youth Tobacco Survey, 2019).
- **Health Burden:** Causes approximately **1.35 million deaths annually** in India (WHO).
- **Economic Cost:** Estimated at **1.04% of India's GDP**, with **smoking accounting for 74%** of this cost.

INDIA'S LEGAL & POLICY FRAMEWORK:

- **Cigarettes and Other Tobacco Products Act (COTPA), 2003** – regulates advertising, sale, and packaging.
- **National Tobacco Control Programme (NTCP)** – focuses on awareness, cessation services, and enforcement.
- **Prohibition of Electronic Cigarettes Act, 2019** – bans production, import, and sale of e-cigarettes.

WAY FORWARD:

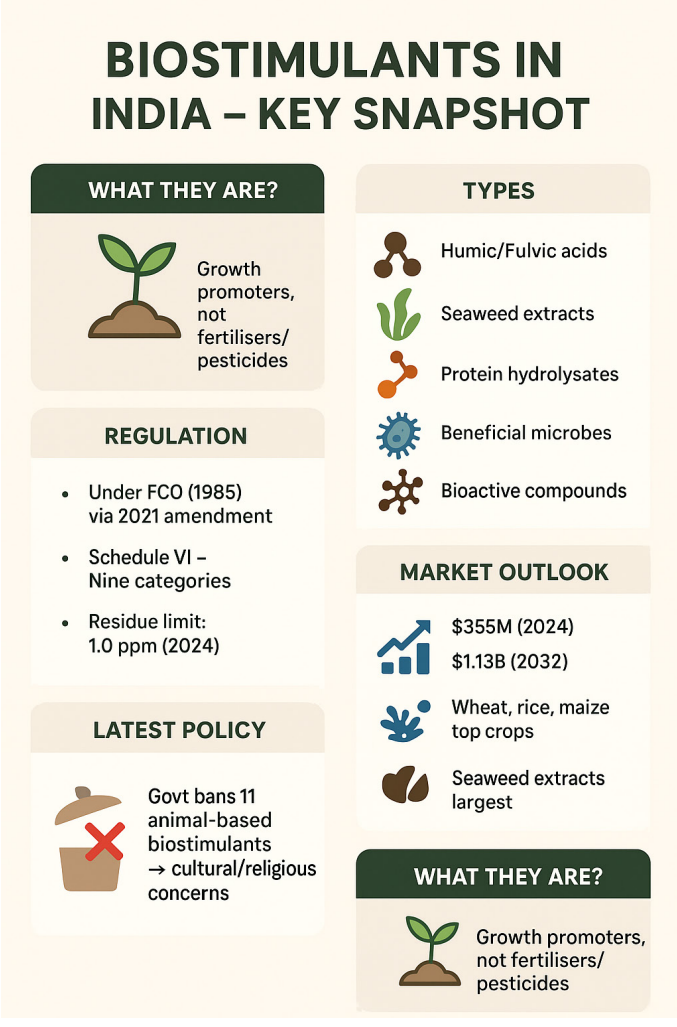
Youth Engagement: Integrate anti-tobacco education into school curricula.

Counselling Access: Expand *tobacco cessation helplines* under the NTCP.

Digital Campaigns: Use influencers and social media to counter pro-tobacco content.

Strict Enforcement: Ensure compliance with COTPA and ToFEI across educational campuses.

GOVERNMENT RESTRICTS ANIMAL-BASED BIOSTIMULANTS



CONTEXT:

The Union Agriculture Ministry has recently **withdrawn approval for 11 animal-derived biostimulants**, citing concerns related to religious sensitivities and dietary restrictions. This marks a significant step in regulating India's expanding biostimulant sector.

WHAT ARE BIOSTIMULANTS?

- **Definition:** Substances or microorganisms applied to plants, seeds, or soil that stimulate natural processes, improving growth, quality, and stress resilience.
- **Key Feature:** Unlike fertilisers, they don't directly provide nutrients; unlike pesticides, they don't act against pests. Instead, they **enhance plants' efficiency** in nutrient use.
- **Sources:** Microbes, algae, seaweed, humic substances, protein hydrolysates, beneficial microorganisms, composted matter.
- **Challenges:** Mechanisms are diverse and not fully understood; require **scientific validation** and localized agronomic trials.

MAJOR TYPES OF BIOSTIMULANTS

- **Humic & Fulvic Acids:** Improve soil porosity, water retention, and nutrient absorption.
- **Seaweed Extracts:** Rich in natural hormones; boost tolerance to abiotic stress.
- **Protein Hydrolysates:** Aid recovery during drought/ heat stress.
- **Beneficial Microbes:** E.g., *Rhizobium*, *mycorrhiza*; support nitrogen fixation and root growth.
- **Bioactive Compounds:** Vitamins and antioxidants enhance plant defence and quality.

REGULATION FRAMEWORK IN INDIA

- **FCO 1985:** Biostimulants brought under regulation via the 2021 amendment.
- **Schedule VI (2021):** Defines nine groups of biostimulants with standards.
- **Approval:** Only those notified in Schedule VI can be manufactured, sold, or imported.
- **Central Biostimulant Committee (2021):** Reviews evidence, sets specifications, advises government.
- **Residue Limits:** Raised from **0.01 ppm to 1.0 ppm** in 2024 amendment.

BIOSTIMULANT INDUSTRY IN INDIA

- **Market Size:** Valued at **USD 355 million in 2024**; projected to cross **USD 1.13 billion by 2032** (CAGR > 15%).
- **Crops:** Wheat, rice, and maize dominate usage due to cultivation scale.
- **Dominant Ingredient:** Seaweed extracts (due to efficacy and recognition).
- **Application:** Foliar spraying most common for rapid absorption.

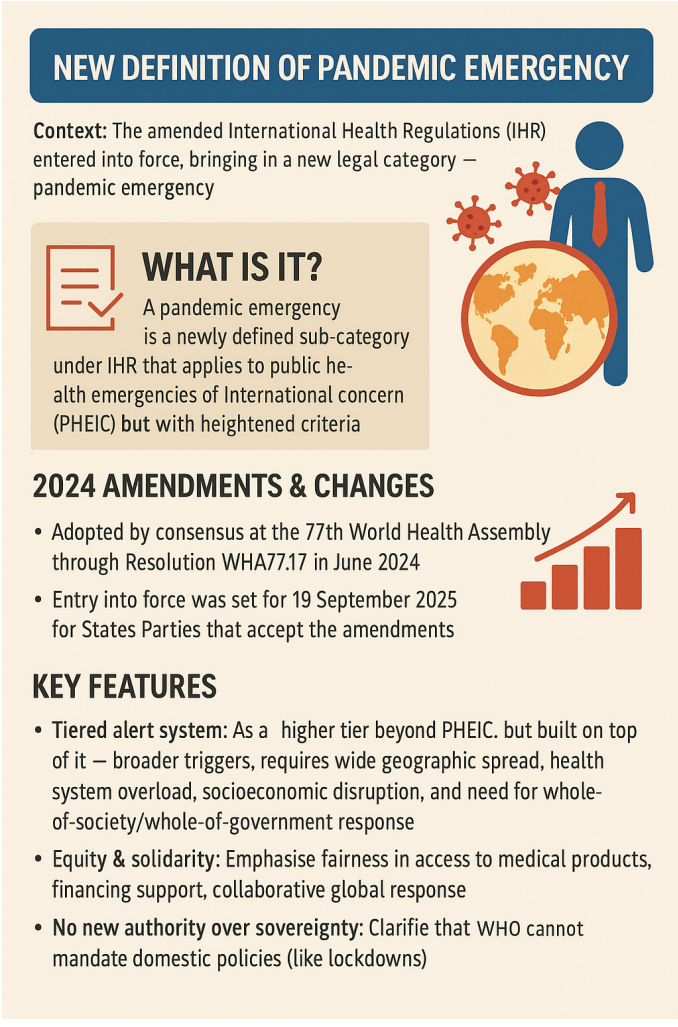
SIGNIFICANCE OF RESTRICTION

- Reflects government sensitivity to cultural and dietary concerns.
- Promotes **plant- and microbe-based alternatives**.
- Reinforces **scientific regulation** of agricultural inputs for safety, transparency, and farmer confidence.

WAY FORWARD:

India must strengthen **R&D, quality standards, and farmer awareness** to ensure safe, sustainable, and culturally sensitive adoption of biostimulants.

NEW DEFINITION OF PANDEMIC EMERGENCY



CONTEXT:

The amended *International Health Regulations (IHR)* came into effect in September 2025, introducing a new legal category — **Pandemic Emergency**. These amendments were adopted by consensus at the 77th World Health Assembly in June 2024 through *Resolution WHA77.17*.

WHAT IS A PANDEMIC EMERGENCY?

A **pandemic emergency** is a newly defined sub-category of a *Public Health Emergency of International Concern (PHEIC)*. It applies when a communicable disease:

- Spreads widely across regions and countries,
- Overloads health systems,
- Causes significant social and economic disruption, and
- Requires rapid, coordinated international action.

Thus, it represents a **higher threshold** built upon the PHEIC framework.

KEY AMENDMENTS UNDER IHR (2024):

- **Decision-making:** WHO Director-General can determine if a PHEIC amounts to a pandemic emergency (Article 12).
- **National IHR Authorities:** Every country must designate an authority to coordinate across ministries.
- **Financial Mechanism:** A global financing facility is introduced to support developing countries in pandemic preparedness.
- **States Parties Committee:** A non-punitive oversight body to assist and guide implementation.

FEATURES OF PANDEMIC EMERGENCY:

- **Tiered Alert System:** Pandemic emergency is a higher tier beyond PHEIC.
- **Broader Triggers:** Based on health overload, socioeconomic disruption, and whole-of-society response needs.
- **Equity & Solidarity:** Focus on fair access to vaccines, medicines, and financial support.
- **Respect for Sovereignty:** WHO cannot impose domestic measures such as lockdowns; national governments retain control.
- **Integration:** Enriches the PHEIC mechanism, avoiding duplication of procedures.

SIGNIFICANCE:

1. **Legal Certainty:** Establishes clear criteria for when a global pandemic can be declared.
2. **Faster Response:** Enables quicker mobilization of international resources and expertise.
3. **Equity in Support:** Developing nations gain access to dedicated financial and technical assistance.
4. **Global Coordination:** Reinforces international cooperation while respecting state sovereignty.

CONCLUSION:

The creation of a **pandemic emergency category** strengthens global health governance by bridging the gap between national sovereignty and international solidarity. It ensures clarity, faster response, and fairer distribution of resources, making the world better prepared for future health crises.

MONUMENT CONSERVATION OPENS TO THE PRIVATE SECTOR

CONTEXT:

In a landmark move, the Government of India is opening the conservation of protected monuments to private participation for the first time, ending the *Archaeological Survey of India's (ASI)* exclusive control. The initiative will work through a **Public-Private Partnership (PPP)** framework, inviting corporates, PSUs, and private organisations to contribute.

IMPLEMENTATION FRAMEWORK

- **Funding Mechanism:** All contributions will flow through the **National Culture Fund (NCF)**, set up in 1996.
  - NCF offers **100% tax exemption** for donations.
  - Till now, NCF has mobilised around **₹140 crore** from corporates/PSUs.
- **Operational Model:**
  - Donors may select empanelled conservation architects (shortlisted by the Ministry of Culture).
  - External implementing agencies can be hired for execution.
  - Each project must follow the **National Policy for Conservation of Ancient Monuments (2014)**.
  - Detailed Project Reports (DPRs) require **ASI's approval**.
- **Pilot Phase:** A list of **250 monuments** will be opened for donor participation.

ARCHAEOLOGICAL SURVEY OF INDIA (ASI) – AT A GLANCE

- **Founded:** 1861 by Alexander Cunningham.
- **Headquarters:** New Delhi.
- **Parent Ministry:** Ministry of Culture.
- **Mandate:** Archaeological explorations, excavations, conservation, site museums, and epigraphical research.
- **Current Role:** Manages conservation of **~3,700 protected monuments**.

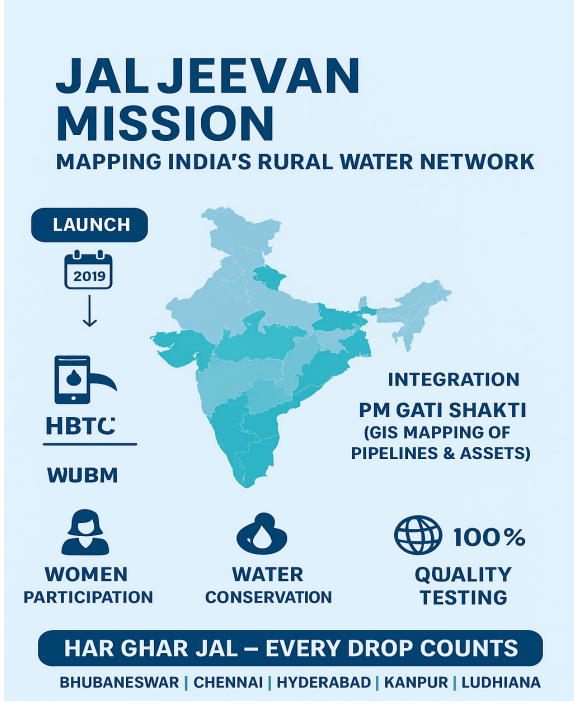
SIGNIFICANCE OF THE MOVE

- **Resource Mobilisation:** Expands conservation funding beyond limited government budgets.
- **Efficiency:** Brings in professional expertise and corporate accountability.
- **Heritage Protection:** Ensures faster preservation of monuments that face neglect due to resource crunch.
- **Public Engagement:** Encourages wider participation in safeguarding cultural heritage.

WAY FORWARD:

Successful implementation will depend on robust regulatory oversight by ASI to maintain authenticity and prevent over-commercialisation of heritage sites.

JAL JEEVAN MISSION: MAPPING INDIA'S RURAL WATER NETWORK



CONTEXT

The Union government has announced plans to **map all drinking water assets**, including pipelines, created under the **Jal Jeevan Mission (JJM)**, on the **PM Gati Shakti platform** — a **Geographic Information System (GIS)-based** national master plan for integrated infrastructure planning.

This initiative aims to enhance **transparency, monitoring, and inter-departmental coordination** to ensure sustainable and equitable water delivery across rural India.

ABOUT JAL JEEVAN MISSION

Launched on **August 15, 2019**, the **Jal Jeevan Mission (JJM)** envisions providing **safe and adequate drinking water** to **every rural household** in India through **Functional Household Tap Connections (FHTCs)** by **2024**.

The Mission adopts a **community-based approach**, emphasizing **Information, Education, and Communication (IEC)** to promote water conservation and responsible usage.

- **Nodal Ministry:** Ministry of Jal Shakti
- **Type:** Centrally Sponsored Scheme

KEY COMPONENTS OF JJM

1. **Infrastructure Development:**
   - Creation of in-village piped water supply networks for every rural household.
2. **Community Participation:**
   - **Bottom-up planning** involving local bodies and Village Water and Sanitation Committees (VWSCs).
3. **Women Empowerment:**
   - Active involvement of women in decision-making, implementation, monitoring, and maintenance.
4. **Institutional Strengthening:**
   - Capacity building of local communities to manage operation and maintenance (O&M).
5. **Source Sustainability:**
   - Groundwater recharge, rainwater harvesting, and conservation of traditional water bodies.
6. **Greywater Management:**
   - Reuse of household wastewater for agriculture and groundwater replenishment.
7. **Water Quality Assurance:**
   - Regular testing to prevent water-borne diseases through **Water Quality Laboratories** and **Field Test Kits**.
8. **Special Focus:**
   - Ensuring tap water supply to **schools, anganwadi centres, tribal hostels, and healthcare institutions**.

FUNDING PATTERN

- **50:50** between Centre and States.
- **90:10** for Himalayan and North-Eastern States.
- **100% Central funding** for Union Territories.

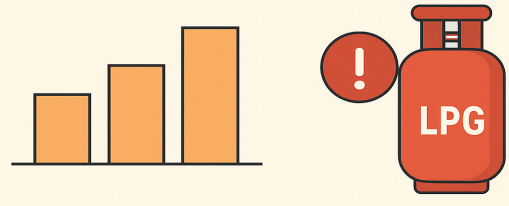
PNGRB PROPOSES LPG INTEROPERABILITY FRAMEWORK

PNGRB PROPOSES LPG INTEROPERABILITY FRAMEWORK

KEY FEATURES OF THE PROPOSAL

- Cylinder not delivered within 24 hrs
- Order routed to nearest ***distributor.***

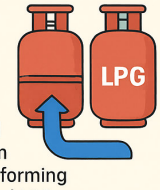
RATIONALE BEHIND THE PROPOSAL



Petroleum and Natural Gas Regulatory Board (PNGRB)

PNGRB PROPOSES LPG INTEROPERABILITY FRAMEWORK

KEY FEATURES OF THE PROPOSAL



- If a distributor fails to deliver a cylinder within 24 hours of booking, the order will be automatically routed to the nearest available distributor, regardless of the oil marketing company (OMC)
- This means that a customer of Indian Oil Corporation (IOC) can receive a refill from a nearby BPCL or HPCL distributor, transforming three separate silos into a unified national LPG delivery system
- Pilot Phase: Proposal includes a phased rollout, starting with pilot projects in select urban and rural areas to test coordination systems

RATIONALE BEHIND THE PROPOSAL

- Delivery Delays: Over 1.7 million LPG-related complaints are registered annually, with nearly haif concerning delivery delays
- Service Excellence: With 32 crore domestic LPG connections and near 100% coverage, the challenge is no longer access but ensuring timely, reliable delivery for households
- Universal Service Obligation: All three OMCs are under MoPNG and sell LPG at uniform prices, sharing a common mandate to guarantee fuel access nationwide

CONTEXT:

The Petroleum and Natural Gas Regulatory Board (PNGRB) has proposed an **interoperable LPG delivery system** to address the growing challenge of delayed cylinder deliveries. The move aims to enhance consumer convenience and strengthen India's energy service delivery mechanism.

KEY FEATURES OF THE PROPOSAL

- **24-Hour Delivery Mandate:** If a distributor fails to deliver a refill within 24 hours of booking, the order will be rerouted to the nearest available distributor, irrespective of the oil marketing company (OMC).
- **Cross-OMC Flexibility:** Customers of IOC, BPCL, or HPCL can receive a refill from any nearby distributor, effectively merging three separate delivery silos into a **unified national LPG supply network**.
- **Phased Rollout:** The framework will begin with pilot projects in select urban and rural areas to test coordination and technology systems before nationwide implementation.

RATIONALE BEHIND THE PROPOSAL

- **Delivery Complaints:** Around **1.7 million LPG-related grievances** are filed annually, with nearly half linked to delayed refills.
- **Focus Shift:** With **32 crore domestic LPG connections** and near-universal coverage achieved, the challenge is no longer access but **timely and reliable service**.
- **Universal Service Obligation:** As all three OMCs operate under the Ministry of Petroleum and Natural Gas (MoPNG) and sell LPG at **uniform subsidised prices**, interoperability aligns with their common mandate to ensure uninterrupted household fuel access.

PETROLEUM AND NATURAL GAS EGULATORY BOARD (PNGRB)

- **Statutory Body:** Established under the **PNGRB Act, 2006**, headquartered in New Delhi.
- **Nodal Ministry:** Ministry of Petroleum and Natural Gas.
- **Composition:** Chairperson, one legal member, and three other members, appointed by the Centre for five years or until the age of 65.
- **Functions:** Regulates refining, storage, transportation, distribution, marketing, and sale of petroleum products and natural gas (excluding crude oil and production).
- **Powers:** Adjudicate disputes, levy fees, maintain databanks, conduct inquiries, and recommend policies.
- **Appeals:** Decisions can be challenged before the **Appellate Tribunal for Electricity**.

SIGNIFICANCE OF THE PROPOSAL

- **Consumer-Centric Reform:** Ensures faster deliveries and reduces reliance on a single distributor.
- **Efficiency & Competition:** Encourages better performance among distributors by eliminating monopolistic silos.
- **Digital Integration:** Pushes for advanced IT systems to seamlessly transfer bookings across OMCs.
- **Strengthening Energy Security:** Builds a more resilient and responsive LPG supply chain.

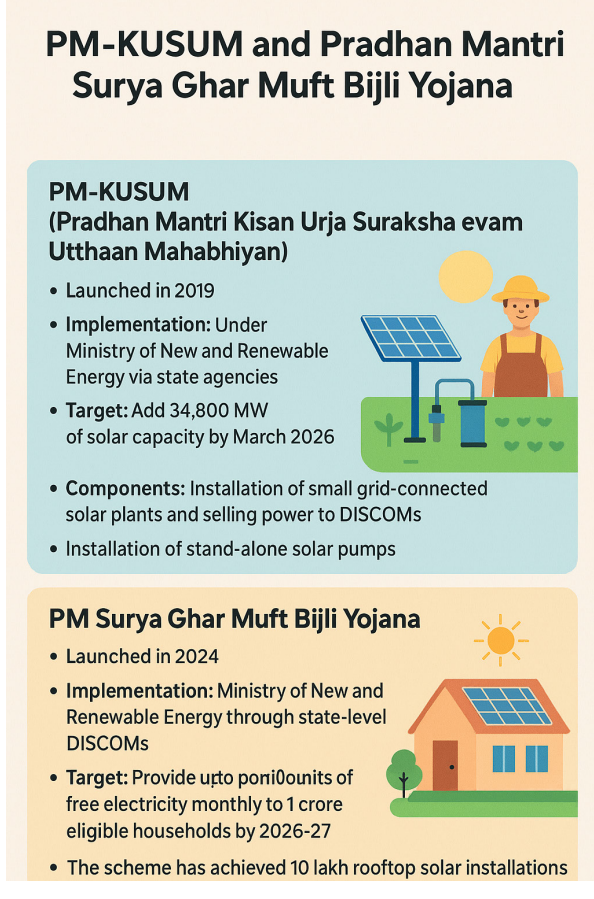
CHALLENGES AHEAD

- **Operational Coordination:** Requires robust digital infrastructure and real-time inventory tracking across companies.
- **Accountability & Monitoring:** Clear mechanisms must be in place to prevent mismanagement and ensure transparency.
- **Pilot to Scale:** Lessons from pilot projects must be carefully integrated before nationwide rollout.

UPSC RELEVANCE:

- **GS2: Governance & Service Delivery Mechanisms**
- **GS3: Energy & Infrastructure Reforms**

PM-KUSUM AND PRADHAN MANTRI SURYA GHAR MUFT BIJLI YOJANA



CONTEXT:

India plans to showcase two of its flagship renewable energy initiatives — **PM-KUSUM** and **PM Surya Ghar Muft Bijli Yojana** — on the global stage through the **International Solar Alliance (ISA)** platform. Both schemes reflect India's commitment towards decentralized solar power generation, rural empowerment, and energy self-sufficiency.

1. PM-KUSUM (PRADHAN MANTRI KISAN URJA SURAKSHA EVAM UTTHAAN MAHABHIYAN)

Launched: 2019

Nodal Ministry: Ministry of New and Renewable Energy (MNRE)

Target: To add **34,800 MW of solar capacity** by March 2026

Objective:

PM-KUSUM aims to provide financial and infrastructural support to farmers for adopting solar energy in agriculture, reducing their dependence on diesel and conventional electricity.

Key Components:

1. **Installation of small grid-connected solar power plants** (up to 2 MW) for selling power to DISCOMs.
2. **Deployment of stand-alone solar pumps** in off-grid areas.
3. **Solarisation of existing grid-connected pumps**, enabling farmers to sell surplus power to the grid.

Progress & Achievements:

Over **70% of standalone solar pumps** under the target have been installed, though the progress in grid-connected components has been relatively slower due to land and financing issues. Still, the scheme has proven effective in promoting **energy-efficient irrigation** and reducing rural carbon footprints.

2. PM SURYA GHAR MUFT BIJLI YOJANA

Launched: 2024

Nodal Ministry: Ministry of New and Renewable Energy (MNRE)

Nature: Central Sector Scheme

Objective:

To provide **up to 300 units of free electricity per month** by promoting **rooftop solar panel installations** across residential households.

Target:

To cover **1 crore households** by 2026–27.

Implementation:

The scheme is implemented through **state-level DISCOMs**, ensuring subsidy disbursement and grid integration for rooftop systems.

Achievements:

Within months of its launch, **10 lakh rooftop solar installations** have been completed. The initiative also encourages household-level energy generation, aiming to transform consumers into "prosumers."

SIGNIFICANCE:

- Reduces agricultural dependence on diesel and conventional power.
- Promotes **self-reliant rural energy systems**.
- Aligns with India's **National Solar Mission** and **Net Zero 2070 goals**.
- Enhances **energy access, affordability, and sustainability**.
- Strengthens India's leadership in the **International Solar Alliance**.

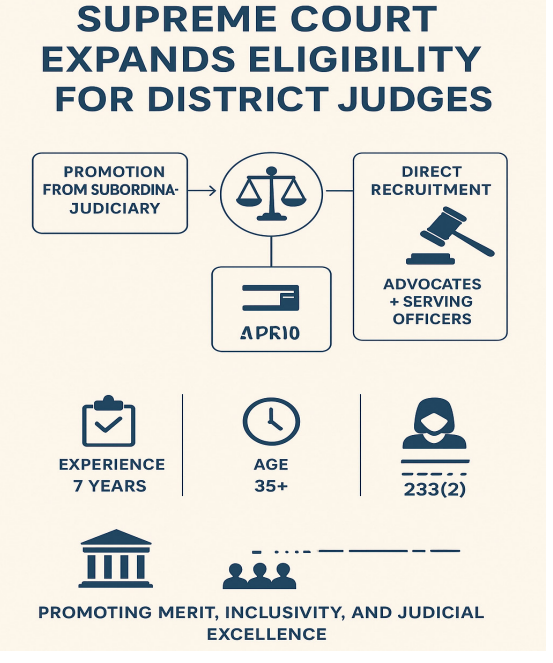
WAY FORWARD:

Both schemes require faster approval processes, better DISCOM participation, and easier financing mechanisms for beneficiaries. With effective implementation, these programs could serve as **models of decentralized renewable energy** for developing nations.

IN ESSENCE:

The twin pillars of **PM-KUSUM** and **PM Surya Ghar Muft Bijli Yojana** represent India's dual strategy — *solarising agriculture* and *democratising household energy access* — driving the nation toward a cleaner and more self-reliant energy future.

SUPREME COURT ALLOWS DIRECT RECRUITMENT FOR DISTRICT JUDGES



In a landmark judgment, the **Supreme Court of India** has permitted **serving judicial officers** to apply for the post of **District Judge** through the *direct recruitment* channel. This ruling marks a significant reinterpretation of **Article 233(2)** of the Constitution, which deals with the appointment of District Judges.

BACKGROUND:

Traditionally, **District Judges** have been appointed through two distinct routes:

1. **Direct recruitment** from practising advocates (Bar quota), and
2. **Promotion** from the subordinate judiciary.

The controversy arose after a **Kerala judicial officer** was disqualified from applying under the *advocate quota* based on the Supreme Court's **Dheeraj Mor vs. High Court of Delhi (2020)** judgment. The Court had earlier held that a person serving as a judicial officer could not be considered an "advocate" under Article 233(2).

However, recognising the evolving nature of judicial service and the need to widen talent pools, a **five-judge Constitution Bench** revisited the issue to harmonise merit-based selection with judicial experience.

KEY DIRECTIONS ISSUED:

- **Eligibility Expansion:** Serving **judicial officers** can now apply for *District Judge posts* under the **direct recruitment** quota.
- **Experience Requirement:** Applicants must have a **minimum of 7 years** of continuous professional experience — either as an **advocate**, a **judicial officer**, or a **combination of both**.
- **Age Limit:** Minimum **35 years of age** is required for all candidates.
- **Eligibility Timeline:** Eligibility shall be **determined at the time of application**, not at the time of appointment.

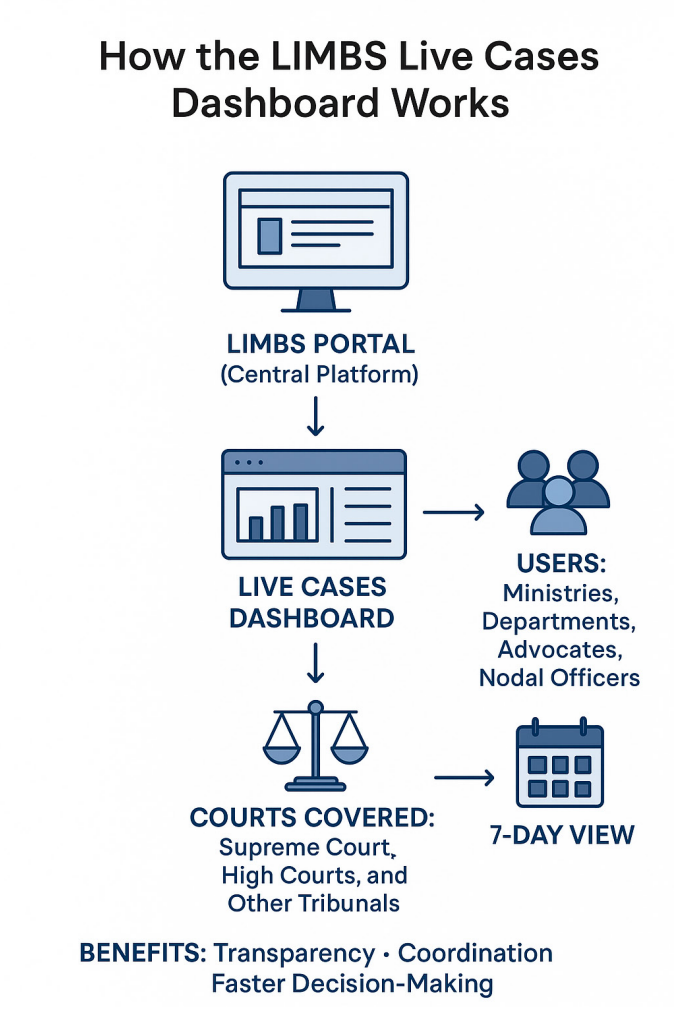
SIGNIFICANCE OF THE RULING:

- **Widened Talent Pool:** Ensures merit and experience from both bar and bench can contribute to higher judicial positions.
- **Judicial Efficiency:** Brings practical courtroom and administrative experience together.
- **Constitutional Clarity:** Provides a definitive interpretation of **Article 233(2)**, resolving ambiguity from earlier rulings.
- **Institutional Impact:** Strengthens the **independence and inclusiveness** of the judiciary.

WAY FORWARD:

The judgment paves the way for **more transparent and inclusive recruitment** in the higher judiciary. It aligns with the larger constitutional goal of ensuring *efficiency, independence, and accessibility* in India's judicial system.

LIVE CASES DASHBOARD OF THE LEGAL INFORMATION MANAGEMENT AND BRIEFING SYSTEM (LIMBS)



ABOUT THE LIVE CASES DASHBOARD

The **Live Cases Dashboard** is a **real-time data visualization platform** that provides an instant overview of court cases involving various **Ministries, Departments, and Government of India entities**.

KEY FEATURES:

- Displays all **cases scheduled for hearing in the next seven days** in the **Supreme Court**, **High Courts**, and other courts.
- Offers a **visual summary** of live cases, pending matters, and upcoming hearings.
- Enables **data-driven decision-making** and **better inter-ministerial coordination**.

- Helps legal officers and officials track case progress efficiently and plan representation accordingly.

ABOUT THE LEGAL INFORMATION MANAGEMENT AND BRIEFING SYSTEM (LIMBS)

LIMBS is a **web-based centralized platform** for monitoring court cases where the **Union of India** is a party. It helps streamline legal data management across ministries, ensuring consistency and efficiency in government litigation.

BACKGROUND & DEVELOPMENT:

- **Launched:** Initially developed in **2016** for all **Ministries, Departments, Autonomous Bodies, and Central Public Sector Undertakings (CPSUs)**.
- **Upgraded Version:** Introduced in **January 2020** with advanced analytical features and improved user interface.
- **Nodal Agency:** Managed by the **Department of Legal Affairs**, **Ministry of Law and Justice**.

SALIENT FEATURES:

- **Accessibility:** Available **24×7** to authorized stakeholders including **nodal officers, advocates, arbitrators, and government officials**.
- **Comprehensive Monitoring:** Enables uploading and tracking of **latest case updates, judgments, and documentation**.
- **Dashboard-Based Interface:** Provides a **summary view** of each Ministry's or Department's legal matters at a glance.
- **Digital Integration:** Supports **paperless workflows** and centralized information sharing, aligning with the **Digital India Mission**.

SIGNIFICANCE

- Promotes **transparency and accountability** in government litigation.
- Reduces duplication of efforts and delays in communication.
- Enhances the **institutional memory** of legal cases across departments.
- Aids in **strategic legal management** and minimizes financial and administrative burden on the government.

GLOBAL HUNGER INDEX (GHI) REPORT 2025: TWO DECADES OF TRACKING HUNGER

GLOBAL HUNGER INDEX 2025

20 Years of Tracking Progress – Time to Re-commit to Zero Hunger

Global GHI Score
18.3

Slow progress since 2016 (19.0)

At current pace: Zero Hunger delayed till 2137

India: Rank 105 / 127

Score: 27.3 (Serious)

Key Challenge: Child malnutrition & dietary inequality

Crisis Hotspots:
- Gaza, Sudan → famine-level hunger
- 20 crises → 140 million people affected

42 countries face serious or alarming **hunger** 7 alarming | 35 serious

Regional Trends:
South Asia, Southern Africa → serious
Europe, Central Asia → lowest hunger

CONTEXT:

The **2025 Global Hunger Index (GHI)** titled *"20 Years of Tracking Progress – Time to Re-commit to Zero Hunger"* was recently released, marking two decades since the Index's inception. Despite some regional improvements, the report warns that **global hunger reduction has largely stalled**, and the **UN Sustainable Development Goal 2 (Zero Hunger by 2030)** is far from reach.

ABOUT THE GLOBAL HUNGER INDEX (GHI):

- **Released by:** *Concern Worldwide* (Ireland) and *Welthungerhilfe* (Germany).
- **Purpose:** To assess and compare hunger levels worldwide using a standardized framework to guide **evidence-based policymaking**.
- **Scoring System:** The GHI score ranges from **0 (no hunger)** to **100 (worst)**.
  - **Low (≤9.9)** | **Moderate (10–19.9)** | **Serious (20–34.9)** | **Alarming (35–49.9)** | **Extremely Alarming (≥50)**

- **Indicators:**
  0. **Undernourishment** – share of population with insufficient calorie intake.
  1. **Child Stunting** – low height-for-age.
  2. **Child Wasting** – low weight-for-height.
  3. **Child Mortality** – under-five mortality rate.

INDIA'S PERFORMANCE:

- **Rank (2024):** 105th out of 127 countries
- **Score:** 27.3 — categorised as *"Serious"*
- **Key Challenges:** Persistent child malnutrition, dietary inequality, and inadequate maternal health remain major concerns despite improvements in food grain output and welfare coverage.

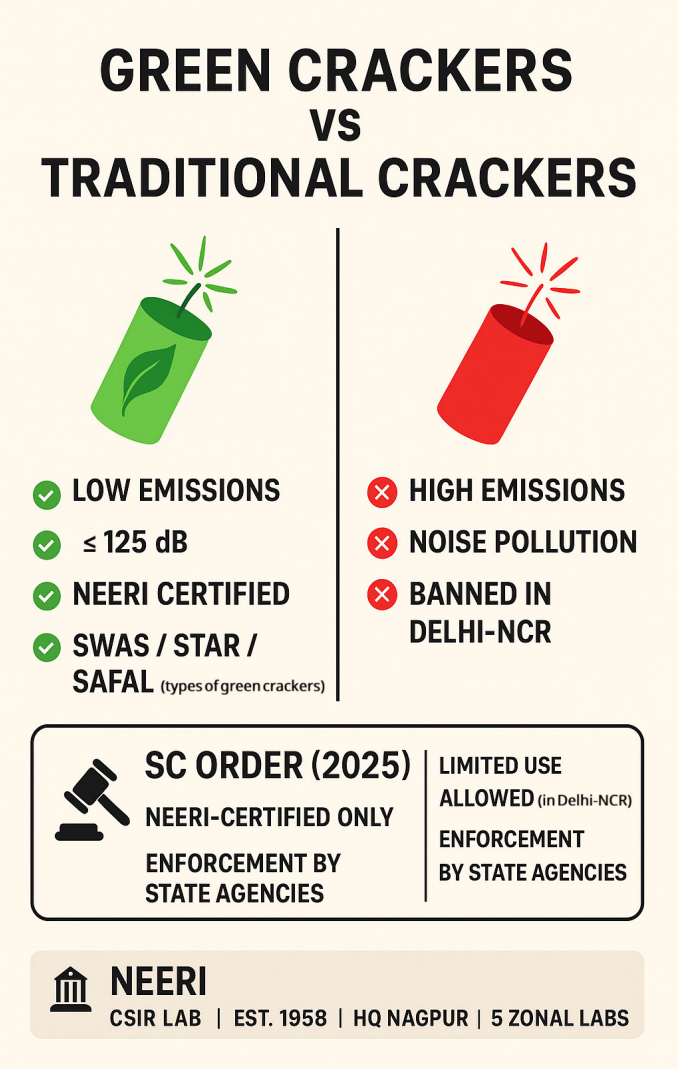
KEY GLOBAL FINDINGS (2025 REPORT):

1. **Stalled Progress:**
   - The global score improved marginally from **19.0 (2016)** to **18.3 (2025)**.
   - At this rate, *Zero Hunger* may not be achieved until **2137**.
2. **Conflict-Driven Crises:**
   - Wars in **Gaza** and **Sudan** triggered famine-level food insecurity in 2024.
   - **20 major food crises** affected **~140 million people** globally.
3. **Rising Hunger:**
   - **42 countries** face *serious or alarming* hunger levels:
     - *7 alarming* (e.g., Burundi, Haiti, Somalia, South Sudan, Yemen)
     - *35 serious*
   - Hunger levels worsened in **27 countries** since 2016.
4. **Regional Variation:**
   - **Serious hunger:** Southern Africa and South Asia.
   - **Improved regions:** Southeast Asia, Latin America.
   - **Lowest hunger levels:** Europe and Central Asia.
5. **Success Stories:**
   - **Tajikistan, Mozambique, Rwanda, Somalia, Togo, and Uganda** demonstrated notable progress through improved nutrition programmes and social safety nets.

SIGNIFICANCE:

- Calls for **re-commitment to SDG-2 (Zero Hunger)** by addressing inequality, conflict, and climate shocks.
- Highlights the need for **climate-resilient food systems**, **inclusive agricultural growth**, and **global solidarity** to tackle undernutrition.
- Reaffirms that hunger is not merely a food issue but a **multi-dimensional challenge** linked to poverty, governance, and peace.

SC ALLOWS USE OF GREEN FIRECRACKERS IN DELHI-NCR



The Supreme Court has eased the earlier blanket ban on firecrackers, **permitting the limited sale and use of green firecrackers in Delhi-NCR** this Diwali. The decision aims to curb the illegal smuggling of traditional firecrackers while promoting less polluting alternatives.

ABOUT GREEN CRACKERS

Green firecrackers are **low-emission, eco-friendly fireworks** designed to reduce both **air and noise pollution** compared to conventional firecrackers. They were developed by the **CSIR–National Environmental Engineering Research Institute (NEERI)** to address pollution spikes during festive seasons.

- **Legal Basis:**
- The use of green crackers follows the **2018 SC ruling in** Arjun Gopal v. Union of India, which banned traditional firecrackers and permitted only certified green versions.

- **Types of Green Crackers:**
  - **SWAS (Safe Water Releaser):** Emits water vapour to suppress dust and dilute harmful gases (~30% reduction).
  - **STAR (Safe Thermite Cracker):** Made without potassium nitrate or sulphur, reducing emissions and noise.
  - **SAFAL (Safe Minimal Aluminium):** Replaces aluminium with magnesium, cutting particulate matter by ~35%.
- **Benefits:**
  - Lower particulate and gaseous emissions
  - Noise levels below 125 dB
  - Reduced contribution to smog episodes
- **Concerns:**
  - Still emit ultra-fine particulate matter
  - Risk of counterfeit products in the market
  - Limited public awareness and enforcement challenges

ABOUT NEERI

The **National Environmental Engineering Research Institute (NEERI)** is a **premier environmental research institute** under the **Council of Scientific and Industrial Research (CSIR)**, Ministry of Science & Technology.

- **Founded:** 1958 (as CPHERI)
- **Renamed:** 1974 as NEERI
- **Headquarters:** Nagpur
- **Zonal Labs:** Chennai, Delhi, Hyderabad, Kolkata, Mumbai
- **Mandate:** R&D in environmental management, pollution control, and sustainable development.

NEERI's innovations, including **green cracker technology**, align with India's broader goals of sustainable celebrations and pollution mitigation.

JUDICIAL CONTEXT

The **Supreme Court's recent order** does not **lift the ban entirely** but **allows the controlled use** of certified green crackers. The Court has also directed state agencies to ensure strict enforcement and curb sale of counterfeit versions.

This move seeks to balance **environmental protection with cultural practices**, especially during festivals like Diwali, when Delhi-NCR faces severe air quality deterioration.

WAY FORWARD

- Enhanced **public awareness campaigns**
- **Strict enforcement** against counterfeit products
- Strengthening **certification and supply chains**
- Promoting **alternative celebration methods**

FSSAI BANS MISUSE OF 'ORS' LABEL

CONTEXT

The Food Safety and Standards Authority of India (FSSAI) has issued a directive prohibiting the use of the term *'Oral Rehydration Salts (ORS)'* on any food or beverage product that does not meet the World Health Organization (WHO)-approved formulation.

This move aims to curb misleading marketing practices where some beverage companies label sugary drinks as "ORS," deceiving consumers and posing potential health risks.

ABOUT THE DIRECTIVE

- **Legal Basis:** Issued under the **Food Safety and Standards Act, 2006**, which empowers FSSAI to regulate and enforce food labelling and safety standards.
- **Misbranding Clause:** Products using the term "ORS" without approval will be treated as **misbranded or misleading advertisements**, punishable under the Act.

- **Objective:** To ensure that only clinically validated and WHO-compliant formulations are sold as ORS in India.

ABOUT FSSAI

- **Established:** 2008, under the **Food Safety and Standards Act, 2006**.
- **Nodal Ministry: Ministry of Health and Family Welfare**.
- **Mandate:** To lay down science-based standards for food articles and regulate their manufacture, storage, distribution, and sale to ensure food safety.

ABOUT ORAL REHYDRATION SALTS (ORS)

- **Purpose:** ORS is a **scientifically formulated solution** used to treat dehydration resulting from diarrhoea, vomiting, or heat stress.
- **WHO-Approved Composition:**
- Sodium chloride, glucose, potassium chloride, and trisodium citrate — in precise proportions to optimize absorption.
- **Mechanism:** The **glucose–sodium co-transport mechanism** in the intestines facilitates the absorption of electrolytes and water, restoring hydration efficiently.
- **Health Significance:**
  - Recognized as one of the most important medical advances for preventing child mortality due to diarrhoea.
  - Must not be confused with general energy or electrolyte drinks, which often contain excessive sugar and inadequate electrolyte balance.

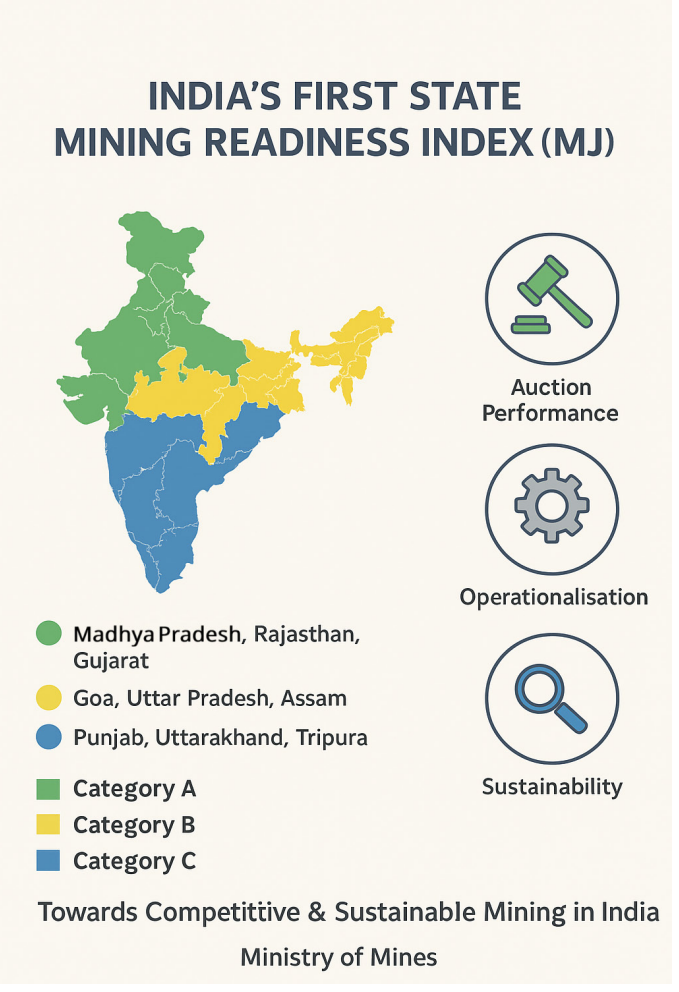
SIGNIFICANCE OF THE BAN

- **Consumer Protection:** Prevents the sale of unscientific and misleading products claiming medical properties.
- **Public Health Safety:** Safeguards vulnerable populations, especially children, from consuming high-sugar products mislabelled as ORS.
- **Regulatory Strengthening:** Reinforces India's compliance with **WHO and UNICEF** standards for rehydration therapy.

CONCLUSION

The FSSAI's regulation marks a vital step in ensuring evidence-based labelling and consumer protection. By limiting the 'ORS' tag to scientifically verified formulations, India upholds both medical integrity and public health priorities.

STATE MINING READINESS INDEX (SMRI) 2025



CONTEXT:

The **Ministry of Mines (MoM)** has released the **first-ever State Mining Readiness Index (SMRI)**, assessing and ranking States based on their readiness and performance in the mining sector. The initiative, reported by *Business Standard* and *Times of India*, aims to encourage reforms, strengthen federal cooperation, and promote responsible mineral development across India.

ABOUT THE SMRI:

The **State Mining Readiness Index** is a **benchmarking tool** designed to evaluate States and Union Territories on their capacity to efficiently manage and develop non-coal mineral resources. It aligns with the national goal of *Atmanirbhar Bharat* through enhanced domestic mineral exploration and sustainable mining.

OBJECTIVES OF THE INDEX:

- To **promote competitive federalism** among States in the mining sector.

- To **encourage investment-friendly policies** and attract private participation.
- To foster **sustainable and transparent mineral management**.
- To act as a **performance monitoring tool** for mining reforms.

KEY EVALUATION PARAMETERS:

The Index evaluates States based on **four key pillars**:

1. **Auction Performance** – Efficiency and transparency in mineral block auctions.
2. **Mine Operationalisation** – Speed and success in converting auctioned blocks into operational mines.
3. **Exploration Efforts** – Level of geological exploration and resource mapping.
4. **Sustainable Mining Practices** – Environmental compliance, community engagement, and mine closure planning.

RANKING HIGHLIGHTS:

Category	States with High Readiness	Mineral Endowment Type
Category A	Madhya Pradesh, Rajasthan, Gujarat	Mineral-rich States
Category B	Goa, Uttar Pradesh, Assam	Moderate mineral endowment
Category C	Punjab, Uttarakhand, Tripura	Limited mineral endowment

SIGNIFICANCE:

- Enhances **policy coherence** between the Centre and States.
- Promotes **data-driven decision-making** in the mineral sector.
- Facilitates **balanced regional development** through sectoral competitiveness.
- Supports India's transition to a **sustainable and self-reliant mineral economy**.

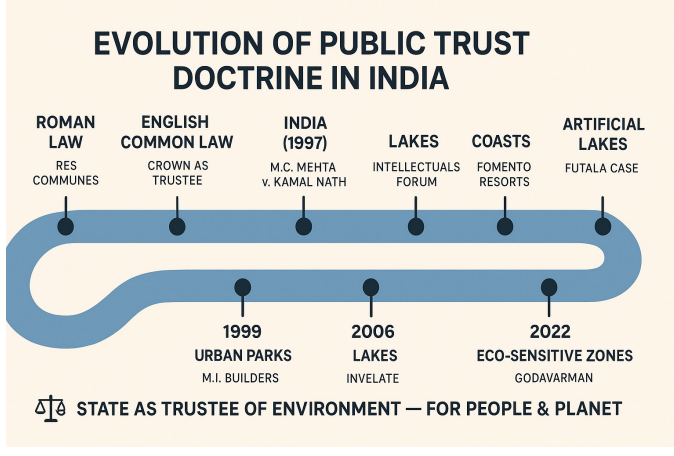
WAY FORWARD:

- Strengthen **digital governance** in mining through platforms like **MCP (Mining Clearance Portal)**.
- Expand **geoscientific data sharing** for faster exploration.
- Integrate **environmental, social, and governance (ESG)** metrics into the SMRI framework.
- Encourage **capacity building** for State mining departments.

CONCLUSION:

The **State Mining Readiness Index** marks a crucial step toward modernising India's mining ecosystem. By linking performance to reforms, it encourages States to adopt best practices in mineral exploration, sustainability, and governance—building a resilient foundation for India's economic growth.

SUPREME COURT EXPANDS SCOPE OF PUBLIC TRUST DOCTRINE



CONTEXT:

In a landmark judgment (Swacch Association v. State of Maharashtra, 2025), the Supreme Court has expanded the **Public Trust Doctrine (PTD)** to include *artificial waterbodies*, marking a significant evolution in Indian environmental jurisprudence. The case pertained to the protection and restoration of **Nagpur's historic Futala Lake**, which had been deteriorating due to unchecked encroachments and pollution.

UNDERSTANDING THE PUBLIC TRUST DOCTRINE

The **Public Trust Doctrine** is a legal principle that treats the **State as the trustee of certain natural and cultural resources**, such as forests, rivers, lakes, and public spaces, for the benefit of present and future generations.

Its **core idea** is that these resources are too vital to be privately owned or misused and must be preserved for public welfare and ecological balance.

OBJECTIVES:

- To ensure **sustainable and equitable use** of environmental resources.
- To uphold **intergenerational equity** — protecting resources for future generations.

- To prevent **arbitrary state actions** that harm ecological assets.

EVOLUTION:

- **Roman Law Origin:** The concept stemmed from the Roman notion of *"res communes"* — resources like air, water, and shores belong to everyone.
- **English Common Law:** The Crown held such resources in trust for the public.
- **Indian Jurisprudence:** Adopted formally through **M.C. Mehta v. Kamal Nath (1997)**, where the Supreme Court ruled against leasing forest land for private use.

CONSTITUTIONAL BACKING

The doctrine draws strength from:

- **Article 21:** Right to Life includes the right to a clean and healthy environment.
- **Article 48A:** Directive for the State to protect and improve the environment.
- **Article 51A(g):** Fundamental duty of citizens to protect the natural environment.

KEY JUDGMENTS EXPANDING THE DOCTRINE

Case	Year	Scope Expanded To
M.C. Mehta v. Kamal Nath	1997	Forest land and rivers
M.I. Builders v. Radhey Shyam Sahu	1999	Urban parks and public spaces
Intellectuals Forum v. State of A.P.	2006	Lakes and wetlands
Fomento Resorts v. Minguel Martins	2009	Coastal and beach areas
T.N. Godavarman v. Union of India	1996–2022	Forests and eco-sensitive zones
Swacch Association v. State of Maharashtra	2025	Artificial waterbodies like Futala Lake

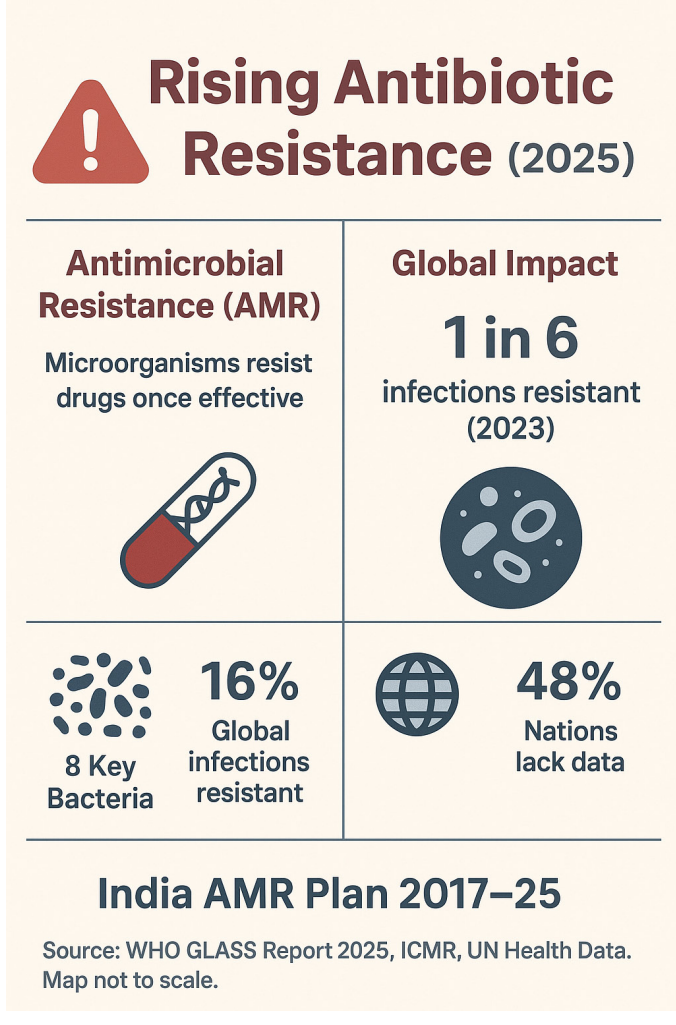
SIGNIFICANCE OF THE 2025 RULING

- Recognizes **artificial lakes** as **public ecological assets**.
- Imposes a **duty on urban authorities** to preserve man-made waterbodies.
- Reinforces **citizen participation** and public accountability in conservation.
- Strengthens **environmental governance** under constitutional principles.

CONCLUSION

By extending the Public Trust Doctrine to artificial waterbodies, the Supreme Court has reaffirmed India's commitment to **sustainable urban ecosystems**. This judgment bridges the gap between **natural ecology and human-made infrastructure**, ensuring that environmental stewardship remains central to governance and justice.

RISING ANTIBIOTIC RESISTANCE: A GLOBAL HEALTH EMERGENCY



CONTEXT (WHO 2025):

The *World Health Organization's Global Antibiotic Resistance Surveillance Report (2025)* warns that nearly **1 in 6 bacterial infections worldwide in 2023** were resistant to antibiotics. Between **2018–2023**, resistance rose in over **40% of pathogen–antibiotic combinations**, with an annual increase of **5–15%**, signaling an **accelerating global health emergency**.

WHAT IS ANTIMICROBIAL RESISTANCE (AMR)?

Antimicrobial Resistance (AMR) occurs when microorganisms (bacteria, viruses, fungi, parasites) evolve to resist the effects of drugs designed to kill them.

- **Example:** *Multi-Drug-Resistant Tuberculosis (MDR-TB)* — caused by *Mycobacterium tuberculosis* resistant to both **isoniazid (INH)** and **rifampicin (RMP)**.
- AMR makes infections harder to treat, increases hospital stays, and raises mortality risk.

KEY FINDINGS FROM WHO REPORT (2025):

- **Scale of Resistance:**
- Globally, **16% of lab-confirmed infections** were antibiotic-resistant in 2023. The highest rates are reported from **South-East Asia** and the **Eastern Mediterranean**, where **1 in 3 infections** show resistance.
- **Most Affected Pathogens (8 major bacteria):**
- *E. coli, Klebsiella pneumoniae, Acinetobacter spp., Salmonella spp., Shigella spp., Staphylococcus aureus, Streptococcus pneumoniae, Neisseria gonorrhoeae.*
- **Drug Resistance Pattern:**
- Over **40% of E. coli** and **55% of Klebsiella pneumoniae** strains are resistant to **3rd-generation cephalosporins**, a mainline antibiotic group.
- **Data Gaps:**
- Nearly **48% of countries** did not report sufficient data to the **Global AMR Surveillance System (GLASS)**, reflecting weak diagnostic capacity and reporting infrastructure.

INDIA'S PERSPECTIVE

India faces one of the **highest burdens of AMR** globally.

- **Causes:** Overuse of antibiotics, self-medication, poor infection control, and use of antibiotics in livestock.
- **Initiatives:**
  - **National Action Plan on AMR (2017–2025)**.
  - **AMR Surveillance & Research Network (ICMR)**.
  - **"One Health" approach** integrating human, animal, and environmental health.

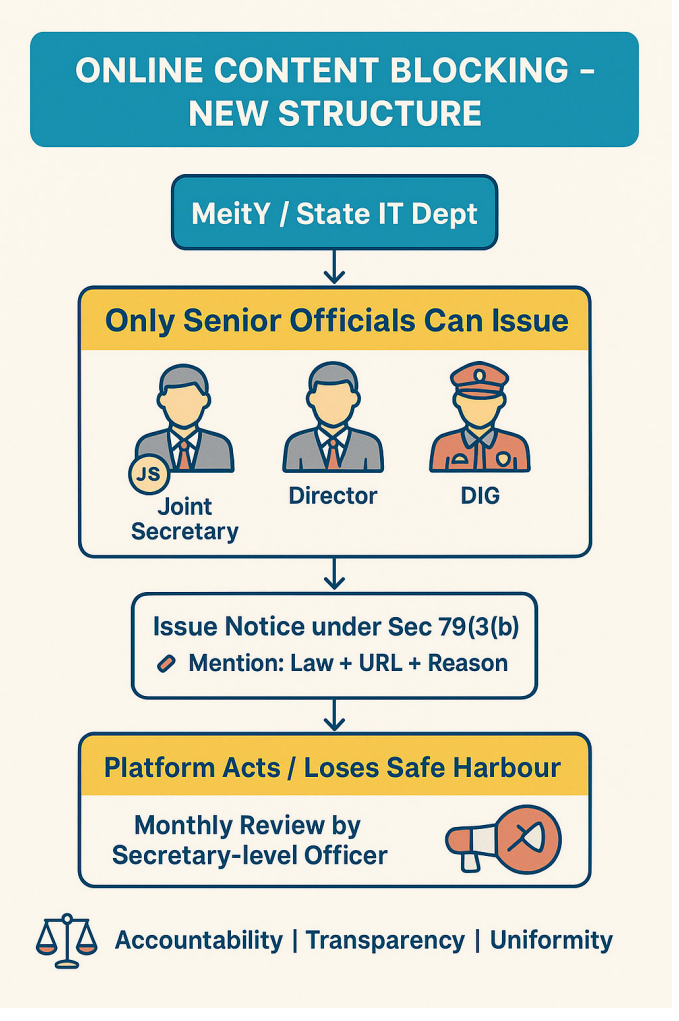
WAY FORWARD

- **Stewardship:** Rational antibiotic prescription and public awareness.
- **Surveillance:** Strengthen global and national reporting systems.
- **Research:** Promote new antibiotics, vaccines, and alternatives like phage therapy.
- **Global Cooperation:** Coordinated policy response under WHO and UN frameworks.

CONCLUSION

Antibiotic resistance is not just a medical challenge—it is a **societal threat** jeopardizing modern medicine. Strengthening surveillance, promoting responsible use, and fostering global partnerships remain key to reversing the tide of AMR.

GOVERNMENT TIGHTENS ONLINE CONTENT BLOCKING RULES, ADDS SENIOR-LEVEL OVERSIGHT



CONTEXT:

The Ministry of Electronics and Information Technology (MeitY) has amended the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021** to introduce new safeguards and senior-level oversight in **online content blocking** under **Section 79(3)(b)** of the **IT Act, 2000**.

KEY HIGHLIGHTS OF THE AMENDMENT

- **Who Can Now Issue Blocking Notices**

Only senior officials are now authorised to issue content removal or flagging notices to platforms such as **YouTube, X (formerly Twitter), and Instagram**.

Authorised officers include:

- **Joint Secretary (JS)** or equivalent officer at the Centre/State.
- **Director-level officers**, where no JS exists.
- **DIG or above**, in police departments, specifically authorised.

Each order must **clearly specify**:

- ☑ Legal basis and statutory provision
- ☑ Nature of the unlawful act
- ☑ Exact URL/digital location of content

A **monthly review** of all such orders will be conducted by an officer **not below the rank of Secretary** (e.g., IT Secretary or State Home Secretary).

RULE 3(1)(D): THE LEGAL BASIS

Under **Rule 3(1)(d)** of the IT Rules, 2021, the government can flag content that violates Indian law.

If platforms **fail to act**, they may **lose "safe harbour" protection**—their legal immunity from user-generated content liability.

Such notices act as **warnings**, not direct takedown orders.

WHY THE CHANGE WAS NEEDED

In some states, **junior police officers** (like Sub-Inspectors or ASIs) had been issuing blocking notices, raising concerns of **misuse** and **lack of accountability**.

The amendment ensures that **only senior officers** can exercise this power, promoting **transparency**, **due process**, and **uniformity** across states.

BACKGROUND: X VS. GOVERNMENT CASE

Elon Musk's **X (formerly Twitter)** had legally challenged the government's use of Rule 3(1)(d), calling it **arbitrary** and **unconstitutional**.

The **Karnataka High Court**, however, upheld the government's authority.

Officials clarified that the new amendment is **not a reaction** to X's case but does address its core concern by defining **clear authority and procedure**.

SECTION 79(3)(B) VS SECTION 69A

Provision	Purpose	Key Feature
Section 79(3)(b)	Removal of unlawful content	Platforms lose "safe harbour" if they fail to act
Section 69A	Blocking content on grounds of national security, integrity, or defence	Direct blocking by government agencies

SIGNIFICANCE

The amendments mark a **shift toward responsible digital governance**, ensuring that **content blocking powers** are exercised with **legal clarity**, **senior oversight**, and **procedural accountability**.

They balance **freedom of expression** with the **need to curb misuse** and maintain **lawful online spaces**.

9 YEARS OF UDAN SCHEME: CONNECTING INDIA'S SKIES

CONTEXT:

The **UDAN (Ude Desh Ka Aam Nagrik)** scheme, launched on **21 October 2016** under the **Ministry of Civil**

Aviation (MoCA), has completed **nine successful years** of enhancing regional air connectivity and making air travel accessible to the common citizen.

ABOUT THE UDAN SCHEME

- **Launch & Objective:**
- Introduced under the **National Civil Aviation Policy (NCAP), 2016**, UDAN aims to make **air travel affordable and widespread**, especially for residents of **Tier-2 and Tier-3 cities**, and regions with **poor or no air connectivity**.
- **Implementing Agency:**
- **Airports Authority of India (AAI)** serves as the **nodal agency**.
- **Tenure:**
- Applicable for **10 years (2016–2026)**.
- **Recognition:**
- Recipient of the **Prime Minister's Award for Excellence in Public Administration (2020)** under the *Innovation Category*.
- **Funding Structure:**
- Supported through **Viability Gap Funding (VGF)** from the **Regional Connectivity Fund**, shared between:
  - **Centre:** 80–90%
  - **State Governments:** 10–20%
  - Airlines receive incentives such as:
    - Fee waivers on parking and navigation
    - 50% seats at subsidised fares
    - State support for land, utilities & security

KEY ACHIEVEMENTS IN 9 YEARS (AS OF 2025)

Category	Achievement
Routes Operationalised	649 Regional Routes
Passengers Served	1.56 crore
Flights Operated	3.23 lakh UDAN Flights
Infrastructure	93 Airports, 15 Heliports, 2 Water Aerodromes
Investment & Support	₹4,300 crore as VGF; ₹4,638 crore airline support
Employment Impact	1 lakh+ Direct & Indirect Jobs (MoCA Report, 2025)

RECENT DEVELOPMENTS

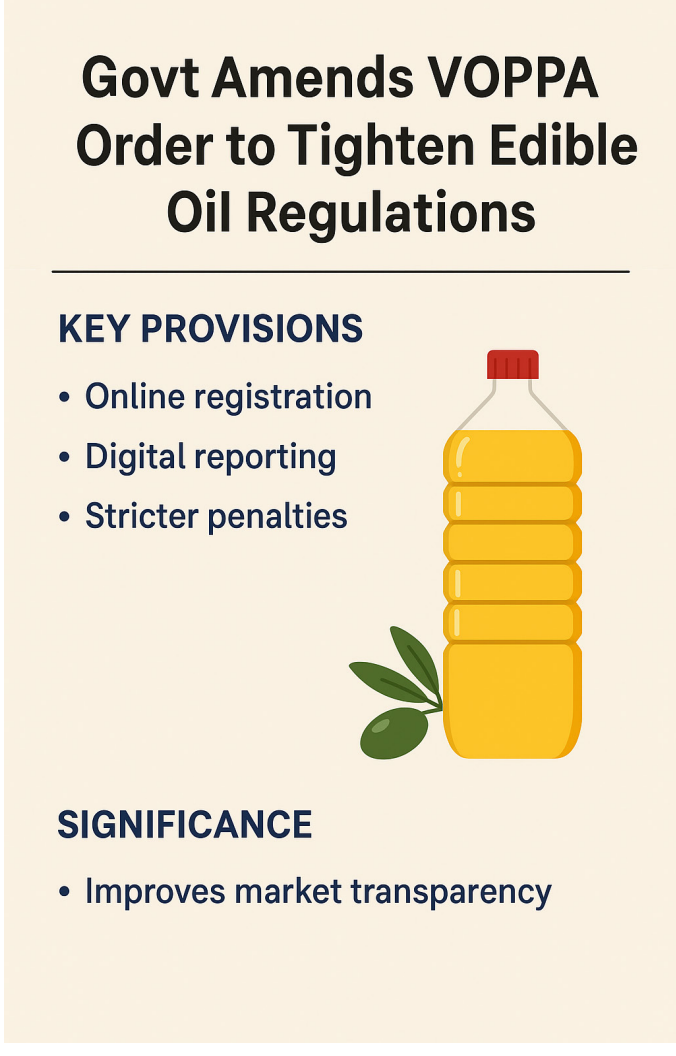
- **UDAN 5.5 (2025):**
- Introduced to focus on **special bidding rounds for seaplanes and helicopters**, addressing geographical barriers in **hilly, island, and North-Eastern** regions.
- **Expanded UDAN Framework (Post-2027):**
- The upcoming phase will focus on **aspirational districts**, **border areas**, and **remote hilly terrains**, aligning with the government's **"Viksit Bharat 2047"** vision.

SIGNIFICANCE

- Democratized air travel by connecting **underserved and unserved airports**.
- Strengthened **regional economic activity**, **tourism**, and **employment generation**.
- Enhanced **social inclusion** and **mobility** in remote areas.

UDAN represents India's **model of inclusive infrastructure growth**, balancing **commercial viability** with **social responsibility**.

GOVT AMENDS VOPPA ORDER TO TIGHTEN EDIBLE OIL REGULATIONS



CONTEXT

The Ministry of Consumer Affairs, Food & Public Distribution has issued the *Vegetable Oil Products, Production and Availability (Regulation) Amendment Order, 2025 (VOPPA 2025)* to enhance regulatory oversight and transparency in India's edible oil sector.

The VOPPA Order, originally notified in 2011 under the *Essential Commodities Act, 1955*, governs the production, distribution, and trade of edible oils in India.

OBJECTIVE OF THE AMENDMENT

The amendment aims to:

- Prevent hoarding and artificial shortages,
- Improve transparency in production and trade data,
- Strengthen enforcement against misreporting, and
- Ensure consumer protection through stable and fair prices.

KEY PROVISIONS OF VOPPA (AMENDMENT) ORDER, 2025

- **Mandatory Online Registration:** All edible oil producers, refiners, and traders must register digitally with state and central authorities.
- **Monthly Digital Reporting:** Real-time data submission on stocks, production, and prices.
- **Alignment with Essential Commodities Act (1955):** Ensures definitional uniformity for better policy enforcement.
- **Enhanced Penalties:** Tighter action against hoarding, under-reporting, and stock manipulation.

SIGNIFICANCE:

These reforms strengthen market surveillance, ensure accurate data flow for policy interventions, and improve food security resilience amid global supply disruptions.

INDIA'S EDIBLE OIL SECTOR: OVERVIEW

- **Consumption:** India is the world's **second-largest consumer** of edible oils after China. Per capita consumption surpasses ICMR's recommended intake levels.
- **Import Dependence:** Imports account for **55–60%** of total demand, making India the **largest global importer**—ahead of China and the U.S.
- **Composition of Imports:**
  - **Palm Oil:** ~56% (mostly from Indonesia & Malaysia)
  - **Soybean Oil:** ~27%
  - **Sunflower Oil:** ~16%
- **Domestic Production:** Key oilseeds—**soybean (34%)**, **rapeseed–mustard (31%)**, and **groundnut (27%)**—constitute over 90% of domestic output.
- **Structural Issues:** Low productivity due to small rainfed farms, outdated processing tech, and limited irrigation.

GOVERNMENT INITIATIVES

- **NMEO–Oil Palm (2021):** Focuses on self-reliance in palm oil production in the North-East and Andaman–Nicobar Islands.
- **NMEO–Oilseeds (2024):** Promotes yield improvement and secondary oil sources (rice bran, cottonseed) using modern technologies.

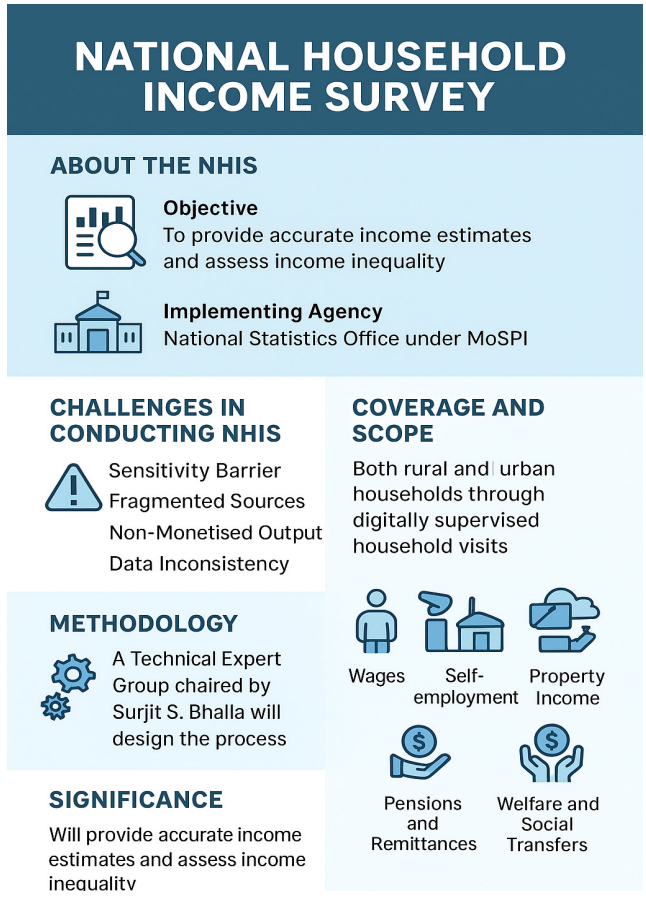
WAY FORWARD

- Develop **strategic edible oil reserves** to cushion price shocks.
- Promote **research and hybrid seeds** for higher oil content.
- Enhance **domestic value chains** through cooperatives and agri-startups.
- Strengthen **digital traceability systems** for transparent supply chains.

CONCLUSION

The **VOPPA 2025 Amendment** represents a critical reform for ensuring edible oil availability, stabilising prices, and reducing India's heavy import dependence — aligning with national goals of food security and *Atmanirbhar Bharat*.

NATIONAL HOUSEHOLD INCOME SURVEY (NHIS)



CONTEXT:

The **Ministry of Statistics and Programme Implementation (MoSPI)** will launch India's first-ever **National Household Income Survey (NHIS)** in **February 2026**. This landmark initiative aims to generate reliable, comprehensive, and regionally representative data on household income and its distribution across different socio-economic groups.

ABOUT THE NATIONAL HOUSEHOLD INCOME SURVEY (NHIS)

Objective:

The primary goal of the NHIS is to **provide accurate income estimates** and **assess income inequality** across rural and urban India. It will help policymakers design targeted welfare measures, strengthen fiscal planning, and evaluate the impact of government schemes on income distribution.

IMPLEMENTING AGENCY:

The survey will be conducted by the **National Statistics Office (NSO)** under the **MoSPI**, marking a significant expansion of India's official statistical architecture.

COVERAGE AND SCOPE:

- Both **rural and urban households** will be covered.
- Data collection will be carried out through **digitally supervised household visits** to ensure transparency and minimize human error.
- The survey will capture income from multiple dimensions, including:
  - **Wages and salaries**
  - **Self-employment**
  - **Property income**
  - **Pensions and remittances**
  - **Welfare and social transfers**

METHODOLOGY:

A **Technical Expert Group (TEG)**, chaired by **Surjit S. Bhalla**, will design the methodology using **global best practices**. This will ensure consistency with international standards used in income and inequality studies by organizations such as the **World Bank** and **OECD**.

CHALLENGES IN CONDUCTING NHIS

1. **Sensitivity Barrier:** Pre-tests conducted in 2025 revealed that **95% of respondents were unwilling** to disclose income details, reflecting deep-seated privacy and trust concerns.
2. **Fragmented Sources:** Rural households often have **multiple informal income streams**, making it difficult to verify and aggregate income accurately.
3. **Non-Monetised Output:** The **self-consumption of farm produce** and barter-based exchanges complicate valuation of non-marketed income.
4. **Data Inconsistency:** Persistent **under-reporting** and **recall bias** may result in lower reported income compared to actual consumption levels.
5. **Irregular Earnings:** Seasonal labourers and self-employed workers face fluctuating earnings, leading to **inconsistent and incomplete data capture**.

SIGNIFICANCE

- Will fill a **critical gap** in India's socio-economic data landscape, as previous surveys (like NSSO consumption surveys) only provided **expenditure-based** insights.
- Supports the measurement of **income inequality (Gini coefficient)** and helps track **regional disparities**.
- Enhances India's capacity to align with **SDG Goal 10 – Reduced Inequalities**.
- Facilitates evidence-based policymaking for **taxation, welfare targeting, and poverty alleviation**.

KEY ECONOMIC CONTEXT

India's **per capita Gross National Income (GNI)** for **2024–25** stood at **₹2.31 lakh (current prices)**, marking an **8.7% year-on-year increase**. However, this growth masks regional and class-based disparities—making NHIS data crucial for accurate, equitable policy design.

CONCLUSION

The **National Household Income Survey** marks a transformative step towards improving India's statistical precision and policy targeting. Despite implementation challenges, it promises to bridge the long-standing gap between **income and consumption data**, enabling a more inclusive understanding of India's economic reality.

INTERNATIONAL RELATIONS

GS PAPER 2

INDIA WELCOMES THE US'S PLAN FOR GAZA PEACE

CONTEXT:

Prime Minister Narendra Modi welcomed US President Donald Trump's 20-point peace plan aimed at ending the ongoing Israel–Hamas conflict in Gaza. India, which advocates a two-state solution and peaceful coexistence, reiterated its support for all diplomatic efforts towards regional stability.

KEY PROVISIONS OF THE PEACE PLAN

- **Deradicalisation of Gaza:** Transforming Gaza into a terror-free zone without threats to neighbouring countries.
- **Immediate Ceasefire:** Suspension of all military operations between Israel and Hamas.
- **Hostage Release:** All hostages (living or deceased) to be returned within 72 hours of Israel's acceptance.
- **Interfaith Dialogue:** A global platform for tolerance and reconciliation among Jews, Christians, and Muslims.
- **Economic Revival:** Establishment of a special economic zone, investment initiatives, and large-scale job creation.

BACKGROUND OF THE ISRAEL–HAMAS CONFLICT

- **Historical Roots:** The conflict traces back to the **1947 UN Partition Plan**, which proposed separate Jewish and Arab states. Arabs rejected the plan, while Jews declared Israel's independence in 1948, leading to successive wars.
- **Oslo Accords (1993):** Signed between Israel and the Palestine Liberation Organization (PLO) to establish peace. Hamas opposed the agreement, continuing armed resistance.
- **Recent Escalation:** In **October 2023**, Hamas launched *Operation Al-Aqsa Storm*, killing over 1,200 Israelis. Israel retaliated with extensive military operations, resulting in **64,000+ casualties in Gaza**, creating a severe humanitarian crisis.

INDIA'S STAND

- India supports a **sovereign, independent Palestine living peacefully alongside Israel**.
- It maintains **balanced relations** with both Israel and Palestine, providing humanitarian aid to Gaza while also strengthening defence cooperation with Israel.
- Welcoming the US initiative aligns with India's long-standing call for dialogue, non-violence, and respect for international law.

SIGNIFICANCE

- **For West Asia:** If successful, the plan could end one of the most intractable conflicts in modern history.
- **For India:** Stability in the region secures energy supplies, ensures diaspora safety, and strengthens India's diplomatic footprint as a responsible global actor.

INDIA'S POLICY ON RECOGNISING THE TALIBAN

CONTEXT

India's recent decision to host Afghanistan's Foreign Minister with full diplomatic protocol marks a **cautious shift in its approach** toward the Taliban regime. This move does not amount to formal recognition but indicates a pragmatic engagement strategy amid changing regional geopolitics.

INDIA'S CURRENT DIPLOMATIC APPROACH

- **Non-recognition Policy:** India has not formally recognised the Taliban due to concerns over governance, terrorism, and human rights violations.
- **Embassy Operations:** Since June 2022, India has deployed a *technical team* at its Kabul mission to oversee humanitarian assistance and monitor security dynamics.
- **Consulate Access:** Taliban-appointed officials currently manage Afghan consulates in Mumbai and Hyderabad, but New Delhi maintains its non-recognition stance.
- **Humanitarian Aid:** India continues to supply wheat, vaccines, and medicines, reaffirming its commitment to the Afghan people, not the regime.

WHY INDIA HASN'T RECOGNISED THE TALIBAN

- **Security Threats:** Taliban's historical links with LeT and JeM raise fears of renewed cross-border militancy.
- **Pakistan Factor:** Taliban's close ties with Pakistan's ISI may give Islamabad strategic leverage.
- **Democratic Credibility:** Recognition could weaken India's global image as a supporter of democratic governance and women's rights.
- **Global Alignment:** Recognising the Taliban may strain ties with allies like the U.S. and EU, who maintain sanctions on Taliban leaders.

STRATEGIC ARGUMENTS FOR ENGAGEMENT

- **Strategic Leverage:** Formal dialogue can help India counter China–Pakistan influence in Afghanistan.
- **Project Protection:** Engagement can safeguard India's investments, including the Salma Dam and other infrastructure.
- **Security Dialogue:** A structured channel could help prevent Afghan soil from being used against India.
- **Connectivity Goals:** Cooperation could strengthen India's access to Central Asia through the Chabahar route.

INDIA–AFGHANISTAN BILATERAL TIES

- **Historic Linkages:** Relations trace back to the ancient Silk Route and were formalised with the 1950 Treaty of Friendship.
- **Development Partnership:** India has invested over **$3 billion** in reconstruction, including iconic projects like the Afghan Parliament building.
- **Policy Divergence:** India's democratic ethos contrasts with Taliban rule, complicating engagement.
- **Strategic Importance:** A stable Afghanistan is crucial for India's **regional connectivity and security architecture**.
- **Evolving Policy:** Hosting the Taliban FM reflects **pragmatism over ideology**, signalling limited engagement without official recognition.

CONCLUSION:

India's stance on the Taliban represents a **fine balance between realism and principle**. While non-recognition upholds democratic values, cautious engagement allows India to protect its strategic interests in a volatile neighbourhood.

INDIA–BRAZIL BILATERAL TRADE TARGET OF USD 20 BILLION

CONTEXT

India and Brazil have reaffirmed their commitment to strengthen trade and investment ties during the **7th India–Brazil Trade Monitoring Mechanism (TMM)** meeting. The two nations have set an ambitious goal of achieving **USD 20 billion in bilateral trade within the next five years**.

KEY HIGHLIGHTS OF THE MEETING

- **Visa Facilitation:** Both countries agreed to simplify visa procedures to enhance business and professional mobility.
- **Expansion of India–MERCOSUR PTA:**
- Discussions were held to **expand the scope** of the **India–MERCOSUR Preferential Trade Agreement (PTA)** to include more products and reduce tariff barriers.
  - The **India–MERCOSUR PTA**, operational since **June 2009**, provides **reciprocal tariff concessions**:
    - India offers concessions on **450 tariff lines**
    - MERCOSUR bloc (Argentina, Brazil, Paraguay, Uruguay) grants concessions on **452 tariff lines**
  - The agreement aims to **boost trade diversification** beyond traditional commodities.

EVOLVING TRADE LANDSCAPE

The two countries are focusing on **diversifying the trade basket** by moving from primary goods to **high-value sectors**, including:

- **Healthcare and Pharmaceuticals**
- **Renewable Energy and Biofuels**
- **Digital and IT Services**
- **Defence and Space Cooperation**

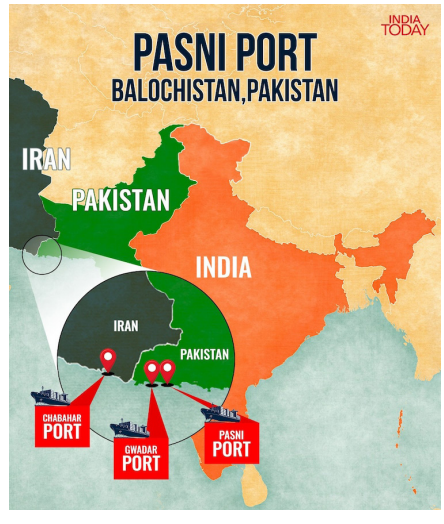
INDIA–BRAZIL RELATIONS: AN OVERVIEW

- **Major Partner:** Brazil remains **India's largest trading partner** in the **Latin American and Caribbean region**.
- **Trade Volume:** Bilateral merchandise trade reached **USD 12.19 billion** in **FY 2024–25**.
- **Agricultural Exchange:**
  - **India exports:** Coconuts and mangoes
  - **Brazil exports:** Cashews and Nelore cattle breeds (originally from Andhra Pradesh)
- **Global Cooperation:**
- Both nations collaborate closely in **BRICS**, **G20**, and the **International Solar Alliance (ISA)**, exemplifying strong **South–South cooperation**.
- **Strategic Engagement:**
- The initiation of **NSA-level talks** and the **2+2 Political-Military Dialogue (2024)** highlights the growing **defence and security partnership** between the two democracies.

CONCLUSION

India–Brazil relations symbolize a **strategic convergence of emerging economies** with shared democratic values and developmental priorities. The renewed trade target of **USD 20 billion** underscores the potential of the partnership to become a cornerstone of **South–South economic cooperation**, fostering growth in sectors aligned with sustainability and innovation.

PORT OF PASNI: PAKISTAN'S NEW GEOSTRATEGIC MARITIME GAMBIT



CONTEXT:

In a significant geopolitical development, **Pakistan has proposed allowing the United States to build and operate a commercial deep-water port at Pasni, Balochistan**. The move is aimed at exporting **critical minerals** such as copper and rare earths, marking a strategic shift in Pakistan's foreign and economic policy posture.

ABOUT THE PORT OF PASNI

The **Port of Pasni** is a small but strategic **deep-water harbour** located in the **Gwadar district of Balochistan**. It houses a **fish harbour, a cargo jetty**, and a **Pakistan Maritime Security Agency (PMSA)** base.

Originally designed for **fisheries and coastal trade**, it has now gained attention as a potential **mineral export terminal** under Pakistan's new proposal to the US.

LOCATION AND STRATEGIC SETTING

- Situated on the **Arabian Sea**, approximately **70 miles east of the China-operated Gwadar Port** and **100 miles from the Iran-Pakistan border**.
- Roughly **300 km from India's Chabahar Port** in Iran, forming part of an emerging **maritime triangle**:
  - **Chabahar (India–Iran)**
  - **Gwadar (China–Pakistan)**
  - **Pasni (US–Pakistan)**

This triangle could redefine **power dynamics in the North Arabian Sea**, where regional and global interests intersect.

AIM OF THE PROPOSAL

- **Reduce dependence on China's Belt and Road Initiative (BRI)** by engaging US investment.
- Promote **commercial cooperation** in the extraction and export of **critical minerals** like **copper, antimony, and neodymium**, which are essential for **green technologies, electronics, and defence applications**.
- Position Pakistan as a **critical-mineral transit hub**, diversifying its economic partnerships beyond China and Gulf economies.

KEY FEATURES

- **Estimated investment:** $1.2 billion through joint funding by the **Pakistani government** and **US private investors**.
- **Infrastructure plans:** Rail and road connectivity to the **Reko Diq mineral belt**, along with **modern cargo-handling terminals** and **logistics facilities**.
- **Official stance:** The project is described as **purely commercial and non-military**, intended to promote economic growth and regional trade.

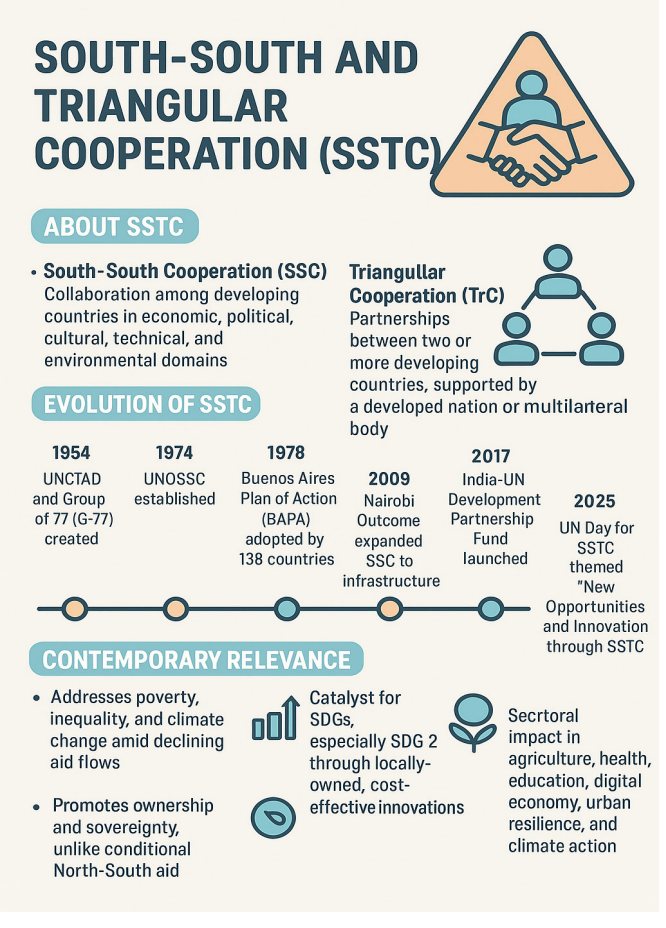
STRATEGIC AND ECONOMIC IMPLICATIONS

- **For Pakistan:** Offers a potential economic boost and strategic balance vis-à-vis China by attracting Western investment.
- **For the United States:** Provides a **foothold near China's Gwadar** and **Iran's Chabahar**, enhancing its presence in the **Arabian Sea and Indian Ocean Region (IOR)**.
- **For India:** Raises **strategic and maritime concerns**, as Pasni's proximity to Chabahar could influence **surveillance, logistics, and regional trade routes**.
- **For the Region:** Adds a new dimension to the **Indo-Pacific strategic framework**, where economic and security interests overlap.

SIGNIFICANCE

If operationalised, the **Port of Pasni** could transform into a key node in **global critical mineral supply chains**, while also intensifying **great-power competition** in South Asia's maritime sphere.

SOUTH-SOUTH AND TRIANGULAR COOPERATION (SSTC)



CONTEXT:

South-South and Triangular Cooperation (SSTC) has emerged as a crucial framework for development partnerships in the Global South. With the 2030 Agenda for Sustainable Development approaching its deadline, India has actively leveraged SSTC to foster solidarity, innovation, and self-reliance among developing nations.

ABOUT SSTC

- **South-South Cooperation (SSC):** Collaboration among developing countries in economic, political, cultural, technical, and environmental domains.
- **Triangular Cooperation (TrC):** Partnerships between two or more developing countries, supported by a developed nation or multilateral body.
- **Guiding Principles:** Mutual respect for sovereignty, equality, non-interference, solidarity, and shared benefit.

EVOLUTION OF SSTC

- **1964:** UNCTAD and Group of 77 (G-77) created.
- **1974:** UNOSSC established.
- **1978:** *Buenos Aires Plan of Action (BAPA)* adopted by 138 countries.
- **2009:** Nairobi Outcome expanded SSC to infrastructure and governance.
- **2017:** India-UN Development Partnership Fund launched.
- **2025:** UN Day for SSTC themed *"New Opportunities and Innovation through SSTC"*.

CONTEMPORARY RELEVANCE

- **Global Challenges:** Addresses poverty, inequality, and climate change amid declining aid flows.
- **Catalyst for SDGs:** Especially SDG 2 (*Zero Hunger*) through locally-owned, cost-effective innovations.
- **Sectoral Impact:** Agriculture, health, education, digital economy, urban resilience, and climate action.
- **Empowerment:** Promotes ownership and sovereignty, unlike conditional North-South aid.

INDIA'S ROLE IN SSTC

- **Philosophy:** Rooted in *Vasudhaiva Kutumbakam* ("The world is one family").
- **Institutions:**
  - *Development Partnership Administration (MEA)* – central SSTC agency.
  - *ITEC Program* – training and capacity-building in 160+ countries.
  - *India-UN Fund* – supports 75+ projects across 56 nations.
- **Technology Sharing:** Digital infrastructure like Aadhaar, UPI exported as global public goods.
- **Advocacy:** *Voice of the Global South Summit*; support for African Union's permanent G20 membership.
- **Food Security Models:** Annapurti grain ATMs, fortified rice, and women-led nutrition programs scaled abroad via WFP.

CHALLENGES

- Fragmented priorities and weak cohesion.
- Dependence on unpredictable voluntary funding.
- Inconsistent political will and delays.
- Bureaucratic hurdles in triangular cooperation.
- Limited monitoring and evaluation frameworks.

WAY FORWARD

- Promote **innovation-driven, people-centric solutions**.
- Strengthen **financing and accountability mechanisms**.
- Build **multi-stakeholder partnerships** with private sector, academia, and communities.
- Focus on **high-impact areas**: food security, climate resilience, health, and education.
- Enhance **knowledge-sharing platforms** for replication of best practices.
- Align all initiatives with **measurable SDG outcomes**.

INDIA–UK BILATERAL TALKS 2025: STRENGTHENING STRATEGIC AND TECHNOLOGICAL TIES

CONTEXT

In 2025, UK Prime Minister **Keir Starmer** visited India for high-level bilateral talks with Prime Minister **Narendra Modi**. The visit marked a major step in reinforcing the **India–UK Comprehensive Strategic Partnership**, focusing on defence, technology, digital innovation, education, and sustainable development.

KEY OUTCOMES OF THE TALKS

1. Defence Cooperation

India has signed an agreement to procure the **British-made Lightweight Multirole Missiles (LMM 'Martlet')** for the Indian Army. This reflects growing defence industrial collaboration under the "**Make in India–Make for the World**" vision.

2. Naval Collaboration

Both countries agreed to **jointly develop electric-powered propulsion systems** for next-generation **Indian naval vessels**, boosting green maritime capabilities.

3. Fintech Corridor

A new **India–UK Fintech Corridor** has been launched to link **regulators, startups, and investors**, promoting financial innovation and digital inclusion.

4. AI and 6G Research Partnership

A **Joint Research Centre on AI-native 6G technologies** will enhance cooperation in **cybersecurity, telecommunications, and digital infrastructure**, supporting both nations' digital public goods ecosystem.

5. Critical Minerals Partnership (Phase II)

The **UK–India Critical Minerals Observatory** and a new **Industry Guild** were launched to ensure **sustainable and resilient mineral supply chains**, particularly for clean energy technologies.

6. Higher Education Collaboration

In line with **India's National Education Policy (NEP) 2020**, **Lancaster University** and the **University of Surrey** have received approval to establish **campuses in India**, promoting academic exchange and research cooperation.

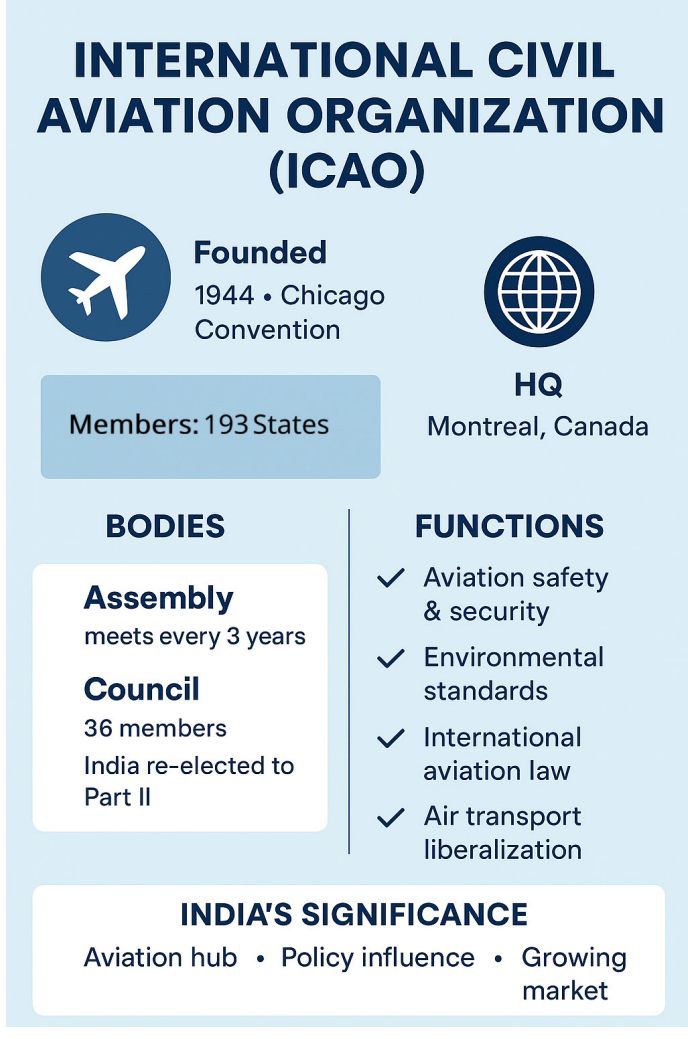
ABOUT THE LIGHTWEIGHT MULTIROLE MISSILE (LMM 'MARTLET')

- **Type:** Precision-guided, lightweight, multi-platform missile
- **Speed:** Approximately **Mach 1.5**
- **Range:** Up to **8 km**
- **Applications:** Air-to-air, air-to-surface, surface-to-air, and surface-to-surface missions
- **Guidance:** Uses **laser beam-riding technology**, ensuring high accuracy even in complex environments such as coastal and maritime zones.
- This acquisition aligns with India's efforts to **modernize its defence forces** and **diversify arms imports**, while enhancing interoperability with trusted partners.

CONCLUSION

The 2025 India–UK bilateral talks underline a **renewed era of strategic convergence**. By combining strengths in **defence technology, AI innovation, and education**, the partnership aims to shape a **future-oriented alliance** grounded in sustainability, innovation, and democratic values.

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)



CONTEXT:

India has been re-elected to *Part II* of the Council of the International Civil Aviation Organization (ICAO). This reaffirms India's growing role in shaping global civil aviation standards and policies.

ABOUT ICAO

- **Established:** 1944 under the *Convention on International Civil Aviation (Chicago Convention)*.

- **Type:** Specialized agency of the United Nations.
- **Headquarters:** Montreal, Canada.
- **Members:** 193 States.
- **Mandate:** To ensure safe, secure, efficient, and sustainable international civil aviation.

GOVERNANCE OF ICAO

- **Assembly:**
  - Sovereign body of ICAO.
  - Meets once every 3 years.
  - Comprises all 193 member states.
- **Council:**
  - Governing body, elected by the Assembly.
  - 36 member states serve a three-year term.
  - India elected under *Part II* (states making the largest contribution to international civil aviation).

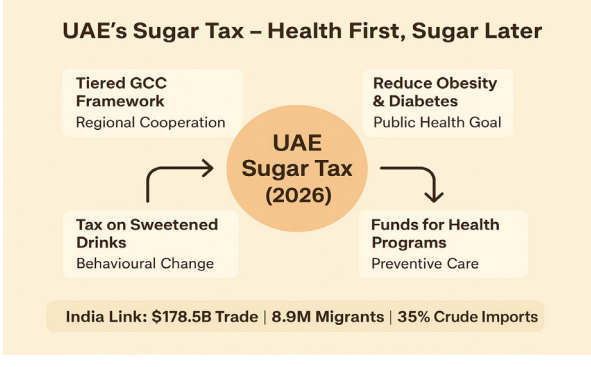
FUNCTIONS OF ICAO

- **Standard-Setting:** Develops global aviation standards for **safety, security, efficiency, and environmental sustainability**.
- **Policy Platform:** Provides a forum for discussion and cooperation among states on civil aviation issues.
- **Legal Frameworks:** Helps establish rules of international aviation law, ensuring peaceful and safe use of airspace.
- **Economic & Environmental Role:** Promotes liberalization of air transport markets and reduction of aviation's environmental footprint.

SIGNIFICANCE FOR INDIA

- Reinforces India's standing as a key aviation hub and market.
- Provides India with greater influence in shaping global aviation policies.
- Aligns with India's domestic aviation growth, projected to become the **third-largest aviation market** by 2030.

UAE INTRODUCES SUGAR TAX TO PROMOTE PUBLIC HEALTH



CONTEXT:

The **United Arab Emirates (UAE)** has announced that it will implement a **sugar tax on sweetened beverages** starting **January 1, 2026**. The move aims to reduce high sugar consumption and associated health risks such as **obesity, diabetes, and cardiovascular diseases**. This initiative aligns with the **Gulf Cooperation Council (GCC)'s regional framework** for a **tiered excise on sugar-sweetened beverages (SSBs)**.

ABOUT THE SUGAR TAX

A **sugar tax** is a **fiscal measure** that increases the retail price of sugary drinks through taxation to **discourage excessive sugar intake** and **encourage healthier choices** among consumers.

Globally, countries like the **UK, Mexico, and South Africa** have introduced similar taxes with measurable declines in sugary drink consumption.

OBJECTIVES:

- Reduce sugar-related health issues.
- Encourage product reformulation by beverage companies.
- Generate revenue for public health and awareness programs.

In the UAE, this step forms part of a broader **"Healthier UAE Vision"**, which also targets smoking and trans-fat consumption.

INDIA'S APPROACH

India already imposes one of the world's **highest tax burdens on sugary drinks**, including:

- **28% GST**,
- **40% Sin Tax**, and
- **12% Compensation Cess**.

Together, these aim to discourage consumption and offset healthcare costs linked to **lifestyle diseases**. India's measures align with the **World Health Organization's (WHO)** recommendation to use fiscal tools for improving public health outcomes.

ABOUT THE GULF COOPERATION COUNCIL (GCC)

The **GCC** is a **regional political and economic alliance** formed in **1981** to strengthen **political, financial, and security cooperation** among its six members — **Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE**.

- **Security Arm:** *Peninsula Shield Force* (established 1984).
- **Regional Policy:** Increasingly focused on economic diversification, health, and sustainability.

INDIA–GCC RELATIONS

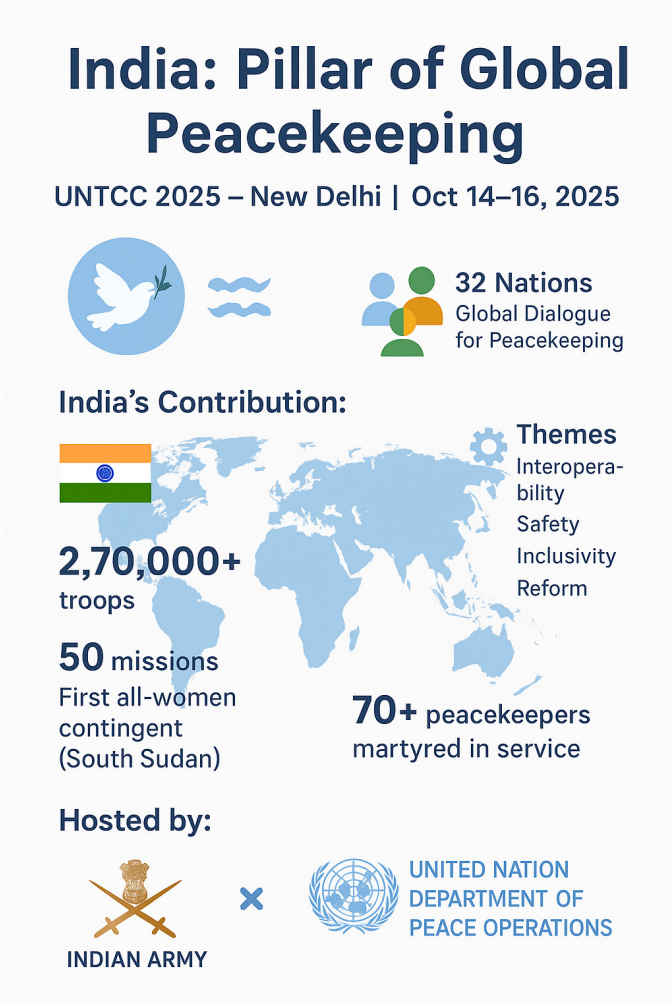
- **Trade:** Reached **$178.56 billion in FY2025**, forming **15.4% of India's global trade**.
- **Energy Security:** GCC supplies **~35% of India's crude oil** and **~70% of its imported natural gas**.
- **Diaspora:** Over **8.9 million Indians** live in GCC nations, contributing **38% of India's total remittances (FY2024)**.

Thus, UAE's fiscal and health policies have indirect implications for **India's trade, employment, and economic engagement** in the Gulf.

SIGNIFICANCE

The UAE's sugar tax reflects a growing global shift towards **preventive healthcare through economic policy**. For India and other developing nations, it underscores the importance of **integrating fiscal instruments with public health strategies** to curb **non-communicable diseases (NCDs)** and reduce healthcare costs.

INDIA TO HOST UNTCC 2025



CONTEXT:

India will host the **United Nations Troop Contributing Countries' (UNTCC) Chiefs' Conclave 2025** in **New Delhi from October 14–16, 2025**. The event, organized by the **Indian Army in collaboration with the UN Department of Peace Operations (UNDPO)**, will bring together senior military leaders from **32 nations** contributing troops to **UN Peacekeeping missions** worldwide.

ABOUT THE UNTCC CONCLAVE

The **United Nations Troop Contributing Countries (UNTCC) Conclave** serves as a global platform to:

- Facilitate dialogue among nations contributing troops and police personnel to UN peacekeeping.
- Discuss **operational challenges**, such as logistics, technology, and safety in mission areas.
- Enhance **interoperability** among multinational contingents.
- Promote **inclusivity and transparency** in UN peace operations' decision-making processes.

The conclave also provides an opportunity to **strengthen coordination** between the UN Secretariat and troop-contributing countries, ensuring that field challenges and national perspectives are effectively represented.

INDIA'S LEADERSHIP IN UN PEACEKEEPING

- **Legacy of Service:** Since the first UN mission in 1948, **India has been one of the largest and most consistent contributors** to UN peacekeeping.
- **Contribution Scale:** Over **2,70,000 Indian troops** have served in **50 UN missions** across continents.
- **High-Risk Deployments:** Indian forces have operated in some of the most volatile conflict zones—**Congo, Lebanon, Sudan, and Somalia**, among others.
- **Humanitarian and Gender Leadership:**
  - India deployed the **first all-women peacekeeping contingent** to **South Sudan** in 2023, setting a global example for gender equality in peace operations.
  - Indian peacekeepers are widely recognized for their **discipline, compassion, and commitment** to protecting civilians and supporting local communities.

SIGNIFICANCE OF HOSTING UNTCC 2025

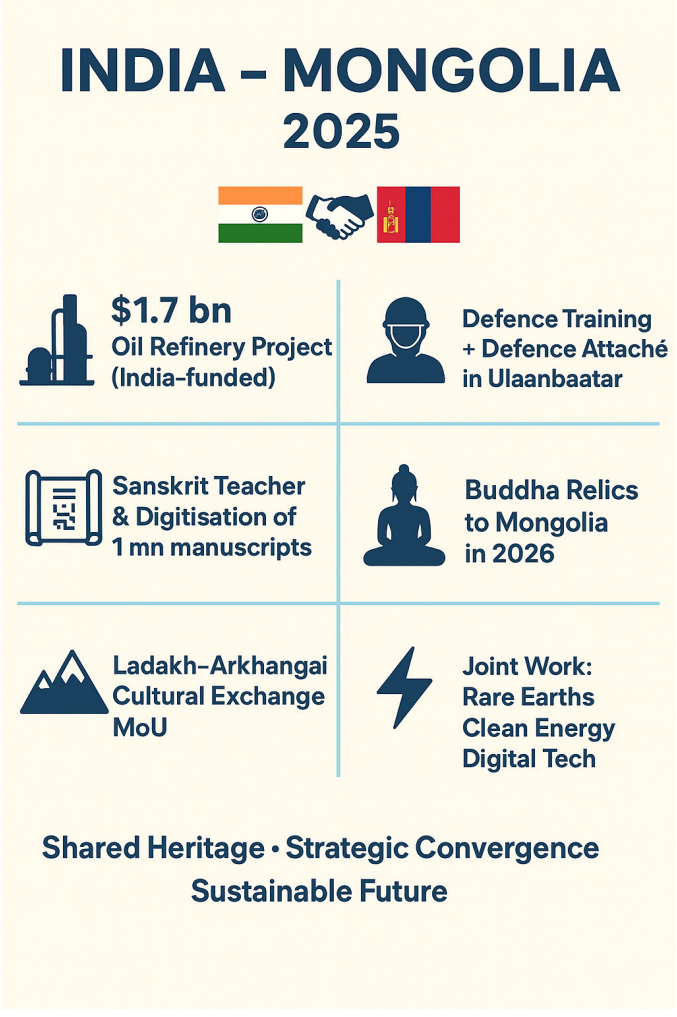
- **Strategic Diplomacy:** Reinforces India's image as a **responsible global stakeholder** and a **credible voice for the Global South** in UN affairs.
- **Operational Influence:** Enables India to shape **future UN peacekeeping reforms**, including discussions on technology, training, and equitable burden-sharing.
- **Soft Power Projection:** Highlights India's **values of peace, cooperation, and inclusivity**, aligning with its commitment to "**Vasudhaiva Kutumbakam – One Earth, One Family, One Future**."

WAY FORWARD

India advocates for:

- Greater representation of **troop-contributing nations in UN decision-making**.
- Enhanced **safety, technology integration, and gender balance** in peacekeeping missions.
- Continued focus on **capacity-building and training** through platforms like the **Centre for UN Peacekeeping (CUNPK), New Delhi**.

INDIA–MONGOLIA DIPLOMATIC RELATIONS



CONTEXT:

During the recent state visit of Mongolian President *Ukhnaagiin Khürelsükh* to New Delhi, India and Mongolia signed **10 agreements**, marking a new phase in their **bilateral and strategic partnership**. The visit reaffirmed both countries' shared commitment to deepen cooperation in energy, defence, culture, and technology.

KEY MOUS AND DEVELOPMENTS

1. **Oil Refinery Project:**
   - India will finance Mongolia's **first oil refinery** through a **$1.7 billion Line of Credit** extended via EXIM Bank. This is India's **largest overseas development partnership** to date and aims to ensure Mongolia's **energy independence** from imported crude.
2. **Defence Cooperation:**
   - India will assist in **training Mongolian armed and border security forces**, and has appointed a **Defence Attaché** at its Embassy in Ulaanbaatar — a significant step to enhance strategic engagement and capacity building.
3. **Cultural and Spiritual Bonds:**
   - India will **send a Sanskrit teacher** to Gandan Monastery, Mongolia's premier Buddhist centre.
   - Collaboration will begin to **digitise one million ancient Buddhist manuscripts**, preserving shared spiritual heritage.
   - The **holy relics of Buddha's disciples – Sariputra and Maudgalyayana –** will be sent to Mongolia in **2026**, symbolising deep civilisational ties.
4. **Regional Collaboration:**
   - A new **MoU between the Ladakh Hill Development Council and Arkhangai Province** will promote **cultural, academic, and tourism exchanges**, fostering people-to-people connectivity across the Himalayas and the Steppes.
5. **Economic and Technological Cooperation:**
   - India and Mongolia agreed to explore **joint ventures in critical minerals, rare earths, clean energy, and digital technology**, aligning with India's pursuit of resilient supply chains and sustainable growth.

BACKGROUND OF INDIA–MONGOLIA RELATIONS

- **Diplomatic Relations Established:** 1955
- **Strategic Partnership:** 2015
- **Trade Volume (2024):** USD 110.8 million
- **Common Link:** Shared Buddhist heritage and democratic values
- **Recent Focus Areas:** Renewable energy, cyber security, mining, education, and cultural exchanges

India remains Mongolia's **"Third Neighbor"**, promoting stability and economic diversification beyond its two geographic neighbours, China and Russia.

SIGNIFICANCE

- Enhances **India's Act East and Indo-Pacific vision**.
- Strengthens **energy and resource security** for both nations.

- Reinforces **soft power diplomacy** through cultural and religious cooperation.
- Expands **defence and regional strategic alignment** in Central and East Asia.

WAY FORWARD

Both sides aim to translate these agreements into tangible outcomes by 2030 — particularly in **energy, digital innovation, and education**, ensuring a **mutually beneficial partnership grounded in trust, culture, and development**.

INDIA ELECTED TO THE UN HUMAN RIGHTS COUNCIL (UNHRC): STRENGTHENING GLOBAL HUMAN RIGHTS DIPLOMACY

CONTEXT

India has been **elected unopposed** to the **United Nations Human Rights Council (UNHRC)** for a **three-year term (2026–2028)**.

This marks **India's seventh term** on the Council, underscoring the country's growing credibility and leadership in upholding **human rights, democracy, and the rule of law** on global platforms. *(Source: News on Air – NOA)*

ELECTION SIGNIFICANCE

India previously served **two consecutive terms (2018–2020 and 2021–2024)** and voluntarily **abstained from contesting in 2025**, adhering to **UN guidelines** that prevent members from serving more than **two consecutive terms**.

Being elected again for 2026–2028 reflects the **international community's trust** in India's balanced, democratic, and inclusive approach to global human rights issues.

India's re-election is not just symbolic — it highlights the country's consistent efforts to **promote pluralism, gender equality, and sustainable development**, while advocating for a **fair and impartial human rights discourse** that respects national sovereignty and cultural diversity.

ABOUT THE UN HUMAN RIGHTS COUNCIL (UNHRC)

- **Established:** 2006 (replacing the UN Commission on Human Rights)
- **Headquarters:** Geneva, Switzerland
- **Composition:** 47 Member States elected by the **UN General Assembly** for three-year terms.
- **Regional Distribution:**
  - **African States:** 13
  - **Asia-Pacific States:** 13
  - **Latin American & Caribbean States:** 8
  - **Western European & Other States:** 7
  - **Eastern European States:** 6

The Council addresses human rights violations, conducts the **Universal Periodic Review (UPR)** of all UN Member States, and provides a forum for dialogue and cooperation on global human rights issues.

INDIA'S ROLE AND PRIORITIES AT THE UNHRC

India's stance in the UNHRC is guided by the principles of **non-discrimination, inclusivity, and dialogue**.

As a multi-ethnic, multi-religious democracy, India emphasizes that **human rights and development are interlinked**, advocating for a **constructive, non-politicized approach** to human rights promotion.

Key areas of India's focus include:

- **Gender Equality & Women Empowerment**
- **Right to Development**
- **Digital Human Rights & Data Protection**
- **Climate Justice and Human Dignity**

- **Combating Racial and Religious Intolerance**

India also supports capacity building in developing countries and encourages dialogue-based solutions rather than coercive interventions.

SIGNIFICANCE FOR INDIA AND THE WORLD

India's election reinforces its image as a **responsible global actor** and a **voice of the Global South** in shaping a fairer human rights agenda.

At a time of increasing polarization in global governance, India's balanced approach — grounded in democracy, pluralism, and inclusivity — strengthens the credibility of the UNHRC itself.

INDIA–AUSTRALIA RENEWABLE ENERGY PARTNERSHIP (REP): POWERING A SUSTAINABLE FUTURE

CONTEXT

Australia's Minister for Climate Change and Energy recently met with India's Minister for New & Renewable Energy to advance cooperation under the **India–Australia Renewable Energy Partnership (REP)**.

The meeting underscored the growing convergence between both countries in developing a **clean, resilient, and diversified renewable energy ecosystem**.

ABOUT THE INDIA–AUSTRALIA RENEWABLE ENERGY PARTNERSHIP (REP)

The **REP** is a **strategic framework** launched in **2024** under the **Comprehensive Strategic Partnership (CSP)** between India and Australia. It aims to deepen bilateral collaboration in the **renewable and clean energy sector**, combining **Australia's resource wealth and technology** with **India's manufacturing scale and energy demand**.

OBJECTIVES AND FRAMEWORK

- **Diversified Value Chain:** REP seeks to build an integrated supply chain in **solar PV, green hydrogen, and energy storage**.
- **Technology & Resource Synergy:** Australia provides critical minerals like **lithium, cobalt, and rare earth elements**, while India brings **manufacturing capacity** and **market scale**.
- **Dialogue Mechanism:** A **Track 1.5 Dialogue** connects government officials, industries, and research bodies to convert policy intent into practical outcomes.
- **Supporting Agreements:** The **India–Australia Economic Cooperation and Trade Agreement (ECTA)** underpins REP by reducing tariffs on clean energy commodities and critical minerals.
- **Implementation:** The **Ministry of New & Renewable Energy (MNRE)** serves as India's nodal agency for coordination.

KEY PRIORITY AREAS

The partnership focuses on **eight sectors**:

1. **Solar PV** manufacturing and deployment
2. **Green Hydrogen** production and use
3. **Energy Storage Systems**
4. **Solar Supply Chain resilience**
5. **Circular Economy** models
6. **Two-way Investments** in renewables
7. **Capacity Building** and training
8. **Shared Policy Priorities** for sustainable transition

SIGNIFICANCE FOR INDIA

- ☑ **Mineral Security:** Expands access to **critical minerals**, reducing dependence on China.
- ☑ **Skill Development:** The **Rooftop Solar Training Academy** aims to train **2,000 technicians by 2027**.

- ☑ **Industrial Integration:** The **Green Steel Partnership** will link Australian raw materials with Indian low-carbon steel initiatives.
- ☑ **Energy Targets:** Supports India's **Panchamrit goals**, especially **500 GW non-fossil capacity by 2030**, including **280 GW solar**.
- ☑ **Ethical Supply Chains:** Ensures adherence to **ESG (Environmental, Social, Governance)** norms for transparent, responsible sourcing.

CHALLENGES AHEAD

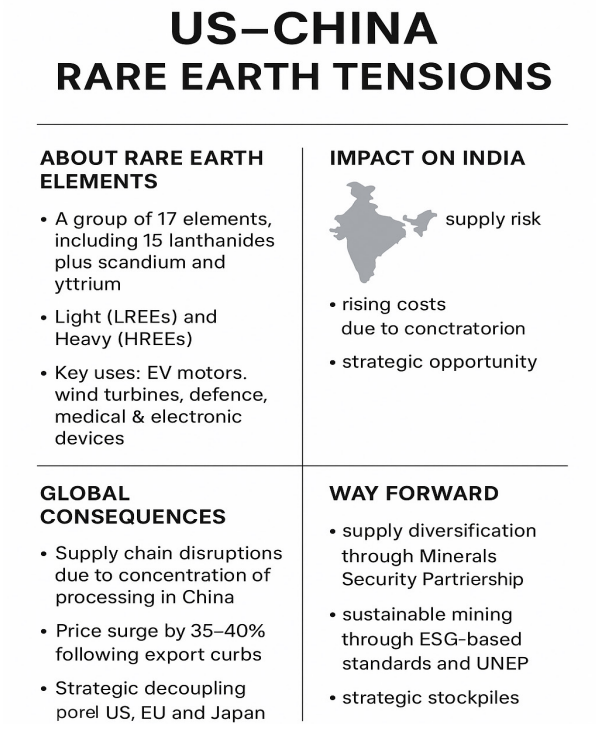
- **Downstream Gaps:** Australia lacks large-scale refining capacity for minerals.
- **Regulatory Mismatch:** Divergent standards complicate certification and trade.
- **Capital Competition:** The U.S. and EU's subsidy-driven clean energy policies divert investments.
- **Grid Bottlenecks:** India needs stronger grid infrastructure to integrate large-scale renewables.

CONCLUSION

The **India–Australia Renewable Energy Partnership** reflects a pragmatic model of climate diplomacy — balancing growth, sustainability, and strategic autonomy.

By linking resource-rich Australia with energy-hungry India, the REP not only accelerates the clean energy transition but also strengthens the **Indo-Pacific's green economic architecture**, positioning both nations as pivotal players in the **global net-zero movement**.

US–CHINA RARE EARTH TENSIONS ESCALATE



CONTEXT:

In October 2025, China announced **export curbs on 12 rare earth elements (REEs)**, escalating existing trade frictions with the United States. In response, the **US imposed 100% tariffs** on Chinese rare earth exports, effective **November 1, 2025**. These developments underscore the **strategic importance of rare earths** in critical supply chains spanning clean energy, defence, and advanced technologies.

ABOUT RARE EARTH ELEMENTS

Rare Earth Elements (REEs) are a **group of 17 elements**, including 15 lanthanides plus scandium and yttrium. Although abundant in the Earth's crust, they occur in **low concentrations** and are **difficult to extract and process**, making them strategically valuable.

- **Types:**
  - *Light Rare Earth Elements (LREEs)* – more abundant (e.g. Neodymium)
  - *Heavy Rare Earth Elements (HREEs)* – scarcer and more critical (e.g. Dysprosium, Yttrium)
- **Applications:** Widely used in **EV motors**, **wind turbines**, **defence systems**, **electronics**, and **medical imaging equipment** like MRI machines.
- **Global Distribution:**
  - **China**: 61% of mining and 92% of processing (IEA 2024)
  - **India**: 3rd largest reserves (~6%) but <2% production (USGS 2024)

IMPACT ON INDIA

1. **Supply Risk:** India imports nearly **90% of its rare earth compounds from China** (DGFT 2024). Export restrictions could disrupt **EV, semiconductor and defence supply chains**, slowing key manufacturing sectors.
2. **Rising Costs:** Tariffs and curbs are projected to increase **input costs for electronics by 20–25%** (IEA 2025), affecting both industry and consumers.
3. **Strategic Opportunity:** With **6.9 million tonnes of REE reserves**, India can expand domestic capacity through **Indian Rare Earths Ltd (IREL)** and the **National Critical Minerals Mission (2023)** to reduce import dependency.
4. **Geopolitical Leverage:** India's participation in the **Quad Critical Minerals Partnership (2022)** and the **Indo-Pacific Economic Framework (IPEF)** can help diversify global supply chains and strengthen strategic ties.

GLOBAL CONSEQUENCES

1. **Supply Chain Disruptions:** China's dominance in processing (92%) makes global supply chains vulnerable to shocks.

2. **Price Surge:** Following the export curbs, **global rare earth prices surged by 35–40%** (IEA Market Update, Sept 2025), affecting clean energy and defence manufacturing worldwide.
3. **Strategic Decoupling:** The US, EU, and Japan are accelerating **friend-shoring** — relocating supply chains to trusted partners like Australia, Vietnam, and African nations under the **Minerals Security Partnership (MSP)**.
4. **Environmental Challenges:** Expansion of new mining hubs in regions such as Congo and Myanmar may lead to **ecological degradation** if not regulated under sustainable frameworks.

WAY FORWARD

- **Diversification of Supply:** Strengthen partnerships with Australia, Vietnam, and African nations under MSP to reduce reliance on China.
- **Sustainable Mining:** Promote ESG-based standards through UNEP's Global Mineral Governance Framework to ensure minimal environmental impact.
- **Strategic Stockpiles:** Create rare earth reserves under the G7 Critical Minerals Agreement to stabilize supply and prices.
- **Recycling and Circular Economy:** Expand e-waste recovery networks, similar to **Japan's Urban Mining Model**, to recover key elements like neodymium and dysprosium from end-of-life electronics.

CHINA'S WTO COMPLAINT AGAINST INDIA'S EV SUBSIDY POLICY

CONTEXT:

China has filed a **complaint at the World Trade Organization (WTO)** alleging that **India's electric vehicle (EV) and battery subsidy schemes** — including the **Production Linked Incentive (PLI) for Advanced Chemistry Cells** — violate global trade rules.

Beijing claims that India's policy discriminates against foreign automakers and suppliers, contrary to WTO norms of fair competition.

ABOUT THE DISPUTE:

The complaint has been lodged under the **WTO's Agreement on Subsidies and Countervailing Measures (ASCM)**, which prohibits subsidies contingent upon **export performance** or **use of domestic goods over imported ones**.

ALLEGATIONS BY CHINA:

1. **National Treatment Violation (Article III, GATT):** India's local-content requirements in EV and battery subsidies allegedly favour domestic firms like **Tata Motors** and **Ola Electric** over foreign companies.
2. **Import-Substitution Subsidy (Article 3, ASCM):** China contends that India's benefits are tied to sourcing from domestic manufacturers — a **prohibited form of subsidy** under WTO rules.
3. **Market Access Barrier:** India's **70–100% import duty** on fully built EVs discourages entry of Chinese automakers, limiting market access.

CONSEQUENCES FOR INDIA:

- **WTO Dispute Risk:**
- If consultations fail, the WTO may establish a **dispute panel**, potentially ruling against India's EV PLI scheme.
- **Trade Deficit Concern:**
- India's **$99.2 billion trade deficit** with China (FY 2024–25) could widen if bilateral trade relations deteriorate further.
- **Diplomatic Strain:**
- The complaint could **set back recent efforts to stabilise India–China ties** following the 2020 Ladakh border tensions.

INDIA'S DEFENCE AND WAY FORWARD:

- ☑ **Transparent Subsidy Design:** Recast EV incentives as **green-tech or R&D subsidies** permissible under **ASCM Article 8** (non-actionable subsidies).
- ☑ **Bilateral Consultation:** Engage China under the **WTO's Dispute Settlement Article 4** consultation stage to seek an amicable solution.
- ☑ **Strategic Diversification:** Build alliances through the **Indo-Pacific Economic Framework (IPEF)** and **Global Biofuels Alliance** to reduce dependency on Chinese EV inputs.

- ☑ **Technology Localisation:** Promote domestic innovation via **Atmanirbhar EV Mission 2030**, public–private R&D grants, and partnerships with Japan, the EU, and the US.

WTO NORMS & PRINCIPLES (AT A GLANCE):

Principle	Provision	Purpose
MFN (Most-Favoured-Nation)	Article I, GATT	Equal treatment to all WTO members
National Treatment (NT)	Article III, GATT	No discrimination against imports after entry
Countervailing Measures	Article VI, GATT	Correct trade distortion caused by subsidies
Dispute Resolution Process	Articles 4–17	Consultation → Panel → Appellate Review

CONCLUSION:

While India's EV incentives aim to foster sustainability and self-reliance, they must remain **WTO-compliant** to avoid sanctions or trade retaliation. Balancing **green industrial policy** with **global trade obligations** will be key to ensuring both **domestic innovation** and **international credibility**.

INDIA AND FAO CELEBRATE 80 YEARS OF PARTNERSHIP

CONTEXT:

On **World Food Day 2025**, **India and the Food and Agriculture Organisation (FAO)** marked **80 years of partnership**, highlighting India's journey from food scarcity to self-sufficiency and global leadership in sustainable agriculture.

The collaboration symbolises India's long-standing commitment to achieving food and nutritional security through innovation, inclusivity, and international cooperation.

INDIA'S ACHIEVEMENTS IN FOOD SECURITY:

- **Resilient Agriculture Base:**
- Despite having **less than 4% of the world's arable land and freshwater**, India ensures **food self-sufficiency and price stability** through efficient policies and technological advances.
- **Public Distribution & Welfare:**
- The **National Food Security Act (NFSA)** guarantees subsidised food to over **800 million beneficiaries**, supported by **MSP (Minimum Support Price)** and **public stockholding** systems.
- **Empowering Small Farmers:**
- With **146 million small and marginal cultivators**, India's targeted interventions — like **PM-KISAN**, **Fasal Bima Yojana**, and **Soil Health Card Scheme** — form the backbone of its agri-economy.
- **Agri-Tech & Sustainability:**
- Digital platforms like **eNAM**, **Kisan Drone Initiative**, and **Millet Mission** are redefining productivity, market access, and climate resilience.

ABOUT THE FOOD AND AGRICULTURE ORGANISATION (FAO):

- **Founded:** 1945
- **Headquarters:** Rome, Italy
- **Membership:** 194 countries; operations in over 130 nations
- **Motto:** *Better Production, Better Nutrition, a Better Environment, and a Better Life for all*
- **Role:** FAO acts as the **custodian for 62 indicators** of the **Sustainable Development Goals (SDGs)**, supporting data-driven policymaking and international coordination in food systems.

INDIA–FAO PARTNERSHIP HIGHLIGHTS:

1. **Founding Membership:**
   - India has been associated with FAO since its inception in 1945, actively shaping agricultural and food policies.
2. **Post-Independence Collaboration:**
   - FAO's early technical assistance supported India's **Green Revolution** and development of its **agricultural research institutions**.

3. **Recent Initiatives:**
   - **Blue Ports Initiative:** Promoting sustainable fisheries and coastal livelihoods.
   - **Millets Promotion:** Jointly led the **International Year of Millets (2023)** campaign to global success.
   - **Climate-Smart Agriculture:** Collaborative projects for resilient crop systems and biodiversity conservation.

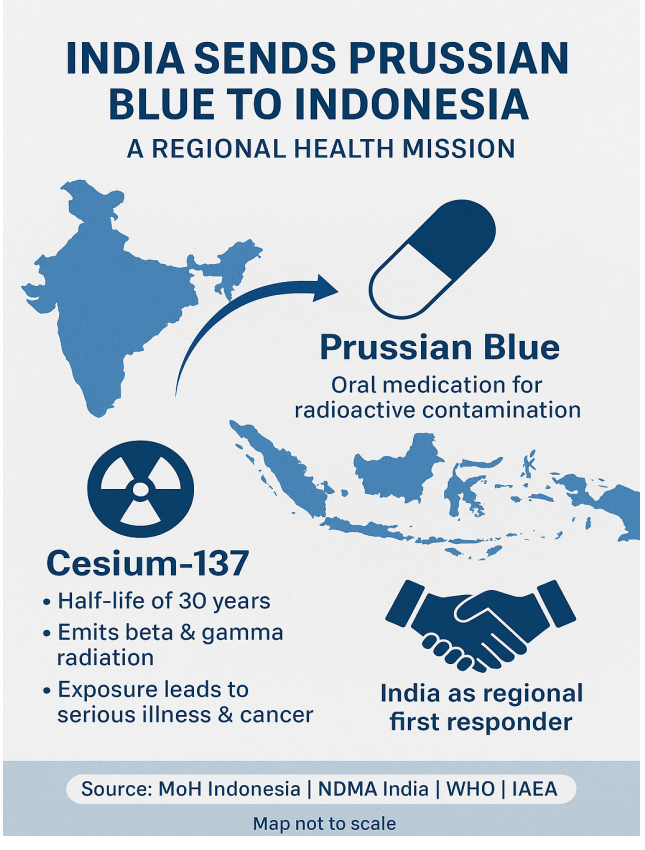
SIGNIFICANCE:

- Strengthens India's **global leadership in food and nutrition governance.**
- Reinforces **SDG-2 (Zero Hunger)** through inclusive, sustainable agricultural models.
- Enhances **South–South Cooperation**, allowing India to share best practices with developing nations.

CONCLUSION:

The **80-year India–FAO partnership** reflects a shared vision for a hunger-free, sustainable, and equitable world. As India transitions from food security to **nutrition security**, this collaboration will continue to drive innovations in **agriculture, climate resilience, and rural development** for decades to come.

INDIA SENDS PRUSSIAN BLUE CAPSULES TO INDONESIA



CONTEXT:

India has supplied **Prussian Blue capsules** to Indonesia after **Cesium-137 (Cs-137)** contamination was detected in Jakarta. This humanitarian action followed an official request from Indonesia's **Ministry of Health**, underscoring India's role as a **regional first responder in public health and nuclear safety cooperation**.

ABOUT PRUSSIAN BLUE:

- **Nature:** Prussian Blue (ferric hexacyanoferrate) is a dark blue pigment and an **FDA-approved oral medicine** used for treating **internal contamination** by radioactive or non-radioactive **caesium (Cs)** and **thallium (Tl)**.
- **Mechanism:** It binds radioactive isotopes in the intestine, preventing absorption into the bloodstream and facilitating excretion through stool.
- **Use:** It is part of the **WHO Essential Medicines List** and a key stockpile item in nuclear emergency preparedness.

ABOUT CAESIUM-137 (CS-137):

- **Origin:** A **radioactive isotope** produced as a byproduct of nuclear fission in reactors and weapons testing.
- **Half-life:** Around **30 years**, meaning it remains hazardous for decades.
- **Radiation Type:** Emits **beta and gamma radiation**, both harmful to living tissue.
- **Health Impact:**
  - External exposure can cause **burns and acute radiation sickness**.
  - Internal exposure increases risks of **cancer and organ damage**.
- **Detection & Cleanup:** Radiation detectors and decontamination agents such as Prussian Blue and potassium ferricyanide compounds are used to mitigate exposure.

INDIA'S ROLE AND STRATEGIC SIGNIFICANCE:

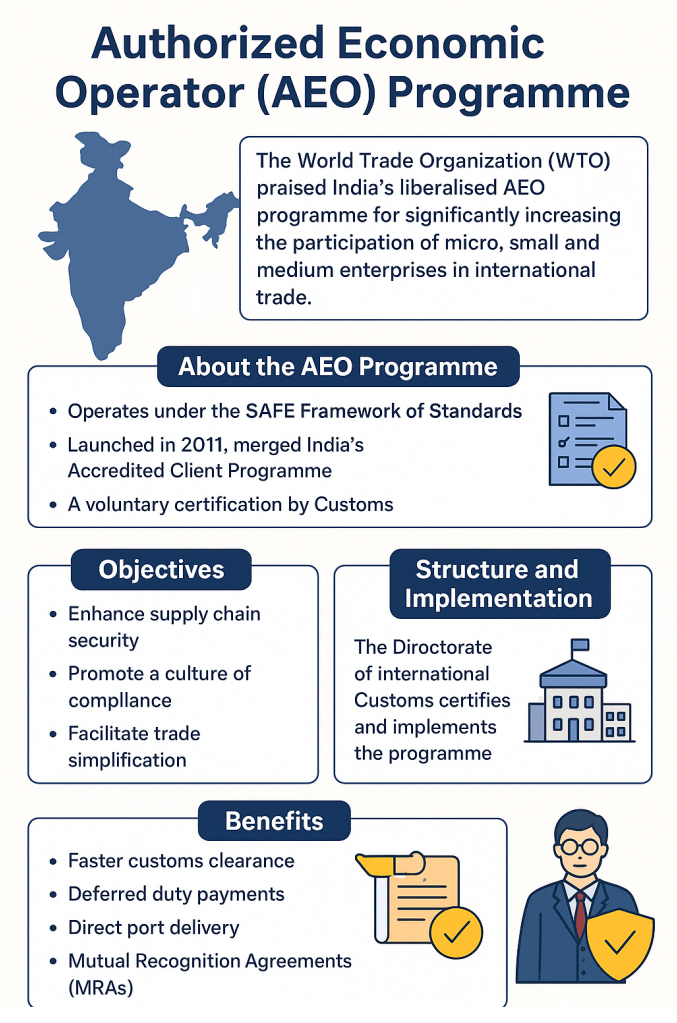
- **Humanitarian Leadership:** India's timely delivery reflects its expanding role as a **regional health and disaster relief provider**, aligning with its **"Neighbourhood First"** and **"Act East"** policies.
- **Technological Capability:** India maintains Prussian Blue stocks under the **National Disaster Management Authority (NDMA)** and **Department of Atomic Energy (DAE)** for nuclear or radiological emergencies.
- **Diplomatic Value:** Strengthens **India–Indonesia bilateral relations**, particularly under the **ASEAN-India partnership** framework for regional security and health cooperation.

- **Historical Parallel:** India had earlier provided medical and nuclear safety assistance to Japan and Sri Lanka under similar emergency circumstances.

CONCLUSION:

India's dispatch of Prussian Blue capsules to Indonesia reinforces its commitment to **regional stability, humanitarian aid, and nuclear safety diplomacy** — enhancing its image as a **trusted partner in crisis response** and responsible scientific power in Asia.

AUTHORIZED ECONOMIC OPERATOR (AEO) PROGRAMME: BOOSTING INDIA'S GLOBAL TRADE CONFIDENCE



CONTEXT:

The World Trade Organization (WTO) recently commended India's liberalised *Authorized Economic Operator (AEO)* programme for significantly enhancing the participation of micro, small, and medium enterprises (MSMEs) in international trade. This recognition highlights India's growing emphasis on trade facilitation, supply chain security, and ease of doing business.

ABOUT THE AEO PROGRAMME

The *Authorized Economic Operator (AEO)* programme operates under the **World Customs Organization (WCO) SAFE Framework of Standards (FoS)** — a global initiative adopted in **June 2005** to secure and facilitate international trade.

India's AEO scheme, implemented by the **Central Board of Indirect Taxes and Customs (CBIC)**, is based on these global standards and aims to strengthen trust-based partnerships between Customs authorities and trade stakeholders.

Launched: As a pilot in **2011** and expanded in **2016**, the AEO programme merges India's earlier *Accredited Client Programme (ACP)* to create a unified framework.

OBJECTIVES OF AEO

- Enhance **supply chain security** and ensure faster movement of goods.
- Promote **compliance culture** among traders and logistics operators.
- Facilitate **trade simplification** while focusing enforcement on high-risk entities.
- Improve **international recognition** of Indian exporters through Mutual Recognition Agreements (MRAs) with other countries.

STRUCTURE AND IMPLEMENTATION

The programme is **voluntary** and open to entities engaged in international trade — including importers, exporters, customs brokers, logistics providers, custodians, and warehouse operators.

The **Directorate of International Customs (CBIC)** manages the programme and grants AEO certification after a detailed compliance audit.

BENEFITS OF AEO STATUS

- **Faster customs clearance** through priority processing and fewer inspections.
- **Deferred duty payments** and simplified documentation.
- **Direct port delivery** and reduced dwell time for exports/imports.
- **Mutual Recognition Agreements (MRAs):** Indian AEOs gain reciprocal benefits in countries that recognise India's AEO certification (e.g., Japan, South Korea).
- Builds **international credibility** as a "trusted trader."

This allows Customs to focus more on **non-compliant or high-risk operators**, improving resource efficiency and trade transparency.

RECENT DEVELOPMENTS AND IMPACT

The liberalised AEO norms have made it easier for **MSMEs** to qualify by easing documentation and compliance requirements.

As per CBIC data, India has witnessed a **30% rise in AEO-certified MSMEs** in the last two years.

The WTO's recognition underscores India's role in setting a global example of **secure, efficient, and inclusive trade facilitation**.

WAY FORWARD

- Expanding MRAs with major trade partners.
- Digitalising AEO certification processes.
- Integrating the AEO system with **National Logistics Policy (NLP)** and **PM Gati Shakti** for seamless supply chain coordination.

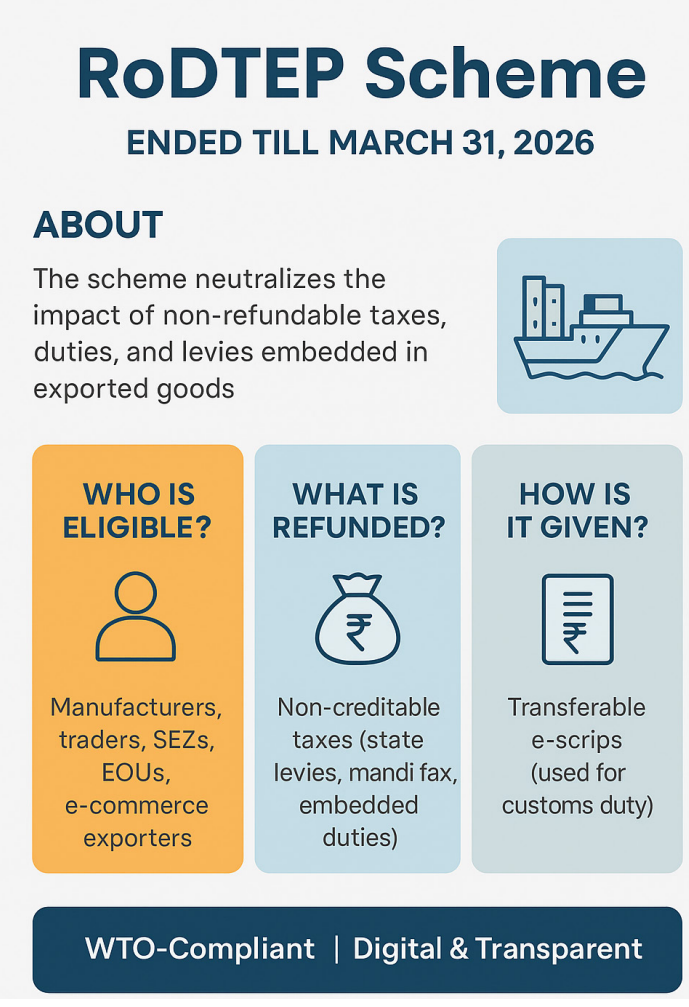
CONCLUSION:

India's AEO programme demonstrates a successful model of balancing **trade facilitation with national security**, reinforcing trust between businesses and Customs — a key driver of India's ambition to become a **global logistics hub**.

ECONOMY

GS PAPER 3

RODTEP SCHEME EXTENDED TILL MARCH 2026



CONTEXT:

The Government of India has extended the *Remission of Duties and Taxes on Exported Products (RoDTEP)* Scheme until **March 31, 2026**, ensuring continued support to exporters amidst global trade challenges.

ABOUT THE RODTEP SCHEME

- **Launched:** January 1, 2021 (through amendment in Foreign Trade Policy 2015–20).
- **Objective:** To neutralize the impact of **non-refundable taxes, duties, and levies** embedded in exported goods.
- **Why Needed:** Exporters incur costs such as state levies, power duties, mandi taxes, and embedded central taxes, which were not refunded earlier.
- **WTO-Compliant:** Replaced the *Merchandise Export Incentive Scheme (MEIS)* after it was challenged by the US at WTO.
- **Administered By:** Department of Revenue, Ministry of Finance.

KEY FEATURES

1. Coverage:

- All sectors eligible.
- Priority given to *labour-intensive sectors* (textiles, agriculture, leather, etc.).
- Applies to *manufacturer exporters, merchant exporters (traders), SEZ units, EOUs, and e-commerce exports*.

2. Exclusions:

- Re-exported products not eligible.

3. Reimbursement Mechanism:

- Provided as a **percentage of FOB (Freight on Board) value** of exports.
- Issued in the form of **transferable e-scrips** (maintained in CBIC's electronic credit ledger).
- e-scrips can be used for paying *basic customs duty* or transferred to other importers.

4. Digital Implementation:

- Entirely **IT-driven** to ensure transparency, speedy clearance, and minimal human intervention.
- Monitored via **IT-based risk management system** with audit provisions.

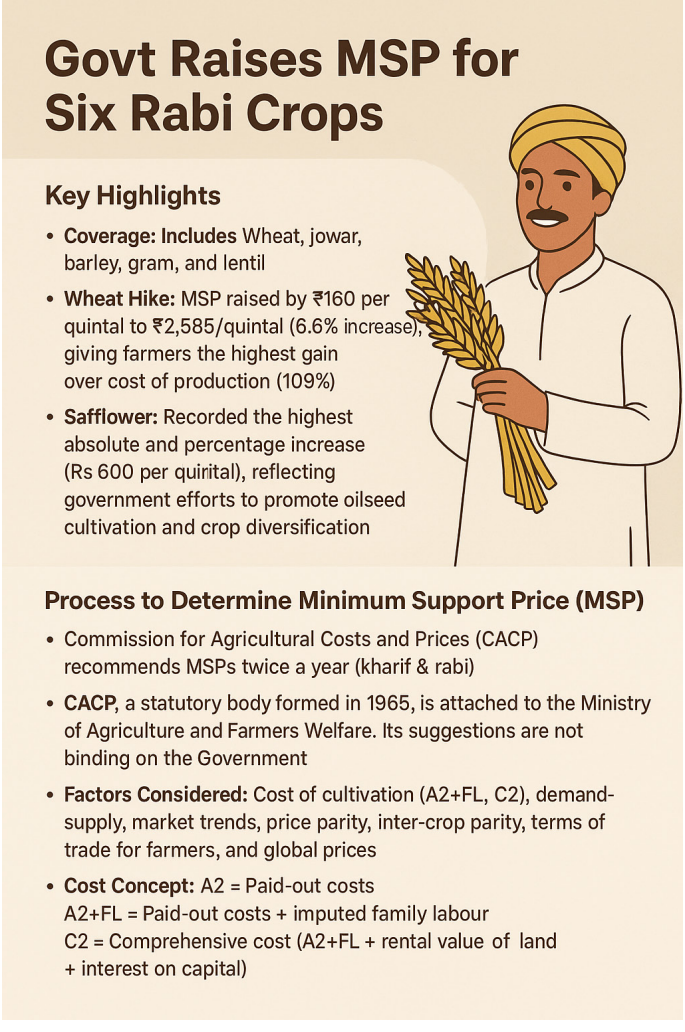
SIGNIFICANCE

- Reduces hidden tax burden on exporters.
- Enhances **global competitiveness** of Indian goods.
- Encourages manufacturing and promotes *"Make in India"* exports.
- Helps India remain aligned with WTO norms while protecting domestic industry.

WAY FORWARD

- With the scheme extended till 2026, exporters now have **policy certainty**.
- Government focus is likely to remain on **simplification of refunds**, **expansion of product coverage**, and **ensuring quick digital disbursements** to sustain India's export momentum.

GOVT RAISES MSP FOR SIX RABI CROPS



CONTEXT:

The Union Cabinet has approved significant hikes in the **Minimum Support Prices (MSPs)** for six rabi crops for the **2026–27 marketing season**, aimed at ensuring remunerative prices to farmers and promoting crop diversification.

WHAT IS MSP?

- **MSP** is the minimum guaranteed price at which the government procures crops from farmers, protecting them from distress sales.
- It currently covers **23 crops**: 7 cereals, 5 pulses, 7 oilseeds, and 4 commercial crops.
- The policy serves as a tool for ensuring **food security, farmer welfare, and market stability**.

KEY HIGHLIGHTS OF THE HIKE

- **Crops Covered:** Wheat, barley, jowar, gram, lentil, and safflower.
- **Wheat:** MSP increased by **₹160 per quintal** to **₹2,585/ quintal** (6.6% rise), offering the highest gain over cost of production (109%).
- **Safflower:** Witnessed the **highest absolute and percentage increase** (Rs. 600 per quintal), reflecting government emphasis on **oilseed cultivation** and **crop diversification**.
- The hikes align with the government's aim to **double farmers' income** and reduce dependence on imported edible oils.

HOW MSP IS DETERMINED

- **Commission for Agricultural Costs and Prices (CACP):**
  - A statutory body set up in 1965 under the Ministry of Agriculture.
  - Recommends MSPs twice a year (for kharif and rabi crops).
  - Recommendations are **not binding**; final approval rests with the **Cabinet Committee on Economic Affairs (CCEA)**.
- **Factors Considered:**
  - Cost of cultivation (A2, A2+FL, C2).
  - Demand-supply situation.
  - Price trends and inter-crop parity.
  - Terms of trade for farmers.
  - Global prices and food security concerns.
- **Cost Concepts:**
  - **A2**: Actual paid-out costs (seeds, fertilizers, etc.).
  - **A2+FL**: A2 + imputed family labour.
  - **C2**: Comprehensive cost (A2+FL + rental value of land + interest on capital).
- MSPs are generally fixed at **A2+FL + 50% margin**, ensuring fair returns.

SIGNIFICANCE

- Enhances **farmers' income security** and incentivizes crop production.
- Encourages **oilseed production**, reducing edible oil import bills.
- Balances **inflation control** with farmer welfare.
- Strengthens **food security** by ensuring procurement at fair prices.

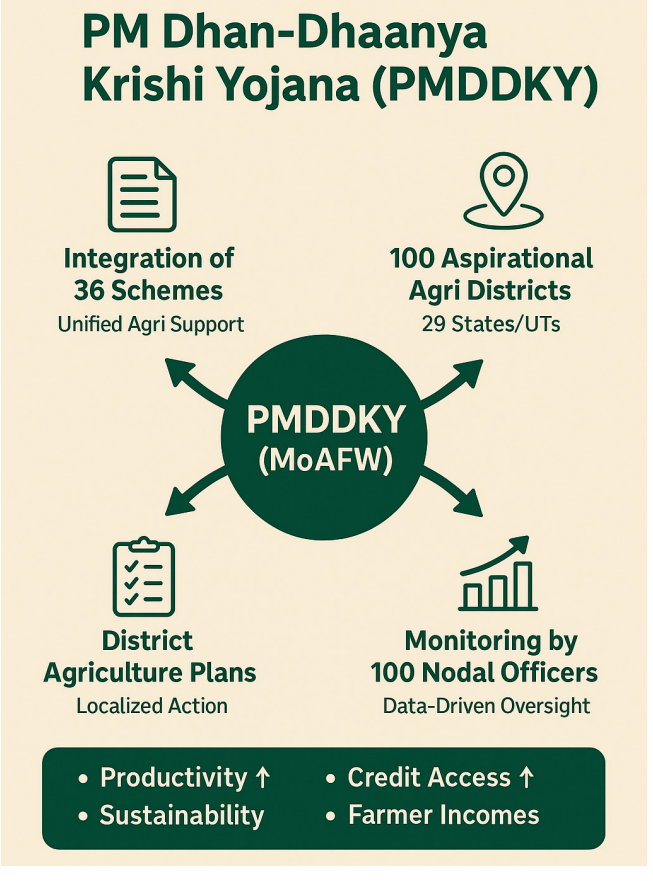
CHALLENGES AHEAD

- Procurement is still concentrated in wheat and rice, limiting benefits for other crops.
- Rising MSPs can strain the **fiscal burden**.
- Market reforms and diversification efforts need to complement MSP to achieve sustainable outcomes.

CONCLUSION:

The recent MSP hike reflects the government's continued focus on **farmer welfare, crop diversification, and self-reliance** in agriculture. However, structural reforms in procurement, storage, and marketing remain crucial to ensure that the benefits of MSP reach all farmers equitably.

PM DHAN-DHAANYA KRISHI YOJANA (PMDDKY): BOOSTING AGRICULTURAL SELF-RELIANCE



CONTEXT:

The Government of India has announced **100 Aspirational Agriculture Districts** under the **PM Dhan-Dhaanya Krishi Yojana (PMDDKY)**, covering **29 States and Union Territories**. The initiative aims to enhance **farm productivity, sustainability, and rural prosperity**, aligning with the government's vision of "Viksit Bharat @2047".

ABOUT THE SCHEME

The **PMDDKY** is an **umbrella initiative** of the **Ministry of Agriculture and Farmers' Welfare (MoAFW)**. It seeks to transform low-performing agricultural districts through **integrated planning, data-driven governance, and convergence of schemes**.

OBJECTIVES

- **Enhance productivity** of major crops through modern, sustainable farming practices.
- **Promote self-reliance** in agricultural resources and inputs.
- **Encourage diversification** into high-value crops, allied sectors, and climate-resilient farming.
- **Ensure inclusive development** by focusing on lagging districts with untapped potential.

SELECTION CRITERIA

The 100 Aspirational Agriculture Districts were identified based on:

1. **Low crop productivity** compared to the state average.
2. **Moderate or low crop intensity.**
3. **Limited access to institutional credit** and agri-infrastructure.
4. **Socio-economic vulnerabilities** affecting farmer incomes.

This **data-driven identification** mirrors the approach of **NITI Aayog's Aspirational Districts Programme (ADP)**, focusing on measurable improvement through a real-time monitoring framework.

SCHEME INTEGRATION AND IMPLEMENTATION

- **Integration:** The PMDDKY brings together **36 central schemes** from **11 departments**, enabling **convergence of resources and simplified delivery**. These include schemes from the Ministries of Rural Development, Food Processing, Water Resources, and Renewable Energy.
- **District Plans:** Each selected district will prepare a **District Agriculture Development Plan (DADP)** outlining priorities such as irrigation, seed quality, soil health, and market linkages.
- **Monitoring:** The progress will be tracked by **100 Central Nodal Officers** using digital dashboards and key performance indicators (KPIs).
- **Local Committees:** Headed by the District Collector, they will coordinate between **panchayats, agri-universities, and farmers' producer organizations (FPOs)** to ensure ground-level execution.

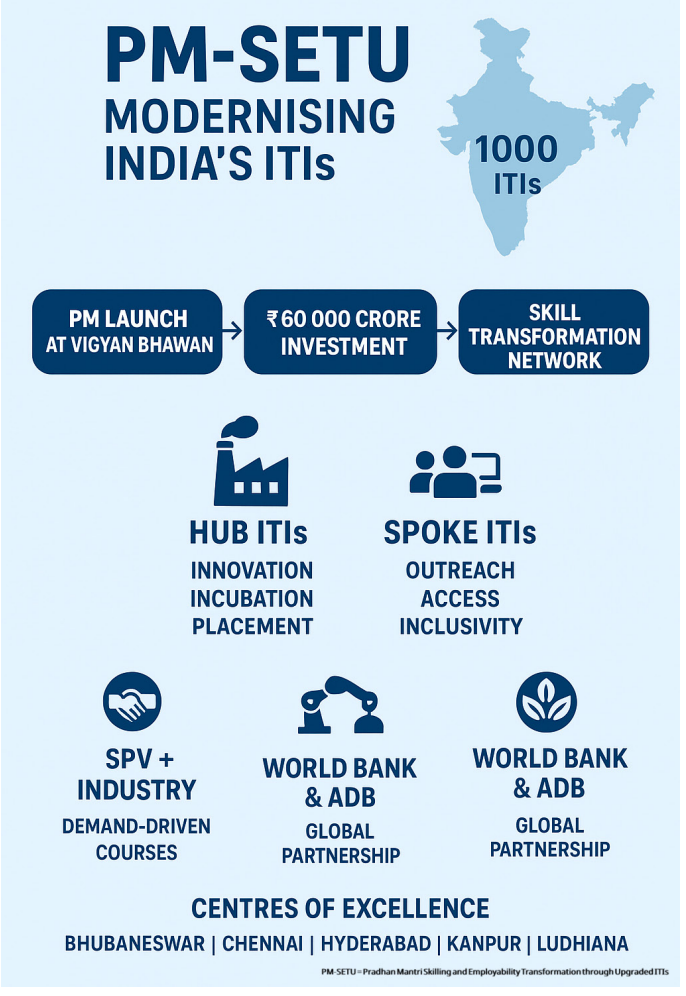
SIGNIFICANCE

- **Holistic Growth:** Moves from fragmented schemes to an integrated mission-mode approach.
- **Sustainability:** Encourages soil health management, efficient water use, and adoption of renewable energy in farming.
- **Farmer Empowerment:** Bridges the rural credit and infrastructure gap, enhancing income stability.
- **Data-Driven Governance:** Builds accountability through measurable, outcome-based indicators.

WAY FORWARD

PMDDKY has the potential to become a **model for regional agricultural transformation**, much like the Aspirational Districts Programme for governance. If effectively implemented, it can significantly contribute to **doubling farmers' income** and achieving **sustainable agricultural growth** across India.

PM-SETU: TRANSFORMING INDIA'S ITIS FOR THE FUTURE WORKFORCE



CONTEXT

During the **Kaushal Deekshant Samaroh** held at **Vigyan Bhawan, New Delhi**, Prime Minister **Narendra Modi** launched the **Pradhan Mantri Skilling and Employability Transformation through Upgraded ITIs (PM-SETU)** scheme — a landmark initiative to modernise India's skill ecosystem and strengthen employability.

ABOUT THE PM-SETU SCHEME

The **PM-SETU** scheme is a **centrally sponsored programme** with an investment of **₹60,000 crore**, aimed at transforming **1,000 Government Industrial Training Institutes (ITIs)** into modern, industry-aligned centres of excellence.

KEY FEATURES

- **Hub-and-Spoke Model:**
  - **200 Hub ITIs** will act as anchor institutions equipped with **advanced infrastructure, innovation labs, incubation centres, production units, training-of-trainer facilities**, and **placement cells**.
  - **800 Spoke ITIs** will extend training access and outreach, particularly in remote and rural regions.
- **Industry Partnership:**
  - Each cluster will be managed through a **Special Purpose Vehicle (SPV)** formed with credible **Anchor Industry Partners** to ensure **outcome-based, demand-driven training**.
- **Modern Curriculum:**
  - Introduction of **new-age courses** in collaboration with industries — focusing on **AI, robotics, electric mobility, renewable energy, and green jobs**.
- **Flexible Learning Pathways:**
  - Provision for **short-term courses, executive programmes, and long-term diplomas**, creating a seamless skilling continuum.
- **Centres of Excellence (CoEs):**
  - Five **National Skill Training Institutes (NSTIs)** at **Bhubaneswar, Chennai, Hyderabad, Kanpur, and Ludhiana** will be upgraded as global-standard CoEs with international collaborations.
- **Global Co-Financing:**
  - Supported by the **World Bank** and the **Asian Development Bank (ADB)**.
  - The **first phase** will focus on upgrading **Patna and Darbhanga ITIs** in Bihar.

OBJECTIVES

1. **Modernise Infrastructure:** Replace outdated training setups with advanced equipment.
2. **Enhance Employability:** Bridge the skill gap through real-time industry engagement.

3. **Inclusive Skilling:** Expand access to women, rural, and underprivileged youth.
4. **Promote Entrepreneurship:** Facilitate innovation and start-up incubation at the ITI level.

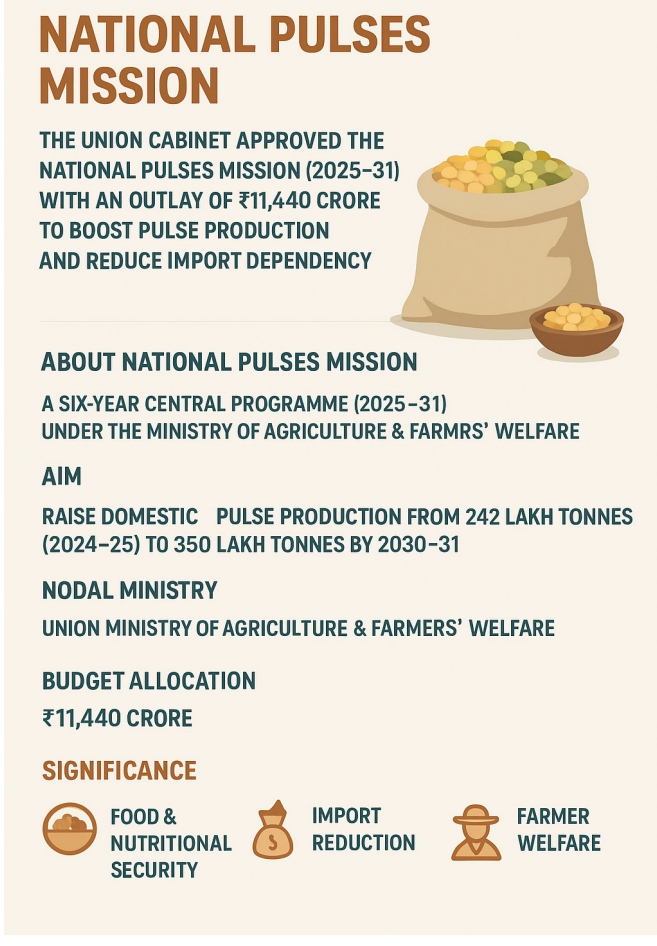
SIGNIFICANCE

- Advances **Atmanirbhar Bharat** and **Viksit Bharat 2047** visions.
- Fosters **Public-Private Partnerships (PPP)** for sustainable skilling.
- Builds a **future-ready workforce** aligned with **Industry 4.0** demands.
- Integrates India's **demographic dividend** into a globally competitive labour market.

CONCLUSION

The **PM-SETU scheme** marks a transformative phase in India's skilling landscape. By integrating technology, industry collaboration, and global partnerships, it aims to build a robust, employment-oriented vocational education system — empowering youth and positioning India as a **global skill hub**.

NATIONAL PULSES MISSION (2025–31)



CONTEXT

The Union Cabinet has approved the **National Pulses Mission (2025–31)** with a total outlay of **₹11,440 crore**. The initiative aims to boost domestic production of pulses and reduce India's import dependency, aligning with the vision of **Aatmanirbhar Bharat** and ensuring **food and nutritional security**.

ABOUT THE NATIONAL PULSES MISSION

The **National Pulses Mission (NPM)** is a **six-year central programme** under the **Ministry of Agriculture and Farmers' Welfare**, operational from **2025–26 to 2030–31**. It seeks to increase the production of pulses from **242 lakh tonnes (2024–25)** to **350 lakh tonnes by 2030–31**, thereby achieving self-sufficiency in pulse production.

KEY FEATURES

- **Production Expansion:** The mission targets an area expansion to **310 lakh hectares**, with a yield goal of **1,130 kg/ha**.
- **Seed Security:** Distribution of **126 lakh quintals** of certified seeds and **88 lakh free seed kits** will be ensured through the **SATHI portal** for transparency and monitoring.
- **Assured Procurement:** The government has announced **100% procurement of Tur, Urad, and Masoor** at **Minimum Support Price (MSP)** for the next four years, ensuring income security for farmers.
- **Infrastructure Development:** Around **1,000 post-harvest processing units** will be established with subsidies of up to **₹25 lakh per unit**, promoting value addition and reducing losses.
- **Research and Innovation:** The mission promotes **climate-resilient and pest-resistant pulse varieties**, supported by multi-location trials.
- **Capacity Building:** Farmers will receive training on **modern and sustainable pulse cultivation practices** through awareness and demonstration programmes.

SIGNIFICANCE

- **Food and Nutritional Security:** Pulses are the primary source of protein for a large section of the Indian population. Ensuring their steady domestic supply strengthens nutritional security.
- **Import Reduction and Forex Savings:** The mission aims to **cut import dependency by 15–20%**, significantly reducing India's annual foreign exchange outgo on pulse imports.
- **Farmer Welfare and Rural Development:** The assured MSP procurement and expansion of local infrastructure are expected to provide **income stability**, **employment**, and **strengthen the pulse value chain**.

CONCLUSION

The **National Pulses Mission (2025–31)** represents a major policy step toward **self-reliance in food production**, **nutritional sufficiency**, and **farmer empowerment**. By integrating technology, procurement assurance, and research-led growth, the mission reinforces India's long-term commitment to sustainable agriculture and rural prosperity.

DEFENCE MANUFACTURING TARGET OF ₹3 LAKH CRORE BY 2029

CONTEXT:

India has set an ambitious goal to achieve **₹3 lakh crore in defence manufacturing** and **₹50,000 crore in defence exports** by **2029**, underscoring its commitment to becoming a global defence manufacturing hub.

RISING DOMESTIC DEFENCE PRODUCTION:

- **Record Production:** India's defence production reached an all-time high of **₹1.5 lakh crore in FY 2024–25**, a threefold rise from **₹46,000 crore in 2014**.
- **Procurement Reforms:** Around **25% of annual procurement** is now reserved for **MSMEs**, with **350+ items** earmarked exclusively for them.
- **Domestic Dominance:** In FY 2024–25, **92% of defence contracts** were awarded to **Indian companies**, boosting self-reliance under *Aatmanirbhar Bharat*.
- **DPEPP 2020:** The *Defence Production and Export Promotion Policy* (DPEPP-2020) targets **₹1.75 lakh crore** in production and **₹35,000 crore** in exports by **2025** — a target expected to be surpassed.

DEFENCE STARTUPS ON THE RISE:

- **Innovation Drive:** The *Innovations for Defence Excellence (iDEX)* programme, launched in **2018**, has supported **650+ innovators** and led to prototype procurements worth **₹3,000 crore**.
- **Defence Unicorn Vision:** The Defence Minister has called on entrepreneurs to create India's **first Defence Unicorn**, marking a $1 billion valuation milestone for the indigenous defence ecosystem.
- **Ease of Procurement:** The upcoming *Defence Procurement Manual (DPM 2025)* will offer **assured five-year contracts**, extendable by another five years, to startups developing military technologies.

GOVERNMENT INITIATIVES DRIVING GROWTH:

- **Positive Indigenisation Lists (PILs):** The Ministry of Defence issues PILs to ban the import of specific defence items and ensure **exclusive domestic procurement**.
- **Localisation Success:** Over **64% of components** of the *Tejas Light Combat Aircraft (LCA)* are now **indigenously manufactured**.
- **Foreign Investment:** The **FDI cap** has been liberalised to **74% under the automatic route** and higher through government approval, encouraging global collaboration.
- **Export Push:** India's defence exports rose from **₹1,500 crore in 2016–17** to over **₹21,000 crore in 2024–25**, marking a **14× increase** in eight years.

WAY FORWARD:

R&D Boost: Enhance public–private partnerships in research and prototyping under DRDO and iDEX.

Export Ecosystem: Strengthen export financing and logistics for Indian defence MSMEs.

Skill Development: Expand training programmes under *Skill India Defence Corridor Initiative*.

Global Partnerships: Promote joint ventures with friendly nations for technology transfer and co-production.

CENTRAL BANK DIGITAL CURRENCIES (CBDCS): GLOBAL PUSH OVER STABLECOINS

CONTEXT:

At the IMF–World Bank Annual Meeting (October 2025), RBI Governor **Sanjay Malhotra** emphasized the need for **central banks to promote Central Bank Digital Currencies (CBDCs)** over **stablecoins** for cross-border transactions.

WHAT ARE CBDCS AND STABLECOINS?

A **CBDC** is a *sovereign, digital form of fiat money* issued and regulated by a central bank. It represents legal tender in electronic format.

In contrast, **stablecoins** are *private cryptocurrencies* pegged to fiat assets (like the US dollar) to maintain price stability but lack sovereign backing.

SIGNIFICANCE OF PROMOTING CBDCS OVER STABLECOINS

1. **Monetary Sovereignty:** CBDCs preserve domestic monetary control. The **RBI's 2024 report** warns that US-dollar stablecoins could trigger *"rupee dollarisation"* if left unchecked.
2. **Cross-Border Efficiency:** According to **BIS (2025)**, CBDC-based cross-border payments could *cut remittance costs by nearly 50%* compared to traditional SWIFT networks.
3. **Regulatory Transparency:** CBDCs ensure **KYC/AML compliance**, backed by sovereign guarantees — unlike the **$285 billion stablecoin market**, which often operates in unregulated zones.
4. **Technological Edge:** *Tokenised CBDCs* combine blockchain programmability with state-backed trust, offering *instant, programmable, and traceable* transactions.

CHALLENGES IN REPLACING STABLECOINS

- **Limited Global Adoption:** Only **19 central banks** have pilot-stage CBDCs (IMF Tracker 2025), lacking standardised interoperability.
- **Cybersecurity Risks:** Over **60% of central banks** cite cyberattacks and surveillance concerns as top risks (BIS 2025).
- **Dominant Stablecoin Market:** Private coins like **Tether (USDT)** and **USDC** control **90%** of global stablecoin circulation (IMF, 2025).

WAY FORWARD FOR INDIA

Global CBDC Corridors: India should join the **BIS mBridge project** (UAE–China–Thailand–Hong Kong) to enable *real-time, low-cost, and secure* CBDC settlements.

Tech–Policy Convergence: Adoption of the **IMF's XC platform** will support interoperability across jurisdictions.

Cyber Resilience: Implement the **FSB 2025 Cyber Resilience Framework** and deploy **AI-driven security tools** to detect fraud.

Awareness & Trust: Expand the **RBI Digital Rupee Mission**, focusing on public literacy — only **26% of Indians** currently understand CBDCs (FIS Survey 2024).

CONCLUSION

CBDCs represent the next frontier of monetary innovation — combining **digital efficiency** with **sovereign trust**. For India, leading in CBDC adoption aligns with its *Digital Public Infrastructure (DPI)* vision and enhances global financial stability.

KERALA'S EXTREME POVERTY ERADICATION PROGRAMME: A MODEL OF INCLUSIVE GOVERNANCE

CONTEXT:

On **November 1, 2025**, Kerala will be officially declared **free from extreme poverty**, becoming the **first Indian state** to achieve this distinction.

The milestone marks the culmination of the **Extreme Poverty Eradication Programme (2021–2025)** — a four-year, data-driven initiative combining welfare convergence, local governance, and digital innovation.

ABOUT EXTREME POVERTY

- **Definition:**
- According to the **World Bank**, extreme poverty refers to living on **less than $2.15 per day**, representing a state where individuals cannot meet basic needs like food, shelter, and healthcare.
- **Updated Benchmark (2025):**
- The World Bank has revised this threshold to **$3 per day (PPP 2021)** for low-income nations, accounting for inflation and changing consumption patterns.
- **Measurement:**
- The poverty line is determined using **Purchasing Power Parity (PPP)** and **Household Consumption Expenditure Survey (HCES)** data, ensuring comparability across regions.

Extreme Poverty Eradication Programme (2021–2025)

Launched in **2021**, the programme aimed to **eradicate extreme poverty** through a multidimensional approach focusing on **nutrition, health, housing, education, and livelihoods**.

- **Implementation Agency:**
- Led by **Kudumbashree – Kerala State Poverty Eradication Mission**, in collaboration with local governments.
- **Beneficiary Identification:**
  - **64,006** extremely poor families identified through door-to-door surveys.
  - **59,277** families uplifted by 2025.
- **Infrastructure Support:**
  - **3,913 houses constructed**.
  - **1,338 families provided land ownership.**
  - **21,263 individuals received essential IDs** (ration, Aadhaar, pension).
- **Technology Use:**
- Every household was **geo-tagged**, and **micro-plans** were prepared to ensure **sustainable rehabilitation**.

HOW KERALA ACHIEVED POVERTY-FREE STATUS

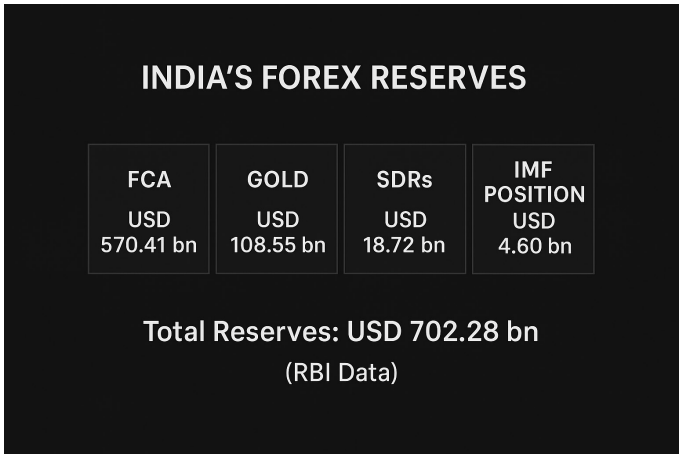
1. **Data-Driven Targeting:** The **Smart Panchayat Project** and **Kudumbashree database** enabled accurate beneficiary identification using community validation and GIS mapping.
2. **Convergence of Schemes:** Integrated **State and Central welfare schemes** under a unified action plan:
   - *Life Mission*: Housing for landless families.
   - *Aardram Mission*: Primary healthcare access.
   - *Ashraya Project*: Welfare for destitute and elderly.
3. **Decentralised Governance:** Kerala's **People's Plan Campaign (Janakeeya Aasuthranam)** empowered local bodies with decision-making and fiscal autonomy under the **Nava Kerala Mission**.
4. **Digital Governance:** The **Kerala State IT Mission** created **GIS-based dashboards** and the **e-Sevanam portal** for tracking benefits, asset mapping, and real-time monitoring.
5. **Political and Institutional Alignment:** Cross-party support and **Mission Mode Governance** ensured coherence between state policies and local implementation, supported by **KILA training** for officials.

SIGNIFICANCE

Kerala's success underscores the potential of **decentralisation**, **data integration**, and **community participation** in addressing poverty.

It sets a **replicable model** for other Indian states to adopt **evidence-based social welfare** and multidimensional poverty reduction strategies.

INDIA'S FOREX RESERVES REACH RECORD HIGH



CONTEXT:

India's foreign exchange (forex) reserves have surged by **USD 4.496 billion**, touching a **new all-time high of USD 702.28 billion**, according to the Reserve Bank of India (RBI). With this, India remains among the **top five reserve-holding nations** globally, after **China, Japan, Switzerland, and Russia**.

LATEST COMPOSITION OF INDIA'S FOREX RESERVES

Component	Latest Value	Change
Foreign Currency Assets (FCA)	**USD 570.41 bn**	▼ USD 1.692 bn
Gold Reserves	**USD 108.55 bn**	▲ USD 6.181 bn
Special Drawing Rights (SDRs)	**USD 18.72 bn**	▲ USD 38 mn
IMF Reserve Position	**USD 4.60 bn**	▼ USD 30 mn

ABOUT FOREX RESERVES

Forex reserves are **external financial assets** held by the RBI in foreign currencies, gold, and IMF-related positions. They are maintained to:

- Ensure **exchange rate stability** of the Rupee,
- Provide **liquidity for external trade and debt payments**, and
- Strengthen **investor and global market confidence** in India's economic stability.

COMPONENTS OF FOREX RESERVES:

1. **Foreign Currency Assets (FCA):** Securities and deposits in global currencies such as USD, Euro, Yen, etc.
2. **Gold Reserves:** Physical gold and gold deposits valued at international prices.
3. **Special Drawing Rights (SDRs):** Reserve assets allocated by the IMF to support global liquidity.
4. **Reserve Tranche Position:** India's withdrawable contribution with the IMF for balance-of-payments needs.

SIGNIFICANCE FOR INDIA

- **Exchange Rate Stability:** Enables RBI to intervene in forex markets to curb sharp rupee fluctuations.
- **Import Cover:** Current reserves can finance **over 10 months of imports**, enhancing economic security.
- **Crisis Buffer:** Helps India withstand global economic shocks, trade imbalances, or capital outflows.
- **Investor Confidence:** High reserves encourage greater foreign investment and reduce perceived economic risk.
- **Portfolio Diversification:** Rising gold reserves act as a hedge against fluctuations in the US dollar.

CHALLENGES

- Heavy RBI intervention can sometimes **reduce export competitiveness** by influencing rupee value.
- Large reserves need careful management to avoid **low-return accumulation costs**.

CONCLUSION

India's record forex reserves reflect **strong macroeconomic fundamentals**, resilient external sector performance, and proactive monetary management by the RBI. Sustaining export growth, attracting stable capital inflows, and prudent reserve diversification remain key for long-term stability.

RBI CAUTIONS STATES ON FISCAL DISCIPLINE

CONTEXT:

The Reserve Bank of India (RBI) has warned states against **fiscal slippages**, rising borrowing, and **pre-election populist spending**, highlighting risks to long-term financial stability. Pre-election populist spending

refers to the **increase in subsidies and welfare outlays mainly to attract voter support**, rather than to promote sustained economic growth.

KEY CONCERNS HIGHLIGHTED BY RBI

1. **Rising Borrowing Costs:** Yields on **State Development Loans (SDLs)** have risen sharply. Higher yields mean **states must pay more interest**, increasing the overall debt burden.
2. **Increasing Market Borrowing:** States have borrowed **₹5.23 trillion till October 2025**, which is **62% of their FY26 borrowing plan**, compared to **₹4.37 trillion** in the same period last year. This indicates **faster-than-expected fiscal stress**.
3. **Fiscal Deficit Pressure:** The combined fiscal deficit for states is expected to be **3.2% of GDP**. However, analysts caution that **pre-election expenditure** could push this **above the recommended limits**, threatening fiscal stability.
4. **Pre-Election Populist Spending:** During **eight state elections (2023–25)**, states spent nearly **₹68,000 crore** on short-term welfare schemes.

- For example, **Bihar allocated 32.48% of its tax revenues** to such schemes, reducing funds available for infrastructure and long-term development.

WHAT ARE SDLS?

State Development Loans (SDLs) are **bonds issued by state governments** to raise funds for development expenses and fiscal deficit management. These are auctioned by the RBI and carry interest, contributing to long-term debt liabilities of states.

RBI RECOMMENDATIONS

Recommendation	Purpose
Productive Spending	Shift funds from temporary subsidies toward **capital expenditure** (roads, power, irrigation) that builds future growth.
Fiscal Prudence	Adhere to **FRBM Act** targets to maintain balanced budgets and macroeconomic stability.
Borrowing Strategy	Spread borrowings across maturities and maintain transparent communication to lower interest costs.
Fiscal Transparency	Clearly report **contingent liabilities** and **off-budget borrowings** to avoid hidden debt risks.

WHY THIS MATTERS

- States account for nearly **60% of public sector capital expenditure** in India.
- **Excessive populist spending reduces funds for development**, slowing growth and worsening debt sustainability.
- Maintaining fiscal discipline strengthens **investor confidence**, supports **stable interest rates**, and ensures **inter-generational equity**.

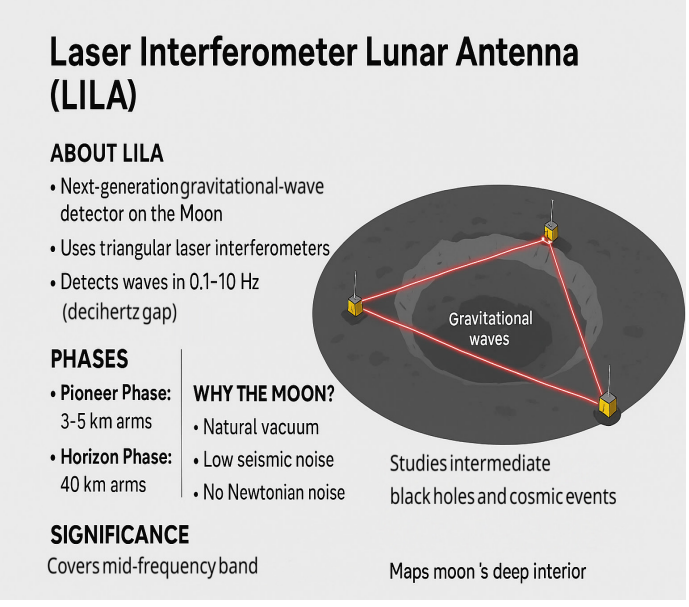
CONCLUSION:

RBI's caution underscores the importance of **sustainable fiscal management**. While welfare spending remains essential, states must prioritize **long-term developmental spending** and maintain **transparent and prudent financial practices** to safeguard economic stability.

SCIENCE & TECHNOLOGY | SPACE | INNOVATION

GS PAPER 3

LASER INTERFEROMETER LUNAR ANTENNA (LILA)



CONTEXT

Scientists have proposed the **Laser Interferometer Lunar Antenna (LILA)** as a next-generation project to detect **gravitational waves** directly from the Moon's surface.

WHAT IS AN INTERFEROMETER?

An interferometer is a precision instrument that uses the **interference of light waves** to measure extremely small changes in distance. This principle is used in gravitational-wave detection.

ABOUT LILA

- **Objective**: Detect mid-frequency gravitational waves (0.1–10 Hz), a range inaccessible to Earth-based **LIGO** or space-based **LISA**.
- **Lead Institution**: Vanderbilt Lunar Labs, USA, in collaboration with global partners.
- **Design**: Network of lunar interferometers placed on the Moon's surface.
- **Significance**: Fills the "**decihertz gap**" in the gravitational-wave spectrum.

DEVELOPMENTAL PHASES

1. Pioneer Phase:

- Robotic deployment of an interferometer with **3–5 km arms**.
- Test of mid-band sensitivity and new technologies.

2. Horizon Phase:

- Construction of a **triangular array** with **40 km-long arms**.
- Astronaut-led assembly using quantum sensors and advanced seismic isolation.

WHY THE MOON?

- **Vacuum Advantage**: No atmosphere to distort laser signals.
- **Low Seismic Noise**: The Moon has fewer vibrations than Earth.
- **No Newtonian Noise**: Absence of oceans and large mass movements reduces disturbances.

SCIENTIFIC SIGNIFICANCE

- **Complements LIGO & LISA**: Bridges the gap in the gravitational-wave spectrum.
- **Astrophysical Breakthroughs**: Enables study of **intermediate-mass black holes** and exotic cosmic events.
- **Lunar Science**: Provides insights into the Moon's deep interior, aiding **3D geophysical mapping**.

CONCLUSION

If realized, **LILA will revolutionize astrophysics**, enabling humanity to observe parts of the universe never seen before. Its lunar placement could make it the **quietest and most sensitive gravitational-wave detector ever built**, marking a leap forward in space science.

INDIA'S BID FOR FULLY REUSABLE ROCKETS

Context: Chennai-based spacetech startup **Agnikul Cosmos** has announced that its upcoming rockets will be **fully reusable**, ensuring no component is discarded. This aligns with the **International Astronautical Congress (IAC) 2025** theme: *"Sustainable Space: Resilient Earth."*

KEY HIGHLIGHTS

- **Agnikul's Vision:** To offer **globally competitive small-satellite launch services** with complete reusability.
- **Technology Achievements:**
  - Successfully tested **3D-printed sub-orbital rocket Agnibaan SOrTeD (2024)**.
  - Plans for orbital launches with reusability.
  - **Support Mechanism:** Backed by **IN-SPACe**, which provides policy and technical support.
- **Focus Areas:** Cost-efficiency, scalability, and **space debris mitigation compliance**.

REUSABLE LAUNCH VEHICLES (RLVS)

- **Definition:** A rocket system that can be launched, recovered, and reused multiple times. Unlike expendable rockets, RLVs ensure **controlled re-entry** and reduce space junk.
- **Advantages:**
  - Cuts down **launch costs**.
  - Minimizes **space debris**, mitigating risks like the **Kessler Syndrome** (cascading orbital collisions).
  - Enhances **sustainability** of global space missions.

INDIA'S EFFORTS IN RLVS

- **ISRO Milestones:**
  - **RLV-TD HEX-01 (2016):** Demonstrator flight for re-entry.
  - **RLV LEX Series (2024):** Autonomous landing tests.
  - **PUSHPAK Mission:** Ongoing experimental reusability projects.
- **Agnikul's Initiative:** Complements ISRO's programmes by targeting **commercial small-satellite launches**.

GLOBAL CONTEXT

- **SpaceX (USA):** Falcon 9, Falcon Heavy — world leaders in reusable rockets.
- **China:** Long March 8 with partial reusability.
- **India's Entry:** Aims to position itself as a **sustainable, affordable, and competitive space launch hub**.

SIGNIFICANCE

- Strengthens India's **Atmanirbhar Bharat** vision in space technology.
- Encourages **startups–ISRO collaboration**, expanding the private space ecosystem.
- Demonstrates India's commitment to **sustainable space exploration** and debris-free orbits.

ANUSANDHAN NATIONAL RESEARCH FOUNDATION (ANRF): BOOSTING INDIA'S RESEARCH AND INNOVATION ECOSYSTEM

CONTEXT:

The **Anusandhan National Research Foundation (ANRF)**, established under the **ANRF Act, 2023**, has recently launched **SARAL (Simplified and Automated Research Amplification and Learning)** — an AI-driven tool to make scientific research more accessible and comprehensible to the public.

ABOUT ANRF:

The **Anusandhan National Research Foundation** is a **statutory body** functioning under the **Department of Science & Technology (DST)**. It replaces and subsumes the **Science and Engineering Research Board (SERB)**, serving as the **apex body** to provide **strategic direction to research and development (R&D)** across the country.

CORE OBJECTIVES:

- To **seed, grow, and promote R&D** across universities, colleges, and research institutions.
- To **foster innovation and interdisciplinary research** aligned with India's developmental priorities.
- To **encourage private sector participation**, with an ambitious **funding target of ₹50,000 crore (2023–2028)** — about **70% expected from non-government sources**.
- To act as a **single-window system** for funding and supporting R&D activities nationwide.

ALIGNMENT WITH NEP 2020:

The ANRF plays a key role in implementing the **National Education Policy (NEP) 2020**, which emphasizes research-driven higher education. By supporting university-based research and collaboration between academia and industry, ANRF aims to transform India into a **global research and innovation hub**.

STRATEGIC VISION:

The foundation seeks to advance India's capabilities in emerging fields through initiatives such as the **AI Science & Engineering Open India Stack** — a framework envisioned to revolutionize research in:

- Drug and chemical discovery
- Aerospace design
- Advanced materials
- Climate and weather prediction

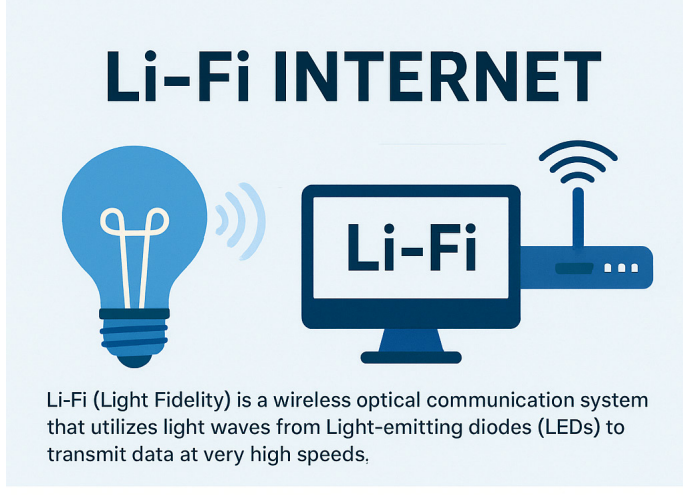
SARAL INITIATIVE:

The newly launched **SARAL** tool represents a major leap toward **democratizing science communication**. Using **Artificial Intelligence**, SARAL can generate **summaries of complex research papers** in easily understandable formats such as **videos, podcasts, posters, and presentations**, making scientific knowledge more accessible to students, policymakers, and the general public.

CONCLUSION:

The **Anusandhan National Research Foundation (ANRF)** marks a transformative step in India's journey toward becoming a **knowledge-driven economy**. Through funding, innovation, and the integration of AI tools like SARAL, ANRF aims to bridge the gap between research and society — ensuring that science becomes both inclusive and impactful.

LI-FI INTERNET SYSTEM: A BREAKTHROUGH IN WIRELESS COMMUNICATION



CONTEXT:

Gujarat-based **Nav Wireless Technologies** has achieved a major milestone by successfully deploying the **United States' first commercial Li-Fi internet system** in **New York City**. This marks a significant step towards transforming how wireless communication operates globally.

ABOUT LI-FI TECHNOLOGY

Li-Fi (Light Fidelity) is a **wireless optical communication technology** that uses **light waves from Light Emitting Diodes (LEDs)** to transmit data at extremely high speeds.

- **Working Mechanism:** Li-Fi works by modulating the intensity of LED light at rapid speeds—imperceptible to the human eye—to encode data.
- **Receiver Setup:** A **photodiode** captures these light signals and converts them into electrical signals, which are then processed into usable data such as audio, video, or text.
- **Comparison with Wi-Fi:** Unlike **Wi-Fi**, which relies on **radio waves**, Li-Fi operates using **visible, infrared, and ultraviolet light**, offering faster and more secure data transmission.

ADVANTAGES OF LI-FI INTERNET

1. **High Speed:** Li-Fi can deliver speeds exceeding **100 Gbps**, outperforming most Wi-Fi systems.
2. **Enhanced Security:** As light cannot pass through walls, Li-Fi signals are **naturally confined to a space**, reducing the risk of external hacking.
3. **Large Bandwidth:** The **visible light spectrum** is nearly **10,000 times wider** than the radio spectrum, significantly improving data capacity and reducing network congestion.
4. **Electromagnetic Safety:** Li-Fi avoids interference with medical or aviation instruments, making it ideal for **hospitals, aircraft, and industrial environments**.
5. **Energy Efficiency:** Dual-use **LED lighting systems** can both **illuminate** and **transmit data**, reducing energy and infrastructure costs.

LIMITATIONS OF LI-FI

- **Line-of-Sight Dependency:** Li-Fi requires a **direct line of sight** between the transmitter and receiver; obstruction can weaken the connection.
- **Limited Range:** Since light cannot penetrate walls, **each room** needs its own Li-Fi transmitter for complete coverage.
- **Ambient Light Interference:** Bright ambient or sunlight may **distort signals**, making Li-Fi less effective outdoors.

SIGNIFICANCE AND WAY FORWARD

Li-Fi represents a **paradigm shift in communication technology**, offering **ultra-fast, secure, and eco-friendly** connectivity. As smart cities, healthcare, and aviation sectors look for interference-free and high-speed data networks, **India's growing role in Li-Fi innovation** positions it as a **leader in next-generation communication solutions**.

DRAVYA PORTAL: DIGITISING INDIA'S AYURVEDIC KNOWLEDGE BASE

CONTEXT:

The **Ministry of Ayush**, through the **Central Council for Research in Ayurvedic Sciences (CCRAS)**, has launched the **DRAVYA Portal** — *Digitized Retrieval Application for Versatile Yardstick of AYUSH Substances*. The portal serves as India's **largest digital repository** of Ayurvedic ingredients and products, aimed at modernising and standardising traditional medicinal knowledge.

In its **first phase**, the DRAVYA Portal will catalogue information on **100 key medicinal substances**, integrating both classical Ayurvedic knowledge and modern scientific validation.

ABOUT DRAVYA PORTAL:

- **Full Form:** *Digitized Retrieval Application for Versatile Yardstick of AYUSH Substances (DRAVYA)*
- **Developed by:** Central Council for Research in Ayurvedic Sciences (CCRAS), under the Ministry of Ayush.

- **Objective:** To create a comprehensive and dynamic database on Ayurvedic raw materials, formulations, and therapeutic properties.
- **Coverage:** Combines information from **classical Ayurvedic texts**, **scientific literature**, and **field studies**.

KEY FEATURES:

- **AI-Ready Framework:** Designed to integrate with the **Ayush Grid** and upcoming digital health initiatives for evidence-based research.
- **Comprehensive Search:** Users can explore medicinal substances used across Ayurveda and other AYUSH systems.
- **Multi-Domain Data:** Each entry includes details on **pharmacotherapeutics, botany, chemistry, pharmacology, and safety**.
- **QR Code Integration:** Enables standardised information display in medicinal plant gardens, herbariums, and research repositories.
- **Dynamic and Open Access:** The portal continuously evolves with verified data from modern research and classical sources.

SIGNIFICANCE:

- **Knowledge Preservation:** Bridges traditional Ayurvedic wisdom with modern scientific validation.
- **Standardisation:** Facilitates evidence-based policymaking and quality assurance in herbal drugs.
- **Research & Innovation:** Supports AI-driven drug discovery and formulation development.
- **Global Collaboration:** Positions India as a leader in **digital traditional medicine data architecture** under the *One Health* framework.

WAY FORWARD:

Integration with **Pharmacopoeia Commission for Indian Medicine & Homoeopathy (PCIM&H)** for standard drug codification.

Expansion to cover **5000+ medicinal substances** over subsequent phases.

Promotion of **interdisciplinary research** between Ayurveda, biotechnology, and pharmacology sectors.

DRDO RELEASES INDIAN RADIO SOFTWARE ARCHITECTURE (IRSA) 1.0

CONTEXT

The **Defence Research and Development Organisation (DRDO)** has unveiled **Indian Radio Software Architecture (IRSA) Standard 1.0**, a landmark step toward unifying India's defence communication systems. This architecture ensures **interoperability among all military radio systems** of the Indian Armed Forces.

ABOUT THE INDIAN RADIO SOFTWARE ARCHITECTURE (IRSA)

The **IRSA** is **India's first national software architecture** designed to enable seamless communication between **Software-Defined Radios (SDRs)** used by the **Army, Navy, and Air Force**.

- **Software-Defined Radios (SDRs):**
- SDRs are advanced radios in which core functions like **frequency, modulation, encryption, and waveform generation** are controlled by **software** instead of fixed hardware.
- This makes it easier to **update, secure, and reconfigure** communication networks without replacing physical components.
- **Objective:**
- To establish a **common, standardised software framework** that allows different types of military radios to **operate together seamlessly**, regardless of manufacturer or service branch.
- **Key Features:**
  - **Standardised APIs and Interfaces:** Enables software applications (waveforms) to be reused across all SDRs.
  - **Full Interoperability:** Allows Army, Navy, and Air Force communication systems to exchange data securely and efficiently.
  - **Plug-and-Play Architecture:** Future radios and communication devices can integrate smoothly with minimal redesign.

- **Developed By:**
- The DRDO, in collaboration with the **Integrated Defence Staff (IDS)** and **Tri-Services** (Indian Army, Indian Navy, and Indian Air Force).

SIGNIFICANCE

- **Enhanced Interoperability:** IRSA ensures that all three services can communicate in real time during joint operations, improving coordination and battlefield efficiency.
- **Security and Encryption:** By centralising control through software, IRSA enhances **cybersecurity** and **data protection** in defence communication.
- **Self-Reliance:** Represents a critical milestone under **Atmanirbhar Bharat**, reducing dependence on foreign defence technologies.
- **Future-Ready:** Provides a scalable base for future upgrades, including **AI-enabled communication networks** and **quantum encryption** capabilities.

CONCLUSION

The release of **IRSA 1.0** marks a major stride in India's journey towards **network-centric warfare capabilities**. By standardising software-based communication across all defence platforms, India is building the foundation for a **secure, integrated, and indigenously developed defence communication ecosystem.**

ASTRA MARK 2: INDIA'S NEXT-GENERATION AIR-TO-AIR MISSILE

CONTEXT

The Defence Research and Development Organisation (DRDO) is developing the **Astra Mark 2**, an advanced **Beyond Visual Range (BVR)** air-to-air missile with an extended range of over **200 kilometres**, significantly enhancing India's aerial combat capabilities. *(Source: ANI)*

ABOUT ASTRA MARK 2

The **Astra missile series** is India's first indigenously developed family of BVR air-to-air missiles, designed to intercept and destroy highly manoeuvrable enemy aircraft. Following the successful induction of **Astra Mark 1** into the Indian Air Force (IAF), DRDO is now focusing on **Astra Mark 2** to provide extended range and superior engagement capabilities.

Developed in collaboration with over **50 public and private industries**, including **Hindustan Aeronautics Limited (HAL)**, Astra represents India's growing self-reliance in advanced weapon systems under the **Atmanirbhar Bharat** initiative.

KEY FEATURES OF ASTRA MARK 2

- **Extended Range:**
- With a range exceeding **200 km**, the Astra Mark 2 doubles the reach of Astra Mark 1 (which has a 110 km range), allowing aircraft to strike enemy targets long before they can be detected visually.
- **Dual-Pulse Propulsion:**
- Unlike the single-pulse solid rocket motor of Astra Mark 1, the Mark 2 uses a **dual-pulse solid rocket motor**, providing sustained thrust during the mid-course and terminal phases of flight, enhancing hit probability.
- **Speed and Agility:**
- The missile can achieve speeds of **Mach 4–4.5**, enabling it to engage fast-moving aerial targets effectively, even in complex electronic warfare environments.
- **Advanced Guidance:**
- Equipped with an **indigenous Radio Frequency (RF) Seeker**, Astra Mark 2 ensures precise target tracking and engagement with high resistance to countermeasures.
- **Platform Integration:**
- Astra Mark 2 is being integrated with the **Su-30MKI** and **LCA Tejas Mk1A** aircraft, with potential future deployment on the **Rafale** and **MiG-29** platforms.
- **Physical Specifications:**
  - Length: ~3.8 m
  - Diameter: ~190 mm
  - Weight: ~175 kg

STRATEGIC SIGNIFICANCE

The Astra Mark 2 represents a critical milestone in India's quest for air superiority and technological independence. Its extended range provides the IAF with a **"first-shot**

advantage" in aerial engagements — the ability to destroy enemy aircraft before being detected or targeted.

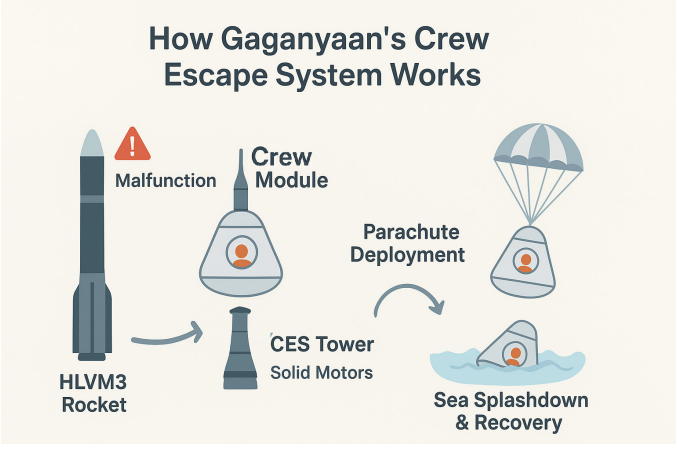
By countering advanced foreign missiles such as the **Chinese PL-15** and **American AIM-120D**, Astra Mark 2 elevates India's deterrence and export potential, making it a competitive system for **friendly foreign nations** seeking cost-effective, high-performance BVR solutions.

WAY FORWARD

Following successful testing, the Astra Mark 2 will pave the way for **Astra Mark 3**, which is expected to feature a **solid-fuel ducted ramjet (SFDR)** engine, further enhancing range and manoeuvrability.

The development underscores India's growing **defence innovation ecosystem**, reducing dependence on imports and reinforcing the nation's goal of becoming a **global defence manufacturing hub**.

CREW ESCAPE SYSTEM IN GAGANYAAN MISSION



CONTEXT:

The Indian Space Research Organisation (ISRO) has recently highlighted the functioning of the **Crew Escape System (CES)** — a critical safety mechanism integral to India's **Gaganyaan Mission**, which aims to send Indian astronauts into Low Earth Orbit (LEO) at about **400 km altitude** and bring them back safely.

ABOUT GAGANYAAN MISSION

- **Objective:** To demonstrate India's human spaceflight capability by launching a **3-member crew** into LEO for up to 3 days.
- **Launch Vehicle:** Human-rated **LVM3 (HLVM3)** rocket.
- **Launch Site:** Satish Dhawan Space Centre (SDSC), Sriharikota.
- **Timeline:** The first uncrewed test flights are planned before the final **crewed mission**, expected around 2025–26.

Crew Escape System (CES): Ensuring Astronaut Safety

The **Crew Escape System** is a **safety abort mechanism** designed to protect astronauts in the event of an anomaly during launch or ascent.

PURPOSE

To **rapidly separate** the **Crew Module (CM)** carrying astronauts from a **malfunctioning rocket** and ensure a safe return to Earth.

PLACEMENT

- Mounted at the **forward end** of the HLVM3 rocket.
- Equipped with **multiple high-burn-rate solid motors** for swift response.

WORKING MECHANISM

1. **Emergency Detection:** Sensors detect a malfunction in the launch vehicle.
2. **Separation:** The CES activates its solid motors to **pull** the Crew Module away from the rocket within milliseconds.
3. **Descent Phase:** After achieving a safe distance, **parachutes deploy** for controlled descent.
4. **Recovery:** The module **splashes down in the sea**, where recovery teams retrieve the crew.

TEST AND VALIDATION

- A dedicated **Test Vehicle** powered by a **Vikas engine** has been developed to validate CES functionality.
- The **TV-D1** (Test Vehicle Demonstration 1) mission successfully demonstrated the **abort and recovery sequence**, marking a key milestone for Gaganyaan.

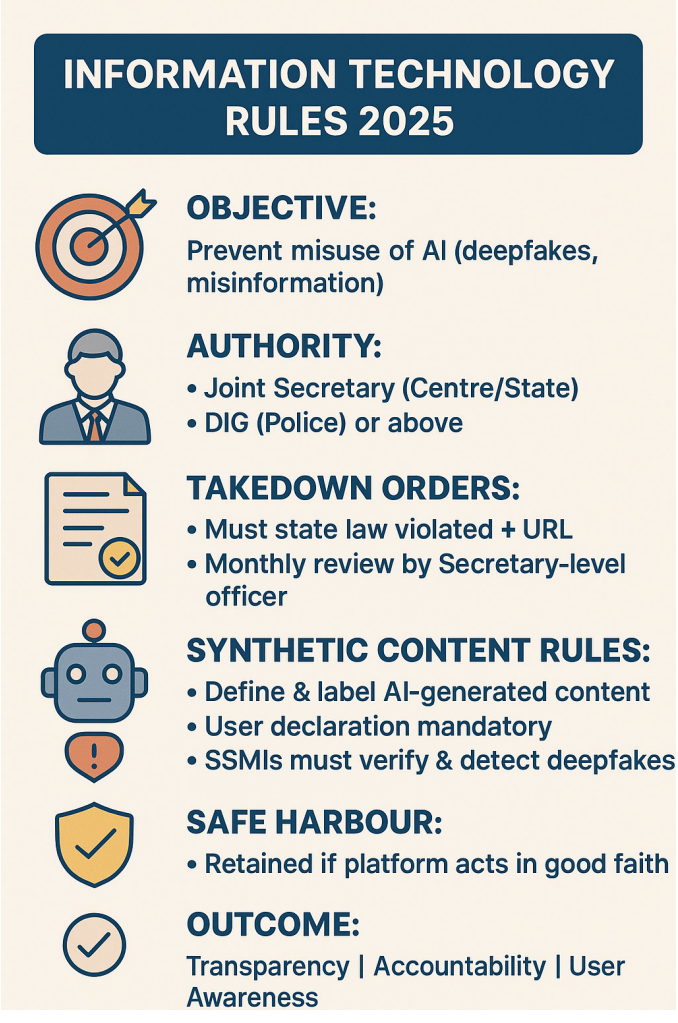
TYPES OF CREW ESCAPE SYSTEMS

Type	Mechanism	Example
Puller Type	Uses **solid motors** to pull the Crew Module away from the rocket.	**Gaganyaan (ISRO)**
Pusher Type	Uses **compact liquid engines** to push the module away from the rocket.	**SpaceX Falcon 9 (Dragon Capsule)**

SIGNIFICANCE

- Ensures **astronaut safety** in the most critical phase of flight.
- Enhances **public confidence** in India's human spaceflight programme.
- Positions India among nations with advanced **crewed launch safety systems**, alongside the U.S., Russia, and China.

INFORMATION TECHNOLOGY (INTERMEDIARY GUIDELINES & DIGITAL MEDIA ETHICS CODE) AMENDMENT RULES, 2025



CONTEXT:

The **Ministry of Electronics and Information Technology (MeitY)** has notified the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2025**.

The amendment aims to prevent the **misuse of Artificial Intelligence (AI)**—particularly **deepfakes, misinformation, and election-related manipulation**—by mandating greater **transparency and accountability** in online content moderation.

OBJECTIVES OF THE AMENDMENT

- Prevent the **spread of synthetic or manipulated media**.
- Ensure **user awareness** about AI-generated or altered content.
- Strengthen **oversight and accountability** in online content blocking.
- Maintain a **balance between innovation and digital safety**.

KEY PROVISIONS OF IT AMENDMENT RULES 2025

1. Authority Restriction

Only senior officials can issue takedown notices:

- **Joint Secretary (or above)** in Ministries/Departments.
- **Deputy Inspector General (DIG)** or above in police departments.

This ensures **misuse prevention** and **greater accountability** in content regulation.

2. Reasoned Orders

Each takedown order must include:

- The statute or rule violated.
- The legal justification.
- The **specific URL or content identifier** to be removed.
- This makes the process **transparent and verifiable**.

3. Monthly Review

All takedown actions under **Rule 3(1)(d)** must be reviewed **monthly** by a senior officer **not below the rank of Secretary**, ensuring procedural compliance and preventing arbitrary censorship.

REGULATING SYNTHETIC & AI-GENERATED CONTENT

- **Definition**

"**Synthetic information**" refers to any content **artificially created or algorithmically modified** using computer resources to appear genuine.

- **Labelling Requirement**
  - Platforms must **label all AI-generated or modified content** to alert users about its artificial origin.
  - This aims to build **digital literacy** and **public trust** in online spaces.
- **User Declaration & Verification**
  - Users must **declare** whether their uploaded content is AI-generated or altered.
  - **Significant Social Media Intermediaries (SSMIs)**—those with over **5 million registered users**—must deploy **tools to verify user declarations** and **detect synthetic content**.
- **Safe Harbour Protection**

Platforms retain **"safe harbour" immunity** under **Section 79 of the IT Act, 2000**, **if they act in good faith** to identify and remove synthetic or manipulated content.

This provision incentivises **proactive compliance** while protecting genuine intermediaries.

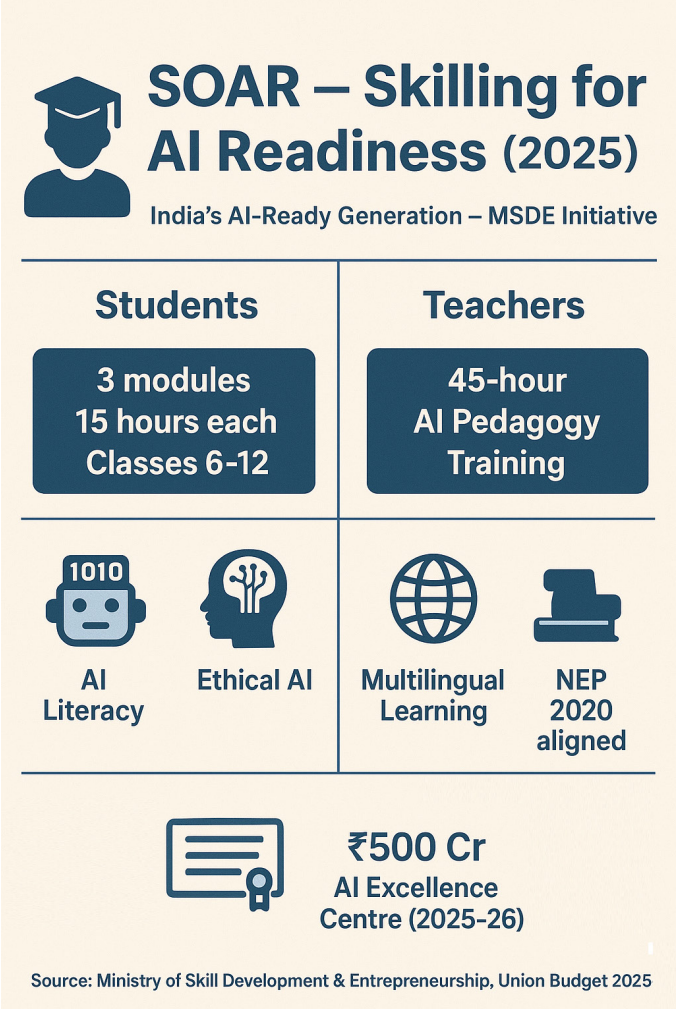
SIGNIFICANCE

The **IT Amendment Rules 2025** mark a critical step in **responsible digital governance** by:

- Curbing **AI misuse and disinformation**,
- Promoting **accountable online regulation**, and
- Safeguarding **citizens' rights to authentic information**.

These amendments align with India's broader goal of building a **secure, transparent, and ethical AI ecosystem** under the **Digital India framework**.

SKILLING FOR AI READINESS (SOAR) PROGRAMME: BUILDING AN AI-READY GENERATION



CONTEXT:

India has launched the **Skilling for AI Readiness (SOAR) Programme** under the **Ministry of Skill Development and Entrepreneurship (MSDE)** to prepare students and educators for the Artificial Intelligence (AI)-driven future. The initiative aligns with India's goal of becoming a **global hub for AI innovation and digital talent**.

ABOUT THE SOAR PROGRAMME

The **SOAR (Skilling for AI Readiness)** initiative seeks to **embed AI learning into India's school education and vocational training ecosystem**, focusing on **early AI literacy, teacher capacity-building, and inclusive digital education**.

Its long-term vision is to make India a **global leader in AI-led innovation, employment, and entrepreneurship** by equipping the youth with future-ready skills.

KEY FEATURES OF THE SOAR PROGRAMME

- **Target Audience:** Students from **Classes VI–XII** and educators nationwide.
- **Structured Learning:**
  - **Students:** Three foundational **15-hour AI modules** covering basics of AI, machine learning, data literacy, and ethical AI use.
  - **Teachers:** A **45-hour specialized module** on AI pedagogy, integration, and classroom innovation.
- **Ethics & Inclusion:** Emphasizes **responsible AI**, promoting awareness of **data privacy, bias prevention**, and **ethical digital citizenship**.
- **Budgetary Support:** The **Union Budget 2025–26** has allocated **₹500 crore** to establish a **Centre of Excellence in Artificial Intelligence for Education** under MSDE.

CENTRE OF EXCELLENCE IN AI FOR EDUCATION

The proposed Centre aims to:

- Develop **AI-powered learning tools and teaching aids**.
- Promote **multilingual AI resources** in Indian languages for inclusivity.
- Foster **AI curriculum innovation** across technical institutes, including IITs and AICTE-approved colleges.
- Encourage **industry–academia collaboration** for AI research and practical skill-building.

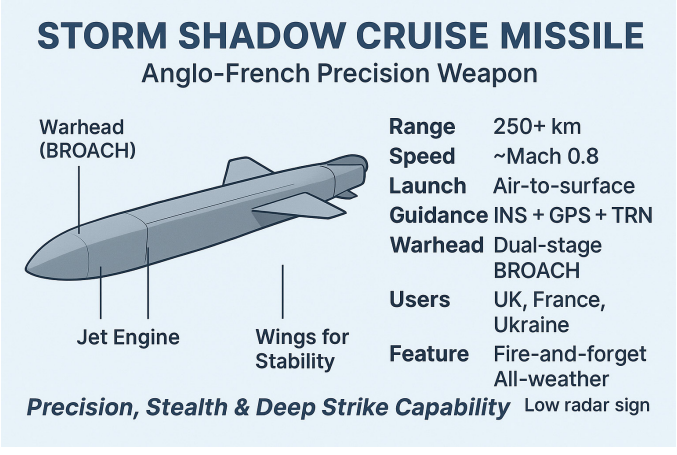
SIGNIFICANCE

- **Bridging the Skill Gap:** Strengthens India's workforce readiness for Industry 4.0.
- **Educational Reform:** Introduces early AI literacy within the **NEP 2020 framework**.
- **Employment Catalyst:** Creates a foundation for AI-driven **startups, research, and jobs**.
- **Digital Inclusion:** Ensures access to AI learning for students from **diverse linguistic and socio-economic backgrounds**.

CONCLUSION

The **SOAR Programme** reflects India's strategic focus on integrating AI education within its skilling ecosystem. By empowering students and teachers with AI competencies, India aims to **transform from a technology consumer to an innovation-driven economy**, reinforcing its role in shaping the **global AI landscape**.

STORM SHADOW CRUISE MISSILE: PRECISION AND POWER



CONTEXT:

In October 2025, Ukraine employed *UK-supplied Storm Shadow* long-range cruise missiles to target a Russian chemical plant in Bryansk. This event once again spotlighted the advanced Anglo-French missile's precision, stealth, and technological sophistication.

ABOUT STORM SHADOW

The **Storm Shadow** (known in France as **SCALP-EG**) is a **long-range, air-launched cruise missile** developed jointly by **MBDA UK and MBDA France**.

It is designed for **deep-strike missions**, capable of engaging high-value, well-defended targets such as command centers, bunkers, and infrastructure.

- **Origin:** United Kingdom & France
- **Developed by:** MBDA (Matra BAE Dynamics Alenia)
- **Entered Service:** 2003
- **Used by:** UK, France, Italy, Greece, Saudi Arabia, and Ukraine

KEY FEATURES

1. **Range:** Exceeds **250 km** (some sources suggest up to 560 km depending on configuration).
2. **Launch Platform:** Can be fired from aircraft such as the *Tornado GR4, Rafale, Mirage 2000, and Su-24* (in Ukraine's case).
3. **Warhead:** Equipped with a **BROACH (Bomb Royal Ordnance Augmented Charge)** warhead—
   - **First charge**: penetrates surface layers like reinforced concrete.
   - **Second charge**: detonates inside for maximum internal destruction.
4. **Guidance and Navigation:** Combines multiple advanced systems for pinpoint accuracy:
   - **INS (Inertial Navigation System):** Tracks position via accelerometers and gyroscopes.
   - **GPS:** Provides satellite-based positional updates.
   - **TRN (Terrain Reference Navigation):** Matches onboard terrain data with actual ground elevation to refine flight path.
   - **Imaging Infrared (IIR) Seeker:** Aids terminal phase precision by matching the target's heat image.
5. **Stealth and Accuracy:**
   - *Fire-and-forget* capability allows autonomous operation after launch.
   - Low-altitude flight path ensures radar evasion.
   - Operable in all weather and light conditions.

SIGNIFICANCE

- **Strategic Value:**
- Enables long-range precision strikes without exposing aircraft to enemy air defences.
- **Technological Impact:**
- Represents advanced European missile engineering combining stealth, autonomy, and precision.
- **Ukraine Context:**
- Strengthens Ukraine's strike capability deep inside Russian-controlled areas, altering operational dynamics in modern warfare.

INDIA RELEVANCE

India's indigenous missile programmes—such as **Nirbhay** and **BrahMos**—share similar long-range and precision characteristics, underlining global convergence in cruise missile technology.

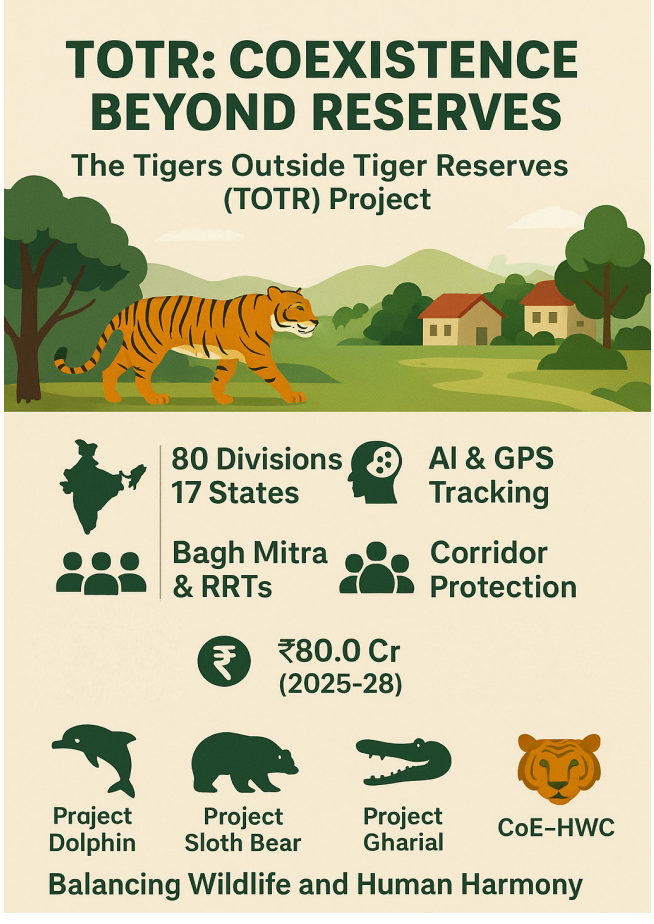
WAY FORWARD

The Storm Shadow exemplifies how modern warfare increasingly depends on **precision, stealth, and autonomous guidance**. As nations adapt to hybrid and long-range conflicts, such technologies redefine deterrence and strategic balance.

ENVIRONMENT & ECOLOGY

GS PAPER 3

THE TIGERS OUTSIDE TIGER RESERVES (TOTR) PROJECT



CONTEXT:

During the **Wildlife Week 2025** celebrations at the **Forest Research Institute (FRI), Dehradun**, the **Union Minister for Environment, Forest and Climate Change** launched **five new conservation projects** and **four national-level wildlife monitoring programmes**, including the landmark **"Tigers Outside Tiger Reserves (TOTR)" Project**.

ABOUT THE TOTR PROJECT

The **Tigers Outside Tiger Reserves (TOTR)** is a **national initiative** of the **Ministry of Environment, Forest and Climate Change (MoEFCC)** and the **National Tiger Conservation Authority (NTCA)**.

It will be implemented from **2025 to 2028** with a total outlay of **₹88.7 crore**, coordinated by **NTCA** and executed by **state forest departments**.

OBJECTIVES

- **Reduce human–tiger conflict** in areas beyond designated reserves.
- **Protect dispersing tigers** that move through agricultural and forested landscapes due to **habitat loss and corridor shrinkage**.
- Promote a **landscape-level conservation model**, ensuring **coexistence and ecological balance** while protecting human lives and livelihoods.

KEY FEATURES

1. Geographical Coverage:

- Covers **80 forest divisions** across **17 tiger-range states**, including **Madhya Pradesh, Maharashtra, Karnataka, Uttarakhand, Assam, Kerala, Tamil Nadu, West Bengal, and Arunachal Pradesh**.
- Focuses on **buffer zones** and **corridors** adjoining high-density tiger reserves.

2. Use of Technology:

- Deployment of **AI-based early warning systems**, **camera traps**, **GPS-enabled patrolling**, and **data analytics** to monitor tiger movements.

3. Community Participation:

- Formation of **Rapid Response Teams (RRTs)** with trained **local youth**, equipped with tranquilization gear and rescue vehicles.
- Launch of **"Bagh Mitra" (Tiger Friends)** and **eco-education camps** to build public awareness on coexistence.

4. Institutional Mechanism:

- **NTCA** will centrally coordinate and monitor project progress.
- **Chief Wildlife Wardens (CWLWs)** and **State CAMPA authorities** will handle state-level fund management and implementation.

OTHER CONSERVATION PROJECTS LAUNCHED

- **Project Dolphin (Phase II):** Focus on conservation of **river and marine dolphins**, including the **Ganga River Dolphin** and **Indus Dolphin**.

- **Project Sloth Bear:** India's first national framework for sloth bear protection — covering **habitat management**, **rescue**, and **conflict mitigation**.
- **Project Gharial:** Aimed at recovering **gharial populations** in the **Chambal** and **Gandak** river ecosystems.
- **Centre of Excellence for Human–Wildlife Conflict Management (CoE–HWC):** Established at **Sálim Ali Centre for Ornithology and Natural History (SACON)** to develop **AI-based conflict prediction models** and **capacity-building tools**.

SIGNIFICANCE

With over **35% of India's tiger population** living **outside reserves**, TOTR represents a crucial step in **inclusive tiger conservation**. By blending **technology, community engagement, and landscape-level management**, it ensures **long-term sustainability** of both human and wildlife ecosystems.

TRICHLOROETHYLENE (TCE) AND ITS IMPACT ON HUMAN HEALTH

CONTEXT:

A recent study has highlighted that long-term exposure to the industrial solvent **Trichloroethylene (TCE)** may be linked to an increased risk of **Parkinson's disease**, raising serious health and environmental concerns.

WHAT IS TRICHLOROETHYLENE (TCE)?

- **Nature:** A **volatile, colorless liquid organic chemical**.
- **Origin:** Does not occur naturally; produced through **chemical synthesis**.
- **Persistence:** Breaks down slowly, remains in the **environment for long periods**.

APPLICATIONS OF TCE

- **Industrial:** Manufacturing of **refrigerants** and **hydrofluorocarbons (HFCs)**.
- **Solvent Use:** Widely used as a **degreasing agent** for metals.
- **Household Products:** Present in some **cleaning wipes, spray adhesives, paint removers, carpet cleaners, and aerosol products**.
- **Dry Cleaning:** Employed as a **spot remover**.

HUMAN EXPOSURE TO TCE

- **Air, Water & Soil:** Found at production and disposal sites.
- **Groundwater:** TCE easily **seeps through soil and contaminates aquifers**.
- **Routes of Exposure:**
  - Inhalation (indoor & outdoor air)
  - Drinking contaminated water
  - Eating food processed or washed with contaminated water

HEALTH IMPACTS OF TCE

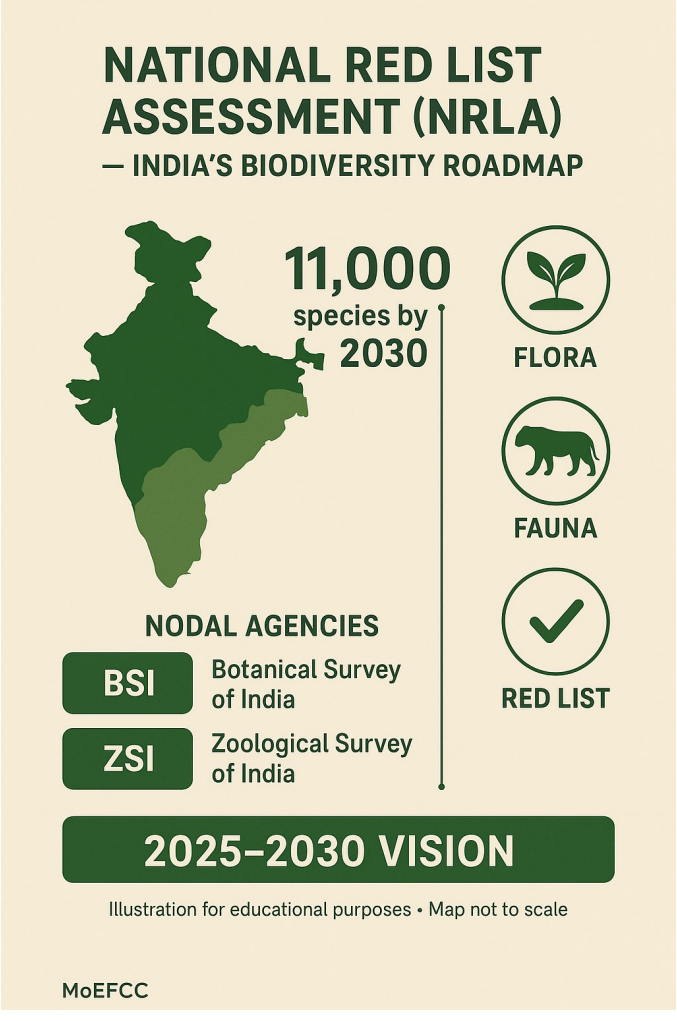
- **Carcinogenic Potential:** Linked to **liver and kidney cancer**.
- **Neurological Effects:** New studies suggest a connection with **Parkinson's disease**.
- **Genotoxic & Immunotoxic Effects:** Impacts DNA and immune function.
- **Reproductive & Developmental Risks:**
  - Infertility (both male & female)
  - Impaired fetal growth
  - **Cardiac teratogenesis** (heart defects in newborns)
- **Other Risks:** Associated with **non-Hodgkin lymphoma** and other chronic illnesses.

WAY FORWARD

- **Regulatory Oversight:** Stronger regulation of TCE use in industries and households.

- **Safe Alternatives:** Promotion of eco-friendly solvents.
- **Environmental Cleanup:** Enhanced groundwater monitoring and remediation.
- **Public Awareness:** Educating communities about risks of exposure.

NATIONAL RED LIST ASSESSMENT (NRLA) INITIATIVE



CONTEXT:

The Ministry of Environment, Forest and Climate Change (MoEFCC) launched the **National Red List Assessment (NRLA)** initiative during the IUCN World Conservation Congress in Abu Dhabi.

The initiative marks a major step in building a **nationally coordinated framework** to assess the conservation status of India's native species.

ABOUT THE NRLA INITIATIVE

- **Aim:** To develop a **National Red List** of threatened species in line with **IUCN Red List standards**.
- **Roadmap:** *The National Red List Roadmap* and *Vision 2025–2030* provide strategic direction for the programme.
- **Coverage:** Assessment of at least **11,000 species of flora and fauna** by 2030.
- **Nodal Agencies:**
  - **Botanical Survey of India (BSI)**
  - **Zoological Survey of India (ZSI)**
- **Objective:** To publish **National Red Data Books** for plants and animals to guide conservation policy.
- **Alignment:** Reinforces India's commitment to:
  - Convention on Biological Diversity (CBD)
  - Kunming–Montreal Global Biodiversity Framework (KMGBF)
  - IUCN Global Red List Standards

BIODIVERSITY OF INDIA

- **Global Position:** India is among the **17 megadiverse countries** of the world.
- **Hotspots:** 4 of the **36 global biodiversity hotspots** fall fully or partly in India.
- **Species Richness:**
  - 7–8% of global recorded species
  - 7th in mammals, 9th in birds, 5th in reptiles.
- **Legal Framework:**
  - Wildlife (Protection) Act, 1972
  - Forest (Conservation) Act, 1980
  - Environment (Protection) Act, 1986
  - Biological Diversity Act, 2002

SIGNIFICANCE OF NRLA

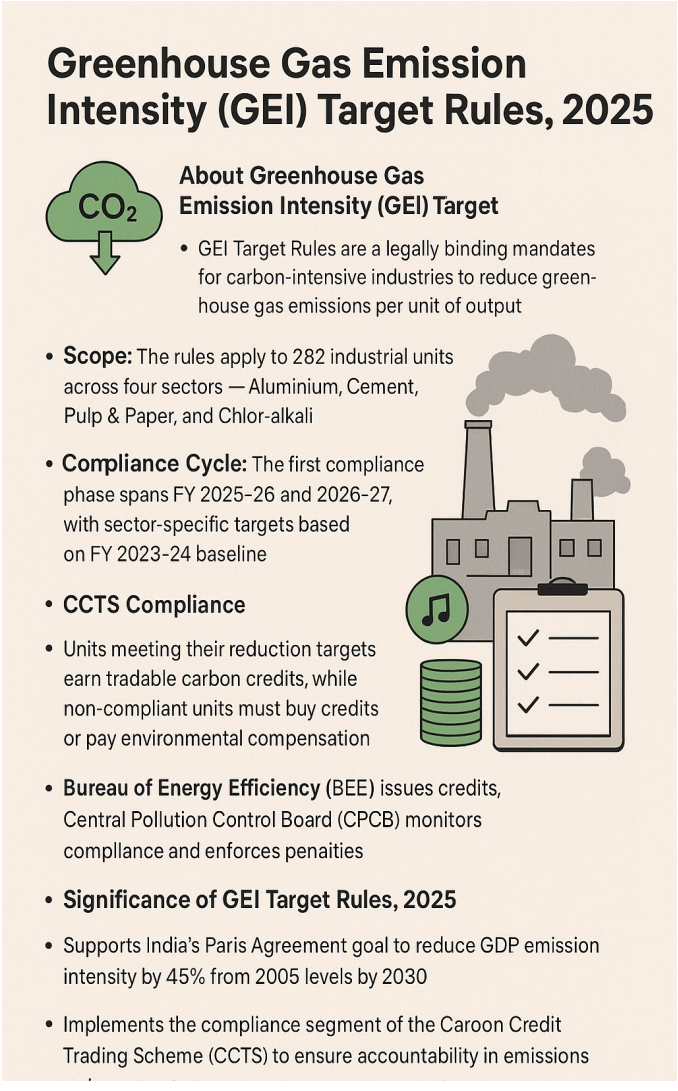
- Provides a **national baseline** for biodiversity conservation.
- Supports evidence-based **policy formulation**.
- Enhances **species recovery programmes** and habitat protection.
- Strengthens India's role in achieving global biodiversity targets by 2030.

WAY FORWARD

- Capacity building of state agencies and research institutions.
- Integration with local community knowledge for species mapping.
- Linking NRLA outcomes with climate adaptation and sustainable development strategies.

The NRLA is a landmark initiative that aligns national conservation priorities with global biodiversity goals and creates a scientific basis for protecting India's rich ecological heritage.

GREENHOUSE GAS EMISSION INTENSITY (GEI) TARGET RULES, 2025



CONTEXT

The Ministry of Environment, Forest and Climate Change (MoEFCC) has notified the **Greenhouse Gas Emission Intensity (GEI) Target Rules, 2025**, establishing India's first **legally binding framework** for industrial emission reductions. This marks a major policy step towards achieving India's climate commitments under the Paris Agreement.

ABOUT THE GEI TARGET RULES

The **GEI Target Rules, 2025** set mandatory reduction targets for greenhouse gas (GHG) emissions per unit of industrial output, introducing accountability within India's carbon-intensive sectors.

KEY FEATURES

- **Scope:** The rules apply to **282 industrial units** across four sectors — **Aluminium, Cement, Pulp & Paper, and Chlor-alkali**.
- **Definition:** *Greenhouse Gas Emission Intensity (GEI)* refers to the **amount of GHG emitted per unit of output**, measured in tonnes of CO_2 equivalent (tCO_2e).
- **Compliance Cycle:** The **first compliance phase** covers **FY 2025–26 and FY 2026–27**, with **sector-specific targets** based on **FY 2023–24** as the baseline year.

INTEGRATION WITH THE CARBON CREDIT TRADING SCHEME (CCTS)

The GEI Target Rules operationalize the **compliance mechanism** under the **Carbon Credit Trading Scheme (CCTS), 2023**, linking industrial performance directly to carbon trading.

COMPLIANCE MECHANISM

- Industries achieving their emission reduction targets will **earn tradable carbon credits**.
- Non-compliant industries must **buy credits** or **pay environmental compensation**, fixed at **twice the average market trading price** of carbon credits.

INSTITUTIONAL OVERSIGHT

- The **Bureau of Energy Efficiency (BEE)** will **issue credits** to compliant entities.
- The **Central Pollution Control Board (CPCB)** will **monitor, verify, and enforce** compliance, with penalties to be finalized within **90 days** of violation.

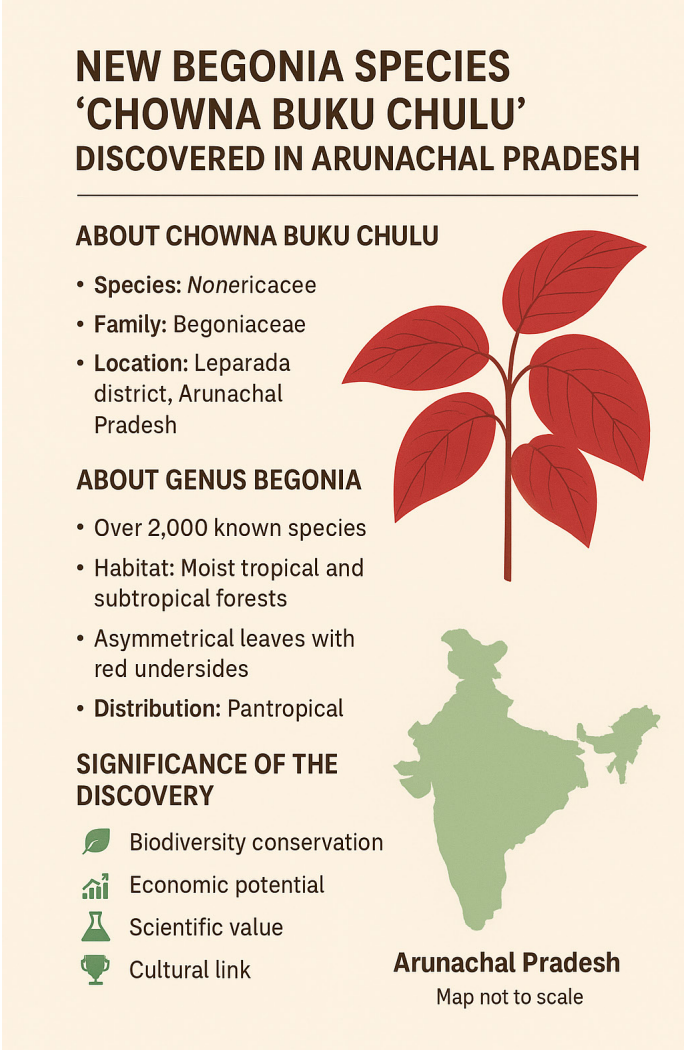
SIGNIFICANCE OF THE GEI TARGET RULES, 2025

1. **Fulfilling Climate Commitments:** Helps India meet its **Paris Agreement target** of reducing the **emission intensity of GDP by 45% from 2005 levels by 2030**.
2. **Strengthening Carbon Markets:** Implements the **compliance segment** of the **CCTS**, ensuring a transparent and accountable carbon trading ecosystem.
3. **Encouraging Technological Upgradation:** Promotes **energy-efficient and low-carbon technologies**, encouraging industries to invest in **cleaner production methods**.
4. **Enhancing Global Competitiveness:** Prepares Indian industries for emerging international mechanisms like the **EU's Carbon Border Adjustment Mechanism (CBAM)**, which taxes carbon-intensive imports.
5. **Institutional Accountability:** By assigning defined roles to **BEE** and **CPCB**, the rules establish a clear regulatory framework for emission monitoring and compliance enforcement.

CONCLUSION

The **GEI Target Rules, 2025** mark a paradigm shift in India's climate governance — from voluntary pledges to **legally enforceable emission standards**. By coupling compliance with **carbon market incentives**, the policy not only strengthens India's domestic climate architecture but also enhances its global credibility in sustainable industrial transition.

NEW BEGONIA SPECIES 'CHOWNA BUKU CHULU' DISCOVERED IN ARUNACHAL PRADESH



CONTEXT:

Scientists have identified a new **Begonia species**, *Chowna Buku Chulu*, in the **Leparada district** of Arunachal Pradesh. The discovery adds to India's rich floral diversity, particularly in the Eastern Himalayas — a globally recognised biodiversity hotspot.

ABOUT CHOWNA BUKU CHULU

- **Species Name:** *Chowna Buku Chulu*
- **Family:** Begoniaceae
- **Location:** Leparada district, Arunachal Pradesh
- **Distinctive Feature:** Bright ruby-red leaves, giving it strong **ornamental potential**.
- **Etymology:** The name translates to **"Noble Red"** (Aryarakta) and honours **Chowna Mein**, Deputy Chief Minister of Arunachal Pradesh, for his contributions to the region's development and conservation.

The species was discovered during a systematic survey of understorey flora in the humid forests of Arunachal Pradesh — an area known for rare endemic plant species.

ABOUT GENUS *BEGONIA*

- **Global Diversity:** Around **2,000 known Begonia species**, making it one of the largest genera of flowering plants.
- **Habitat:** Moist tropical and subtropical forests, thriving under shaded, humid conditions.
- **Unique Adaptation:**
  - Asymmetrical leaves with red undersides reflect light upward, improving photosynthesis under low light.
  - Some species produce **oxalic acid** to deter herbivores.
- **Distribution:** Pantropical — found in **South America**, **Africa**, and **South and Southeast Asia**. India has particularly high Begonia diversity in the Eastern Himalayas and Northeast.
- **Uses:**
  - **Ornamental:** Bright leaves make it popular in horticulture.
  - **Medicinal:** Known for antioxidant, antibacterial, and anti-inflammatory properties.
  - **Natural Dyes:** Used traditionally for pigments and dyes.

SIGNIFICANCE OF THE DISCOVERY

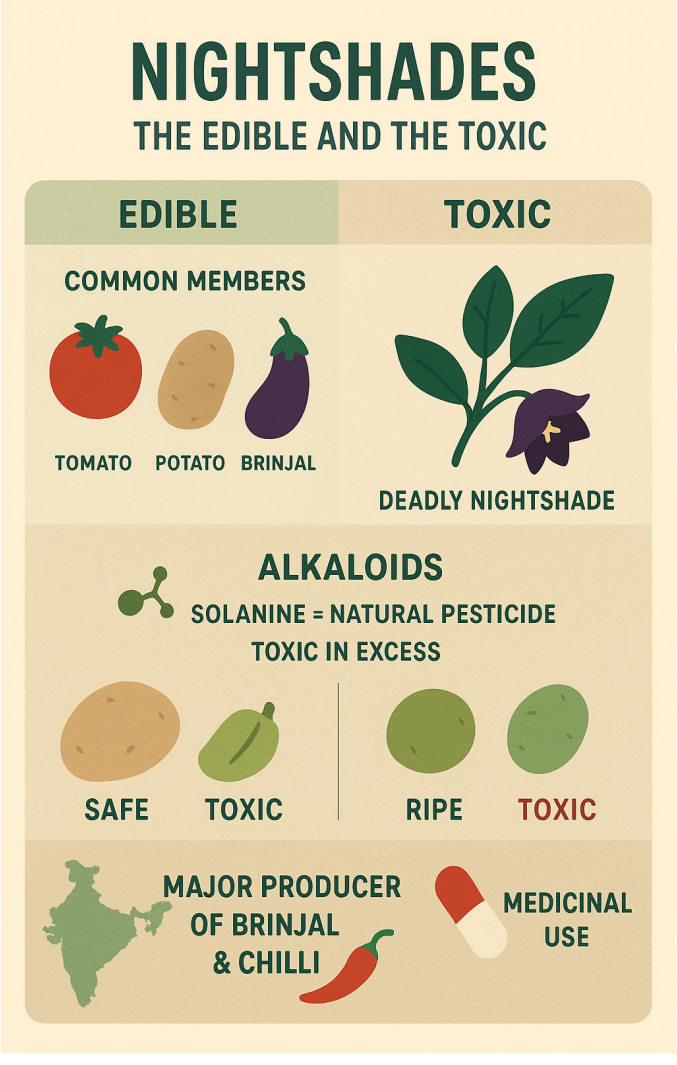
- **Biodiversity Conservation:** Highlights the rich but vulnerable Eastern Himalayan ecosystem.
- **Economic Potential:** Its ornamental value could boost local horticulture and sustainable floriculture markets.
- **Scientific Value:** Adds to taxonomic and genetic knowledge of Begoniaceae, aiding future research.
- **Cultural Importance:** Naming after a local leader fosters community participation in conservation.

CONSERVATION NOTE

Northeast India, though ecologically rich, faces threats from habitat loss, shifting cultivation, and climate change. Identifying and documenting endemic species like

Chowna Buku Chulu helps design **targeted conservation strategies** and aligns with India's commitments under the **Convention on Biological Diversity (CBD)** and **Global Biodiversity Framework**.

NIGHTSHADES SOLANACEAE



CONTEXT:

The nightshade family (*Solanaceae*) is a diverse group of flowering plants that includes both edible crops and toxic species. This plant family has significant ecological, agricultural, and medicinal importance.

ABOUT THE NIGHTSHADE FAMILY

- **Scientific Classification:** *Solanaceae* is one of the largest flowering plant families, comprising over 2,700 species in 98 genera.
- **Common Members:** Tomatoes, potatoes, brinjals (eggplants), chillies, and capsicum are edible nightshades. Toxic varieties include deadly nightshade (*Atropa belladonna*) and jimsonweed (*Datura stramonium*).
- **Characteristic Features:**
  - Star-shaped flowers with five petals.
  - Alternate leaves.
  - Often contain alkaloids that can affect the nervous system.

TOXICITY AND ALKALOIDS

- **Alkaloids:** Nitrogen-containing compounds responsible for the bitterness and potential toxicity of many nightshades.
- **Solanine:** A glycoalkaloid naturally present in potatoes and tomatoes.
  - **Low levels** (in ripe potatoes and tomatoes) are safe for consumption.
  - **High levels** (in green potatoes or sprouted tubers) can cause nausea or neurological symptoms.
- These alkaloids act as **natural pesticides** for the plant, deterring insects and animals.

AGRICULTURAL AND MEDICINAL RELEVANCE

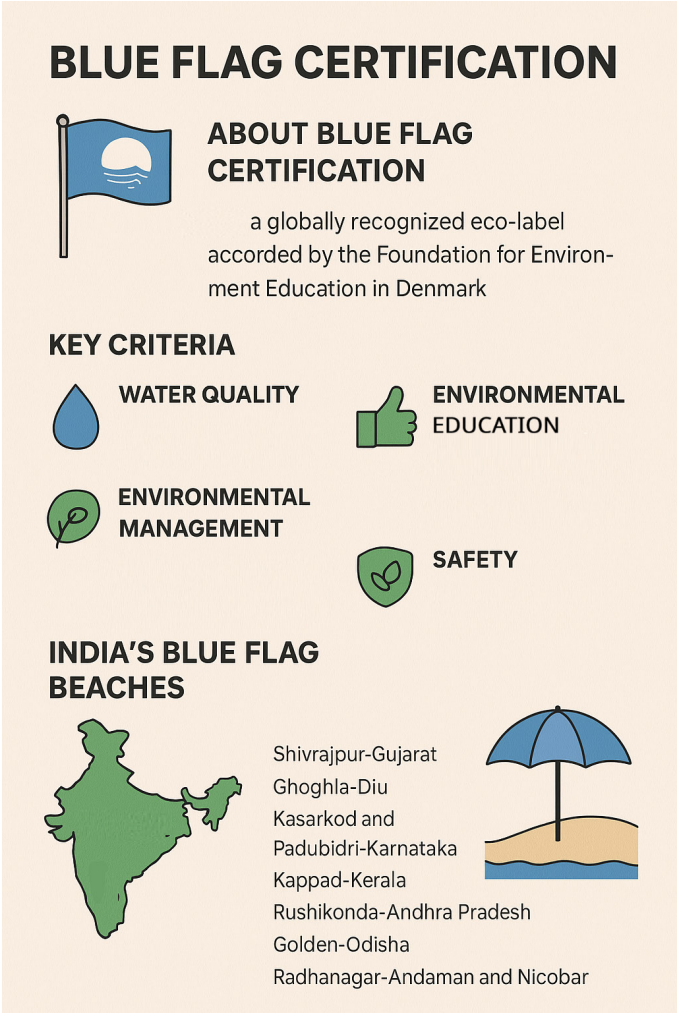
- **Global Crop Importance:** Potatoes, tomatoes, and chillies are among the most widely cultivated vegetables in the world, contributing significantly to food security and trade.
- **Medicinal Uses:** Alkaloids from nightshades are used in controlled doses in pharmaceuticals — for example, atropine from belladonna is used in eye treatments.
- **Ecological Role:** Nightshades provide nectar and habitat for pollinators, playing a role in maintaining ecosystem balance.

INDIA'S CONTEXT

- India is a **major producer** of brinjal, chilli, and potato.
- Traditional medicine has used nightshade species for centuries, though caution is advised due to their toxic properties.
- The **Food Safety and Standards Authority of India (FSSAI)** advises avoiding consumption of green or sprouted potatoes to reduce the risk of solanine exposure.

Conclusion: Nightshades are both *friend and foe* — crucial for food systems yet potentially harmful if mishandled. Understanding their biology and safe usage is essential for public health and sustainable agriculture.

BLUE FLAG CERTIFICATION: INDIA'S COASTAL PRIDE SHINES BRIGHTER



CONTEXT

Recently, **five beaches in Maharashtra** received the prestigious **international Blue Flag certification**, recognizing their high environmental and safety standards. This milestone strengthens India's efforts toward promoting **eco-friendly coastal tourism** and **marine ecosystem conservation**.

ABOUT BLUE FLAG CERTIFICATION

The **Blue Flag** is a **globally recognized eco-label** accorded by the **Foundation for Environment Education (FEE), Denmark**.

It is awarded to **beaches, marinas, and sustainable tourism boats** that meet **33 stringent criteria** related to **cleanliness, safety, environmental management, and sustainability**.

ORIGIN AND EXPANSION

- The programme was **initiated in France in 1985**, focusing initially on European beaches.
- It **expanded globally in 2001**, becoming one of the world's most recognized **voluntary eco-awards**.
- The **mission** of Blue Flag is to **promote sustainability in the tourism sector** through **environmental education**, **protection**, and **sustainable development practices**.

KEY CRITERIA FOR BLUE FLAG BEACHES

Blue Flag certification promotes **sustainable coastal development** through four main pillars:

1. **Water Quality:** Regular testing ensures pollution-free, swimmable waters.
2. **Environmental Management:** Efficient waste management, prohibition of plastic use, and eco-friendly infrastructure.
3. **Environmental Education:** Awareness programs for visitors, schools, and local communities.
4. **Safety and Services:** Lifeguards, first-aid facilities, and accessibility for differently-abled visitors.

INDIA'S BLUE FLAG BEACHES

India's journey with the Blue Flag initiative has been coordinated by the **Society of Integrated Coastal Management (SICOM)** under the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.

India now boasts **17 Blue Flag-certified beaches**, showcasing its progress in sustainable coastal governance.

Recently Certified (Maharashtra):

Five beaches from Maharashtra have been newly recognized (names to be officially listed by MoEFCC).

OTHER BLUE FLAG BEACHES IN INDIA:

1. **Shivrajpur** – Gujarat
2. **Ghoghla** – Diu
3. **Kasarkod** and **Padubidri** – Karnataka
4. **Kappad** – Kerala
5. **Rushikonda** – Andhra Pradesh
6. **Golden Beach** – Odisha
7. **Radhanagar** – Andaman & Nicobar Islands
8. **Kovalam** – Tamil Nadu
9. **Eden Beach** – Puducherry
10. **Minicoy Thundi Beach** and **Kadmat Beach** – Lakshadweep

SIGNIFICANCE OF BLUE FLAG CERTIFICATION

Global Recognition: Enhances India's global image in environmental management and eco-tourism.

Tourism Boost: Attracts eco-conscious domestic and international tourists.

Environmental Protection: Encourages community-led efforts for beach cleanliness and conservation.

Sustainability Model: Aligns with India's **Coastal Mission Programme** and **Sustainable Development Goals (SDGs)**, particularly **SDG 14 (Life Below Water)**.

CONCLUSION

The expansion of Blue Flag-certified beaches symbolizes India's commitment to balancing **economic development** with **ecological preservation**. As India's coastline continues to evolve into a model for **clean, green, and safe tourism**, the Blue Flag serves as a global emblem of responsible stewardship of natural resources.

GREEN SEA TURTLE (CHELONIA MYDAS) – IUCN STATUS UPGRADED TO 'LEAST CONCERN'

CONTEXT

In a landmark conservation success, the **International Union for Conservation of Nature (IUCN)** has upgraded the **Green Sea Turtle (Chelonia mydas)** from *Endangered* to *Least Concern*. This reflects decades of global conservation efforts and improved protection of nesting beaches, feeding grounds, and migratory routes.

POPULATION RECOVERY

Global populations of Green Sea Turtles have **risen by approximately 28% since the 1970s**, particularly in the Atlantic and Indo-Pacific regions. This rebound highlights the effectiveness of **marine protected areas (MPAs)**, **nesting site protection**, and international conventions such as **CITES** and the **Convention on Migratory Species (CMS)**.

However, certain regional subpopulations remain vulnerable due to localized habitat loss, fisheries bycatch, and illegal harvesting.

ABOUT THE GREEN SEA TURTLE (CHELONIA MYDAS)

- **Taxonomy:** Belongs to the family *Cheloniidae*.
- **Physical Traits:** The largest **hard-shelled sea turtle**, named for the **green hue of its body fat and cartilage**, not its outer shell.
- **Diet:**
  - *Hatchlings:* Omnivorous, feeding on small invertebrates.
  - *Adults:* Strictly herbivorous, grazing on seagrasses and algae with beak-like jaws.
- **Distribution:** Found across **tropical and subtropical oceans** — the Atlantic, Pacific, and Indian Oceans, and parts of the Mediterranean.
  - *In India:* Occurs along the **mainland coasts, Lakshadweep, and Andaman–Nicobar Islands**, with **key nesting sites in Saurashtra** and **Great Nicobar**.
- **Habitat:**
  - *Juveniles:* Pelagic (open-ocean).
  - *Adults:* Shallow coastal waters, lagoons, coral reefs, and seagrass meadows.
- **Migration:** Extremely migratory, travelling **thousands of kilometres** between feeding and nesting sites, guided by **Earth's magnetic field**.
- **Reproduction:** Temperature-dependent sex determination — **warmer sand produces more females**, cooler produces more males.

ECOLOGICAL IMPORTANCE

- **Keystone Role:** Grazing maintains **healthy seagrass ecosystems**, enhances **carbon sequestration**, and supports **marine biodiversity**.
- **Indicator Species:** As long-lived (~80 years) marine reptiles, their health reflects **oceanic ecosystem stability**.

THREATS

Despite recovery, the species faces persistent threats:

- Overharvesting and **illegal egg collection**.
- **Bycatch** in trawl and gill nets.
- **Coastal development** and light pollution disrupting nesting.
- **Climate change** altering sex ratios and nesting patterns.

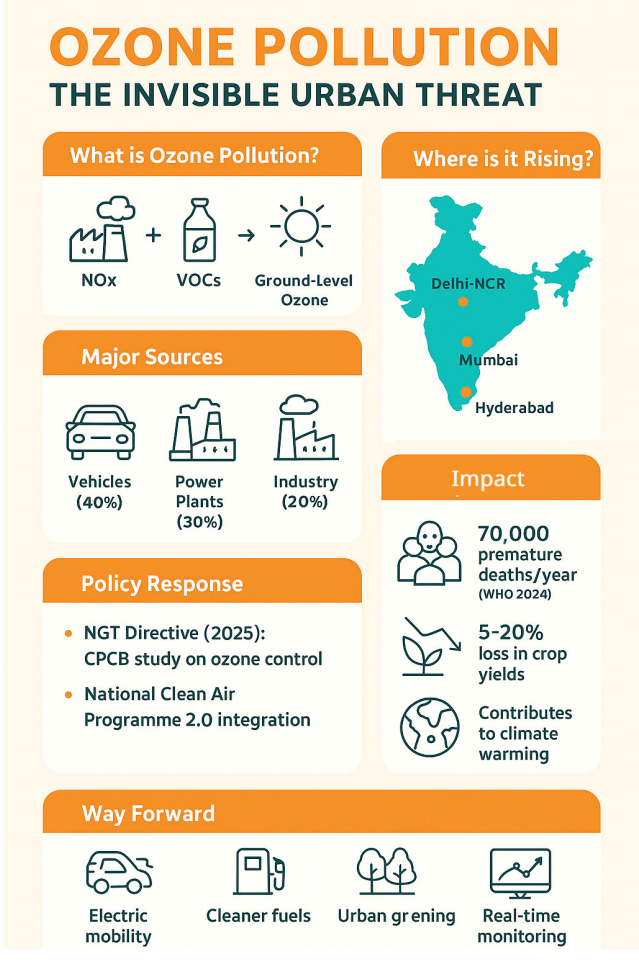
CONSERVATION FRAMEWORK

Convention/Act	Protection Status
IUCN Red List	Least Concern
CITES	Appendix I
CMS	Appendix I & II
Wildlife (Protection) Act, 1972	Schedule I

CONCLUSION

The **upgradation of the Green Sea Turtle** signals a major global conservation win and reinforces the impact of **sustained community engagement, habitat protection, and international cooperation**. Continued vigilance is essential to ensure that regional populations also recover fully and the species continues to thrive as a vital guardian of marine ecosystems.

OZONE POLLUTION IN INDIAN CITIES



CONTEXT:

The **National Green Tribunal (NGT)** has taken *suo motu cognisance* of a report highlighting the alarming rise of **ground-level ozone pollution** across major Indian cities. The tribunal noted that elevated ozone levels are closely linked to **vehicular, industrial, and power-sector emissions of nitrogen oxides (NOx)** and directed the **Central Pollution Control Board (CPCB)** to conduct an expert study and frame **control measures**.

UNDERSTANDING OZONE POLLUTION

Ozone (O_2) is a gas formed when **nitrogen oxides (NOx)** and **volatile organic compounds (VOCs)** react in the presence of sunlight. It is a **secondary pollutant**, meaning it is not directly emitted but produced through chemical reactions in the atmosphere.

- **Stratospheric ozone ("good" ozone):** Forms the ozone layer that protects Earth from harmful ultraviolet (UV) radiation.
- **Tropospheric ozone ("bad" ozone):** Accumulates near the ground, acting as a major air pollutant harmful to human health, vegetation, and ecosystems.

SCALE OF THE PROBLEM

- **Ozone Exceedance:** Highest levels recorded in **Delhi-NCR and Mumbai**, frequently breaching **CPCB safe limits (2025)**.
- **Rising Trend:** Urban ground-level ozone has **increased by over 30% since 2018**, driven by **vehicular exhaust, power generation, and industrial activity (MoEFCC, 2024)**.
- **Health Impact:** Linked to **~70,000 premature deaths annually in India (WHO, 2024)** due to respiratory and cardiovascular diseases.
- **Emission Sources:**
  - **Transport sector:** ~40% of NOx emissions.
  - **Power generation:** ~30% of NOx emissions.
- **Environmental Impact:** Reduces **crop yields by 5–20%**, damages forests, and contributes to **climate warming** by trapping heat.

REGULATORY AND POLICY RESPONSE

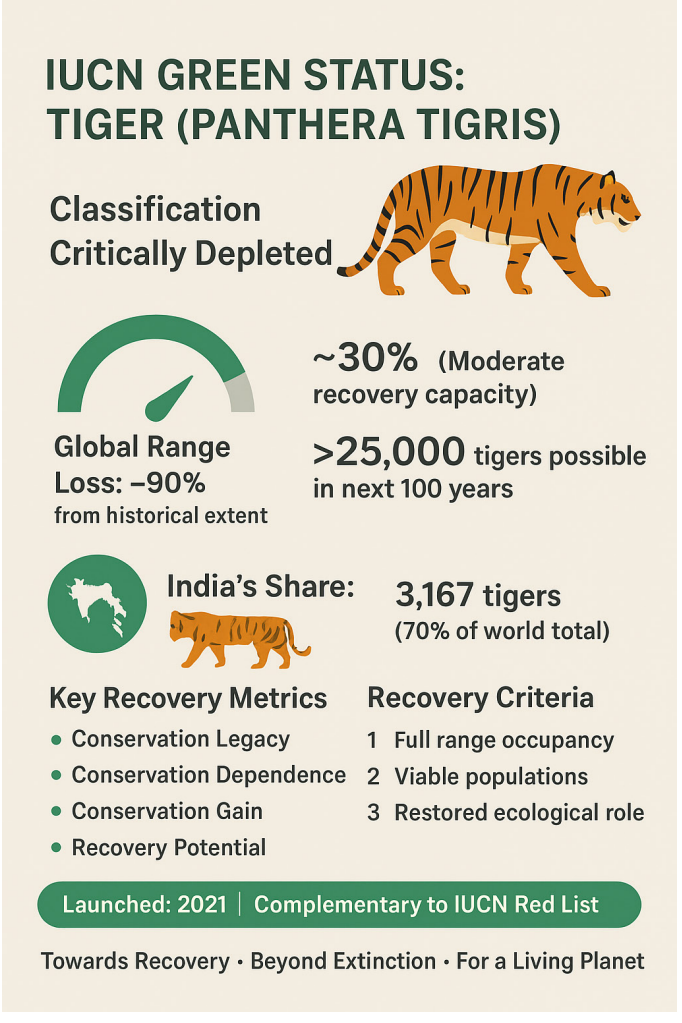
- **NGT Directive (2025):** Seeks a **CPCB-led expert study** on ozone sources and regional control strategies.
- **National Clean Air Programme (NCAP):** Focuses on reducing particulate matter ($PM_{2.5}$ and PM_{10}), but experts now call for integrating **ozone metrics** into air quality management.
- **CPCB Initiatives:** Expanding **ozone monitoring networks** and promoting **real-time data sharing**.
- **Urban Interventions:** Transition to **cleaner fuels, e-mobility, renewable power**, and stricter **NOx emission norms** for industries.

WAY FORWARD

- Develop **Ozone Action Plans** under NCAP focusing on precursor emission control.

- Promote **electric mobility**, **public transport**, and **low-NOx technologies** in thermal plants.
- Enhance **green cover and urban ventilation corridors** to disperse pollutants.
- Strengthen **public awareness** on ozone exposure risks and adaptive health measures.

FIRST IUCN GREEN STATUS OF SPECIES ASSESSMENT FOR THE TIGER



CONTEXT:

The **International Union for Conservation of Nature (IUCN)** has released the **first-ever Green Status of Species Assessment** for the **tiger** (***Panthera tigris***), classifying it as **"Critically Depleted."**

This assessment highlights that while **local conservation efforts have led to recovery** in countries like India and Nepal, the **global tiger range remains severely reduced** — to less than 10% of its historical extent.

The study estimates that with sustained efforts, the **global tiger population could rise to over 25,000 individuals within the next century.**

ABOUT THE IUCN GREEN STATUS OF SPECIES

- Launched in **2021**, the IUCN Green Status complements the Red List by **focusing on recovery progress** rather than only extinction risk.
- It provides a **"Green Score" (0–100%)** reflecting how close a species is to full recovery across its range.
- The framework evaluates **conservation success, dependence, and future potential**, making it an **optimistic and forward-looking tool** for biodiversity recovery.

KEY ASPECTS OF SPECIES RECOVERY

1. **Range Occupancy:** Portion of historical range still occupied.
2. **Population Viability:** Whether populations are self-sustaining and not at risk of extinction.
3. **Ecological Functionality:** Extent to which species perform their natural ecological roles (e.g., predation, seed dispersal).

GREEN STATUS RECOVERY CATEGORIES

Category	Description
Extinct in the Wild	Survives only in captivity
Critically Depleted	Persists in small, fragmented areas; fully dependent on conservation
Largely Depleted	Limited or localized recovery
Moderately Depleted	Partial recovery; major restoration needed
Slightly Depleted	Near full recovery
Fully Recovered	Restored to historic levels and functions naturally
Non-Depleted	Never faced major decline
Indeterminate	Data deficient for classification

CONSERVATION IMPACT METRICS

1. **Conservation Legacy:** Gains from past efforts.
2. **Conservation Dependence:** Deterioration risk if protection stops.
3. **Conservation Gain:** Recovery expected within 10 years.
4. **Recovery Potential:** Likelihood of full recovery in 100 years under optimal conditions.

CRITERIA FOR FULL RECOVERY

To be deemed *fully recovered*, a species must:

1. Reoccupy its **historical range**,
2. Maintain **viable and reproducing populations**, and
3. Resume **ecological roles** in all native ecosystems.

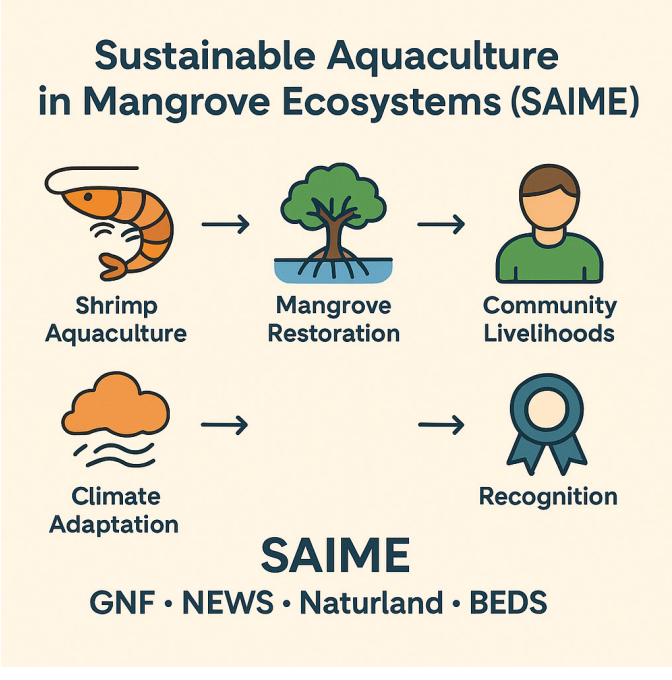
THE TIGER'S CURRENT STATUS

- **IUCN Red List:** Endangered
- **Green Status:** *Critically Depleted*
- **Global Range:** Native to Asia; now restricted to 13 countries.
- **India's Role:** Supports **over 70% of the global population (3,167 tigers)** — a cornerstone of Project Tiger's success.

SIGNIFICANCE

- Shifts conservation focus **from preventing extinction to achieving recovery**.
- Recognises India's pivotal role in global tiger survival.
- Reinforces global goals under the **Kunming-Montreal Global Biodiversity Framework (GBF)** — to restore species and ecosystems by 2030.

SAIME INITIATIVE: SUSTAINABLE AQUACULTURE IN MANGROVE ECOSYSTEMS



CONTEXT:

The **Sustainable Aquaculture in Mangrove Ecosystems (SAIME)** model from the **Sundarbans region of West Bengal** has received **Global Technical Recognition** from the **Food and Agriculture Organization (FAO)** of the **United Nations**. This recognition highlights SAIME's innovative approach to integrating livelihood development with environmental conservation.

ABOUT THE SAIME INITIATIVE

The **SAIME Initiative** is a **multi-stakeholder partnership (MSP)** designed to strengthen sustainable, climate-resilient aquaculture practices while conserving mangrove ecosystems.

OBJECTIVES

- Promote eco-friendly shrimp aquaculture that supports **mangrove restoration**.
- Provide **climate-adaptive, conservation-linked livelihoods** to coastal communities.
- Enhance **sustainable shrimp trade** by linking ecological protection with economic growth.

IMPLEMENTATION

The initiative is jointly implemented by:

- **Global Nature Fund (GNF)**
- **Nature Environment and Wildlife Society (NEWS)**
- **Naturland (Germany)**
- **Bangladesh Environment and Development Society (BEDS)**

SAIME follows an **ecosystem-based and community-led approach**, ensuring that aquaculture development does not come at the cost of mangrove degradation. Instead, it integrates **mangrove plantation** with aquaculture ponds to restore ecological balance.

SIGNIFICANCE

- Balances **livelihood generation** with **ecosystem conservation**, ensuring long-term sustainability.
- Provides **resilience against climate change**, particularly in cyclone-prone regions like the Sundarbans.
- Promotes **biodiversity protection**, improves **carbon sequestration**, and reduces **coastal erosion**.
- Acts as a **replicable model** for other coastal regions in South and Southeast Asia facing similar environmental challenges.

ABOUT MANGROVES

Mangroves are **salt-tolerant trees and shrubs** that thrive in **coastal intertidal zones**, especially in **tropical and subtropical regions**.

KEY CHARACTERISTICS

- **Salt Tolerance:** Specialized roots and leaves help manage saline conditions.
- **Aerial Roots (Pneumatophores):** Absorb oxygen in waterlogged soils.
- **Prop Roots:** Provide anchorage against tides and storm surges.
- **Vivipary:** Seeds germinate while still attached to the parent tree, ensuring survival in saline water.
- **Carbon Storage:** Among the most carbon-dense ecosystems, aiding climate change mitigation.

ECOLOGICAL IMPORTANCE

- Serve as a **natural buffer** against cyclones and tidal waves.
- Act as **nursery grounds** for fish, crustaceans, and mollusks.
- Prevent **coastal erosion** and maintain shoreline stability.
- Support **biodiversity** and provide **livelihoods** for millions of coastal inhabitants.

CONCLUSION

The **SAIME Initiative** exemplifies a successful blend of **environmental restoration** and **sustainable livelihood development**. Its recognition by the **FAO** underscores its potential as a **global model for climate-resilient coastal management**, integrating economic progress with ecological stewardship.

GLOBAL PUSH FOR A FOSSIL FUELS PHASE-OUT TREATY

CONTEXT

At the *IUCN World Conservation Congress (October 2025)*, members adopted **Motion 042**, formally recognising **fossil fuel production as a direct threat to nature and biodiversity**. This marks the **first global conservation treaty proposal** linking fossil fuels explicitly to biodiversity loss and ecosystem collapse.

ABOUT THE IUCN WORLD CONSERVATION CONGRESS

- Held **every four years**, the *IUCN Congress* sets global priorities for **nature conservation and sustainable development**.
- It brings together **governments, scientists, and civil society** to vote on conservation policies and motions shaping global environmental governance.
- The **2025 Congress** witnessed a broad coalition calling for a **Fossil Fuel Non-Proliferation Treaty**, modeled on nuclear disarmament frameworks.

ABOUT THE UNFCCC

- **Adopted:** 1992 (Rio Earth Summit) | **Came into force:** 1994
- **Secretariat:** Bonn, Germany
- **Objective:** To stabilise greenhouse gas concentrations and prevent harmful climate interference.
- **Conference of Parties (COP):** The apex decision-making body.
  - *COP28 (2023): Dubai, UAE*
  - *COP29 (2024): Baku, Azerbaijan*
  - *COP30 (2025): Belém, Brazil*

ABOUT THE IUCN

- **Founded:** 1948 | **HQ:** Gland, Switzerland
- **Members:** 1,400+ (includes states, NGOs, and scientific institutions)
- **Core Role:** Acts as the **global authority** on biodiversity; maintains the **IUCN Red List of Threatened Species**.
- The new motion strengthens IUCN's push for **legally binding mechanisms** to phase out fossil fuel extraction.

WHY A GLOBAL TREATY MATTERS

- **Scientific Consensus:** Fossil fuels drive ~75% of global GHG emissions and nearly **90% of CO_2 output** (UNEP, 2024).
- **Biodiversity Impact:** Extraction and combustion are linked to **40% of land degradation** and **80% biodiversity loss** in ecosystems such as the *Amazon* and *Congo Basins*.
- **Economic Dimension:** The **IMF (2024)** estimated global fossil fuel subsidies at **$1.8 trillion**, undermining renewable energy transitions.
- **Equity Principle:** Developing nations demand financial and technological support for a just transition.

GLOBAL PRODUCTION SNAPSHOT (IEA, 2024)

Resource	Top Producers	Global Share
Oil	U.S. (17%), Saudi Arabia (13%), Russia (12%)	42%
Coal	China (51%), India (10%), Indonesia (8%)	69%
Gas	U.S. (23%), Russia (17%), Iran (6%)	46%

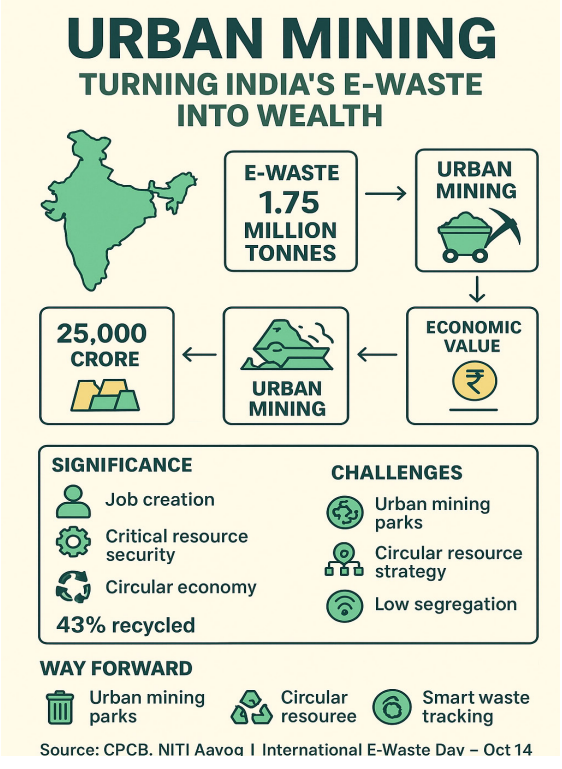
INDIA'S POSITION

- India supports **"phase-down"** (not full phase-out) of fossil fuels, prioritising **energy security and equity**.
- Focus remains on expanding **renewables**, **energy efficiency**, and **green hydrogen** to achieve **Net Zero by 2070**.

CONCLUSION

The IUCN's 2025 resolution signifies a **global paradigm shift** — viewing fossil fuel production not merely as a climate issue but as a **biodiversity emergency**. The success of any treaty, however, will depend on **equitable transitions**, **financial support**, and **political consensus** between developed and developing economies.

E-WASTE RECYCLING THROUGH URBAN MINING



CONTEXT

India generated **1.75 million tonnes of e-waste in 2023–24**, equivalent to **16% of Europe's total**, highlighting the immense potential for **urban mining** and **critical raw material (CRM) recovery**.

Urban mining refers to **extracting valuable materials** such as gold, copper, lithium, and cobalt from discarded electronic devices and other waste products.

E-WASTE DATA IN INDIA

- **Generation:** 1.75 million tonnes (↑72.5% since 2019–20).
- **Recycling Rate:** Improved from **22% (2019–20)** to **43% (2023–24)**.
- **Metal Recovery:** From every tonne of e-waste — **Gold: 300 g**, **Silver: 1 kg** (Circular Economy Report, 2023).

SIGNIFICANCE OF URBAN MINING

- **Economic Potential:** Proper recycling can generate **₹20,000–₹25,000 crore annually** (CPCB, 2024).
- **Job Creation:** Expected to create **5 lakh green jobs** in recycling sectors (NITI Aayog, 2024).
- **Critical Resource Security:** Reduces dependence on imports of lithium, cobalt, and rare earths — essential for EVs and electronics.
- **Circular Economy Boost:** Helps achieve **SDG 12** (Responsible Consumption and Production) and supports **Mission LiFE** for sustainable lifestyles.

CHALLENGES

- **Technological Gaps:** India lacks advanced CRM extraction and smelting facilities.
- **Governance Overlap:** Responsibilities divided between **MoHUA** (urban sanitation) and **MoEFCC** (waste management).
- **Low Segregation:** Only **25% of waste** is segregated at source (CPCB, 2023).
- **Informal Sector Exclusion:** Around **15 lakh waste pickers** remain outside formal recycling systems.
- **Financial Constraints:** Urban local bodies recover less than **20% of user charges** for waste services (NIUA, 2023).

WAY FORWARD

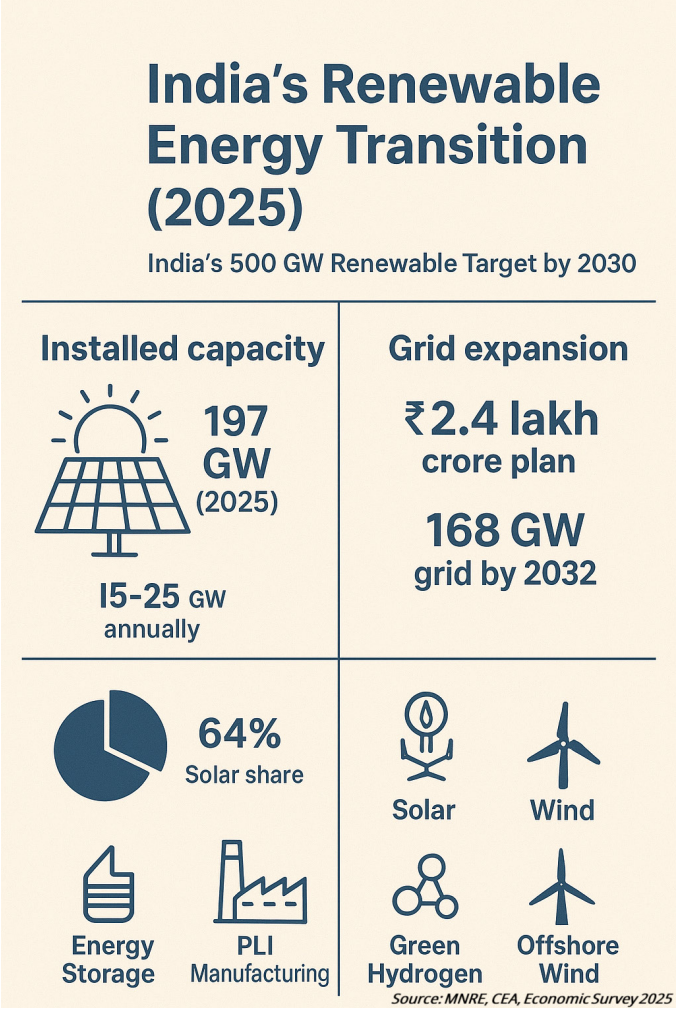
- **Urban Mining Parks:** Develop regional CRM recovery hubs; emulate Japan's *Eco-Town* and China's *Urban Mining Bases*.
- **Circular Resource Strategy:** Implement the **NITI Aayog Circular Economy Action Plan (2021)**.
- **Integrate Informal Sector:** Support cooperatives and SHGs through schemes like **Swachhata Start-up Challenge**.

- **Smart Waste Tracking:** Use **AI, GIS, and IoT** in **Smart City Command Centres** for collection optimisation.
- **Unified Waste Authority:** Merge MoHUA and MoEFCC functions under one nodal body, similar to the **EU Waste Framework Directive (2008)**.

GLOBAL NOTE

International E-Waste Day (October 14) promotes responsible e-waste recycling and the conservation of **critical raw materials** essential for clean energy and digital transitions.

INDIA'S RENEWABLE ENERGY TRANSITION: FROM EXPANSION TO INTEGRATION



CONTEXT:

India's renewable energy (RE) strategy is entering a new phase — from rapid capacity addition to **system integration and grid stability**. With a target of **500 GW of renewable energy capacity by 2030**, India aims to build a resilient, diversified, and self-reliant green energy ecosystem.

INDIA'S CURRENT RENEWABLE LANDSCAPE

- **Installed Capacity:** India's installed renewable capacity (excluding large hydro) has expanded from **35 GW in 2014** to **197 GW in 2025**, marking a **fivefold growth**.
- **Pipeline Projects:** Over **40 GW** of new renewable projects are in advanced stages of securing Power Purchase Agreements (PPAs), Power Sale Agreements (PSAs), and transmission approvals.
- **Annual Growth:** India consistently adds **15–25 GW** of renewable capacity each year — one of the **fastest growth rates globally**.
- **Transmission Corridors:** Under the **Green Energy Corridor** initiative, high-capacity transmission networks from **Rajasthan, Gujarat, and Ladakh** will unlock over **200 GW** of renewable generation potential.
- **Grid Strengthening:** Backed by a **₹2.4 lakh crore Transmission Plan**, inter-regional grid capacity is projected to rise from **120 GW (2025)** to **168 GW (2032)**.

India's current renewable mix (2025):

Solar – 64.63% | Wind – 26.96% | Biopower – 5.46% | Small Hydro – 2.60% | Waste-to-Energy – 0.43%

CHANGING RENEWABLE POLICY DIRECTIONS

- **Energy Storage Priority:** New tenders emphasise **energy storage** and **Round-The-Clock (RTC)** renewable power for grid reliability.
- **Domestic Manufacturing:** Supported by the **PLI Scheme**, India is shifting from import dependency to **self-reliant solar module production**.
- **Grid Access Reform:** The **General Network Access (GNA) 2025** introduces time-segmented transmission use — solar by day, wind/storage by night.
- **Market Evolution:** Traditional **PPAs** are gradually evolving into **Virtual PPAs (VPPAs)**, allowing flexible, non-physical power procurement.
- **Future Diversification:** Policy focus now extends to **offshore wind, pumped hydro storage**, and **green hydrogen**.

MAJOR GOVERNMENT INITIATIVES

Initiative	Objective / Key Feature
PLI Scheme for Solar PV Modules	Incentivises high-efficiency domestic manufacturing.
Battery Energy Storage Systems (BESS)	Ensures grid stability; targets **236 GWh** storage by 2031–32.

Initiative	Objective / Key Feature
Green Energy Corridors (GEC)	Dedicated renewable transmission network.
Ultra Mega Renewable Parks	Plug-and-play land + transmission facilities for **500 MW+ projects**.
Renewable Purchase Obligations (RPOs)	Mandates power discoms to procure renewable energy.
National Green Hydrogen Mission	Targets **5 MMT** green hydrogen production by **2030**.

CONCLUSION

India's renewable transition is evolving from quantity to quality — from mere capacity addition to **smart integration, storage, and grid modernization**.

As India moves toward its **500 GW target by 2030**, the emphasis on **domestic manufacturing, policy innovation, and clean technology** will ensure a sustainable and secure energy future.

SECURITY & DISASTER MANAGEMENT

GS PAPER 3

SIR CREEK DISPUTE

CONTEXT:

India's Defence Minister recently cautioned Pakistan against military activities near *Sir Creek* and referred to **Operation Sindoor**, highlighting India's preparedness to secure its maritime boundaries.

ABOUT SIR CREEK

- **Geography:** Sir Creek is a **96 km long tidal estuary** located in the **Rann of Kutch**, separating Pakistan's Sindh province and Gujarat's Kutch region.
- **History:** Originally called *Ban Ganga*, it was renamed *Sir Creek* after a British surveyor during colonial mapping.
- **Strategic Importance:**
  - Rich fishing grounds and potential oil & gas reserves.
  - Decides maritime boundary, influencing the **Exclusive Economic Zone (EEZ)**.
  - Proximity to **Karachi port** makes it critical for naval security.

THE DISPUTE

- The dispute stems from colonial-era demarcation between **Kutch (India)** and **Sindh (Pakistan)** under the **Bombay Presidency**.

INDIA'S CLAIM:

- Boundary should follow the **mid-channel (Thalweg Principle)**.
- Seeks resolution only through **bilateral talks under the 1972 Simla Agreement**.

PAKISTAN'S CLAIM:

- Boundary lies along the **eastern bank (Green Line)** as per the **1914 Bombay Government Resolution**, giving Pakistan control of the creek.
- Argues **Thalweg Principle doesn't apply** since Sir Creek is not navigable.

KEY CONCEPTS

- **Thalweg Principle:** In international law, boundaries in a navigable water body should follow its deepest channel, ensuring equal access.
- **Simla Agreement (1972):** Peace treaty post-1971 India-Pakistan War; stresses bilateralism, mutual respect, and LoC recognition.

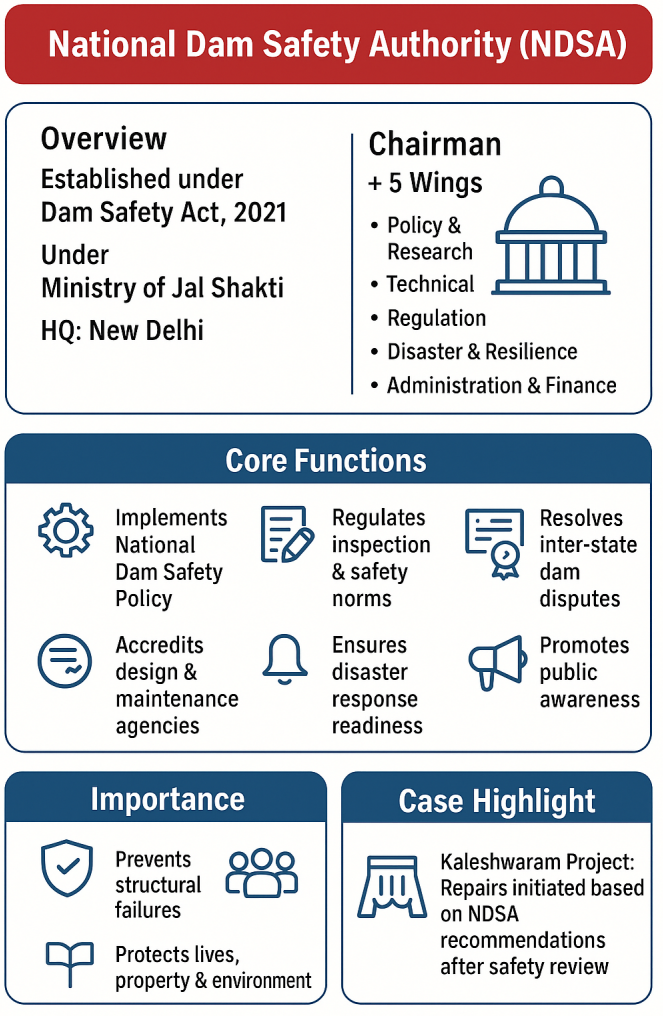
SIGNIFICANCE FOR INDIA

- Ensures sovereignty over maritime resources and security in the Arabian Sea.
- Prevents encroachment into India's EEZ, vital for energy and fisheries.
- Safeguards national security against Pakistan's naval activities.

WAY FORWARD:

A negotiated settlement, balancing international law and bilateral agreements, is essential to prevent conflict and promote stability in the Arabian Sea region.

NATIONAL DAM SAFETY AUTHORITY (NDSA)



CONTEXT

After two years of debate over the structural stability of the Kaleshwaram Lift Irrigation Project's barrages in Telangana, the Union Government has accepted the **recommendations of the National Dam Safety Authority (NDSA)** and decided to undertake repair works on three barrages.

This marks a major step in implementing scientific dam safety oversight in India under the **Dam Safety Act, 2021**.

ABOUT THE NATIONAL DAM SAFETY AUTHORITY (NDSA)

- **Statutory Body:** Established under the **Dam Safety Act, 2021**, the NDSA is a statutory authority functioning under the **Ministry of Jal Shakti**.
- **Headquarters:** New Delhi.
- **Composition:** Headed by a **Chairperson**, assisted by **five members** leading specialized divisions —
  1. Policy & Research
  2. Technical
  3. Regulation
  4. Disaster & Resilience
  5. Administration & Finance

MANDATE AND FUNCTIONS

- **Policy Implementation:** Executes policies framed by the **National Committee on Dam Safety (NCDS)**.
- **Dispute Resolution:** Resolves issues between **State Dam Safety Organisations (SDSOs)** or between an SDSO and a dam owner.
- **Regulation & Inspection:** Specifies standards for inspection, investigation, design, and maintenance of dams.
- **Accreditation:** Grants accreditation to agencies involved in dam construction, design, or alteration.
- **Emergency Preparedness:** Ensures that dam safety and emergency response protocols are in place, especially during natural disasters.
- **Capacity Building:** Conducts awareness and training programmes to enhance safety management across states.

SIGNIFICANCE

- India has **over 6,000 large dams**, many of which are over 50 years old. Ensuring their safety is critical for lives, livelihoods, and irrigation infrastructure.
- The NDSA establishes **uniform national standards** and bridges the coordination gap between Centre and States.
- It promotes a **preventive safety culture** rather than a reactive disaster response mechanism.

WAY FORWARD

- Regular dam safety audits using **modern technology** such as remote sensing, drones, and digital monitoring systems.
- Strengthening coordination between NDSA and state agencies for real-time data sharing.
- Public awareness and early warning systems for communities in downstream areas.

CONCLUSION

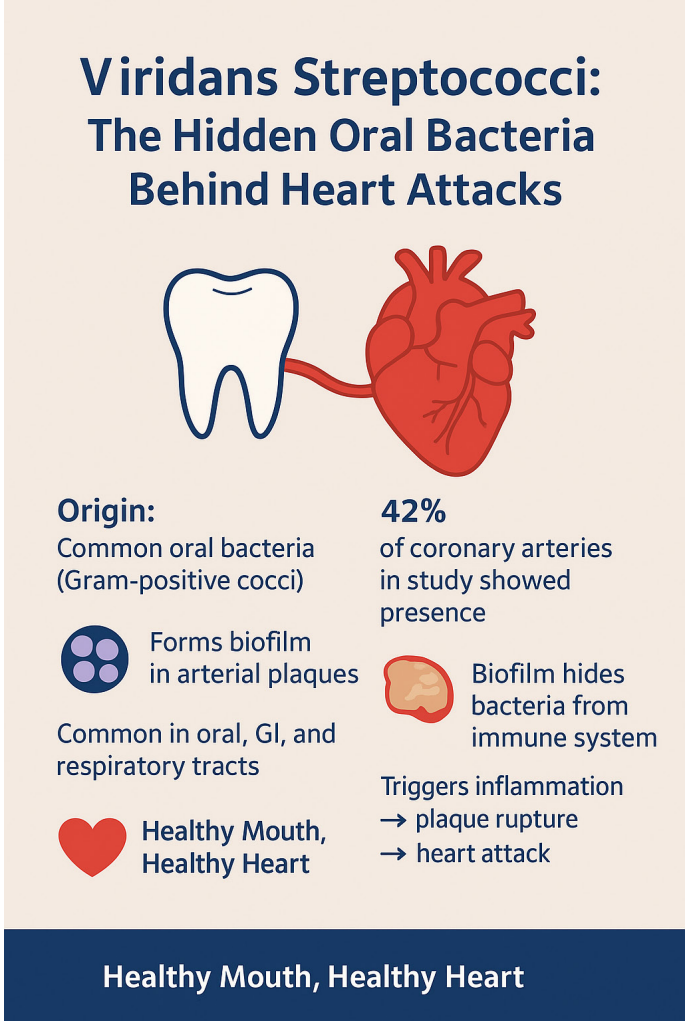
The National Dam Safety Authority marks a paradigm shift from fragmented dam oversight to **integrated and accountable safety governance**.

Its proactive intervention in the Kaleshwaram case demonstrates the Centre's commitment to **scientific dam management and disaster resilience**.

HEALTH DISEASES & BIOTECHNOLOGY

GS PAPER 3

VIRIDANS STREPTOCOCCI: ORAL BACTERIA LINKED TO HEART ATTACKS



CONTEXT:

A recent study conducted by researchers at **Tampere University, Finland**, has revealed a surprising connection between **oral bacteria and heart attacks**. The study examined **coronary arteries from 121 sudden-death autopsies** and found that **Viridans streptococci** were present in about **42% of both autopsy and surgical cases**, making them the most frequently detected bacterial species.

ABOUT VIRIDANS STREPTOCOCCI:

Viridans streptococci are a group of **gram-positive cocci** commonly found in the **oral cavity**, but also present in the **gastrointestinal, respiratory, and female genital tracts**. Normally harmless, they are part of the body's **commensal microbiota**. However, under certain conditions, they can turn pathogenic, being **a leading cause of infective endocarditis (IE)** — an infection that affects the inner lining of the heart, especially in individuals with **previously damaged cardiac tissue**.

VIRIDANS STREPTOCOCCAL BIOFILM FORMATION:

The bacteria have the ability to form **biofilms** — sticky, protective layers that allow them to adhere to surfaces such as **atherosclerotic plaques** (fatty buildups inside arteries). Within these biofilms, bacteria remain **hidden from the immune system**, enabling them to persist undetected for long periods.

Link Between Oral Bacteria and Heart Disease:

The study highlights how **biofilm-forming Viridans streptococci** can play a **direct role in triggering heart attacks**:

1. **Biofilm Stability:** The bacteria remain embedded deep within arterial plaques, shielded from immune response.
2. **Biofilm Disruption:** Over time, fragments of the biofilm can **break loose**.
3. **Inflammation Trigger:** When released, these bacteria provoke **inflammation in the arterial wall**, weakening the **fibrous cap** that covers the fatty plaque.
4. **Plaque Rupture:** The weakened cap eventually **ruptures**, leading to **clot formation**, which can **block blood flow** and cause a **heart attack**.

SIGNIFICANCE OF THE STUDY:

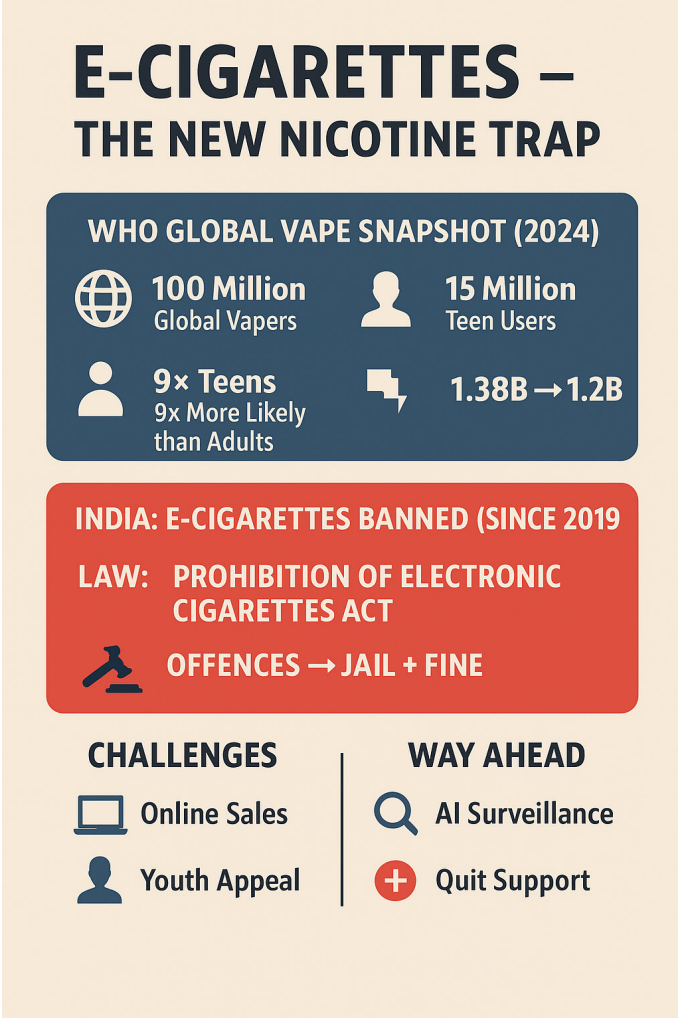
The findings underscore the **link between oral health and cardiovascular health**, suggesting that **oral bacteria may be silent contributors to heart disease**. The presence of Viridans streptococci in coronary plaques demonstrates the importance of **maintaining good oral hygiene** to reduce systemic inflammation and cardiac risk.

CONCLUSION:

The Tampere University study provides crucial evidence that the **mouth-heart connection** is not merely coincidental

but biologically plausible. By forming biofilms within arterial plaques, **Viridans streptococci** act as hidden players in the development of **atherosclerosis and heart attacks** — highlighting how **preventive dental care** may play an unexpected role in **cardiovascular protection**.

E-CIGARETTES AND THE RISING HEALTH RISKS



CONTEXT:

According to WHO's *first global estimate of e-cigarette use (2024)*, **teenagers are nine times more likely to vape than adults**, raising major public health concerns worldwide.

ABOUT E-CIGARETTES:

- **E-cigarettes** are battery-operated devices that heat a liquid into an inhalable aerosol.
- The liquid typically contains **nicotine**, **propylene glycol**, **glycerin**, **flavouring agents**, and other chemicals.
- Known as **vape pens**, **ENDS (Electronic Nicotine Delivery Systems)**, or **ENNDS (Electronic Non-Nicotine Delivery Systems)**.
- Though they may not contain tobacco, they often deliver **addictive nicotine** doses similar to conventional cigarettes.

WHO'S KEY FINDINGS (2024):

- **15 million teenagers (13–15 yrs)** use e-cigarettes globally.
- **Youth are 9× more likely** to vape than adults.
- **Total vapers:** over **100 million**, including **86 million adults** (mostly in high-income nations).
- **Tobacco use** declined from **1.38 billion (2000)** → **1.2 billion (2024)**.
- **Regional trends:**
  - *Southeast Asia:* Male tobacco use fell from **70%** → **37% (2000–2024)**.
  - *Europe:* Now the **highest tobacco prevalence (24.1%)** globally.

LEGAL FRAMEWORK IN INDIA:

The Prohibition of Electronic Cigarettes Act, 2019

- **Complete Ban:** Prohibits *production, import, export, transport, sale, distribution, storage, and advertisement* of e-cigarettes.
- **Penalties:**
  - Manufacture/sale/advertisement → *Imprisonment up to 1 year or ₹1 lakh fine (first offence); up to 3 years or ₹5 lakh (repeat offence).*
  - Storage → *Up to 6 months jail or ₹50,000 fine.*
- **Exemption:** Permitted only for *research and testing purposes.*

IMPLEMENTATION CHALLENGES IN INDIA:

- **Online Accessibility:** Over **60%** of e-cigarette products remain available on **e-commerce platforms** (Voluntary Health Association of India, 2023).
- **Youth Appeal:** Flavoured variants and influencer marketing target adolescents.
- **Lack of Support Systems:** Only **1 in 5 tobacco users** has access to quitting support or therapy (GATS 2022).
- **Product Evasion:** New disposable or flavoured devices enter India through unregulated channels.

WAY FORWARD:

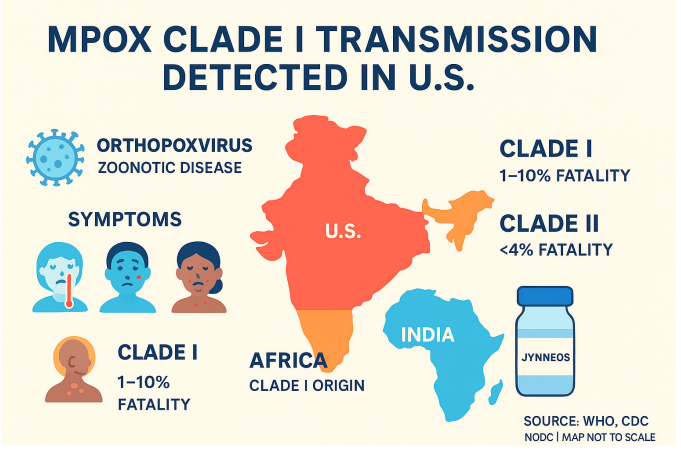
Digital Surveillance: Deploy AI-based systems to monitor illegal online sales (like the EU's *Track & Trace* model).

Youth Awareness: Launch *anti-vaping campaigns* under the **National Tobacco Control Programme (NTCP)**—similar to New Zealand's *Vape-Free Schools*.

Quit Support Expansion: Strengthen helplines like **mCessation**, which has helped over **3 million users** attempt quitting.

Inter-Agency Coordination: Form a **Nicotine Product Enforcement Task Force** involving MoHFW, IT Ministry, and Customs.

FIRST LOCAL TRANSMISSION OF MPOX CLADE I STRAIN IN THE U.S.



CONTEXT

The United States has reported the *first suspected local transmission* of the **Clade I Mpox strain**, with no international travel link identified. The confirmation raises public health concerns, as Clade I is considered more virulent than the Clade II strain that caused the global 2022 outbreak.

This incident marks a potential shift in the epidemiology of Mpox, signaling community-level spread within North America.

ABOUT MPOX

- **Causative Agent:** Mpox (formerly known as Monkeypox) is a *zoonotic viral infection* caused by the **Monkeypox virus (MPXV)**, belonging to the *Orthopoxvirus genus*, closely related to smallpox.
- **Transmission:** Occurs via contact with infectious lesions, body fluids, contaminated materials, or respiratory droplets from infected individuals or animals.
- **Symptoms:** Fever, headache, swollen lymph nodes, muscle pain, and characteristic *painful skin lesions* (often on face, hands, and genital areas).
- **Severity:** Children, pregnant women, and immunocompromised individuals are more prone to complications such as secondary infections and pneumonia.

CLADES OF MPOX

- **Clade I:**
  - *Geographic Origin:* Central Africa (mainly Congo Basin).
  - *Fatality Rate:* 1–10%.
  - *Severity:* More virulent and transmissible.
- **Clade II (A & B):**
  - *Origin:* West Africa.
  - *Fatality Rate:* <1–4%.
  - *Responsible for 2022 Global Outbreak.*

TREATMENT AND PREVENTION

- **Treatment:** No specific antiviral cure exists. However, *Tecovirimat (TPOXX)* and *Brincidofovir* are used under emergency authorisations to manage severe infections.
- **Vaccination:**
  - *Jynneos (Imvamune/Imvanex)* by Bavarian Nordic is the approved vaccine offering cross-protection against both Mpox clades.
  - Target groups include healthcare workers, laboratory staff, and close contacts of confirmed cases.
- **Public Health Response:** Enhanced surveillance, contact tracing, and isolation remain critical for containment.

INDIA'S STATUS

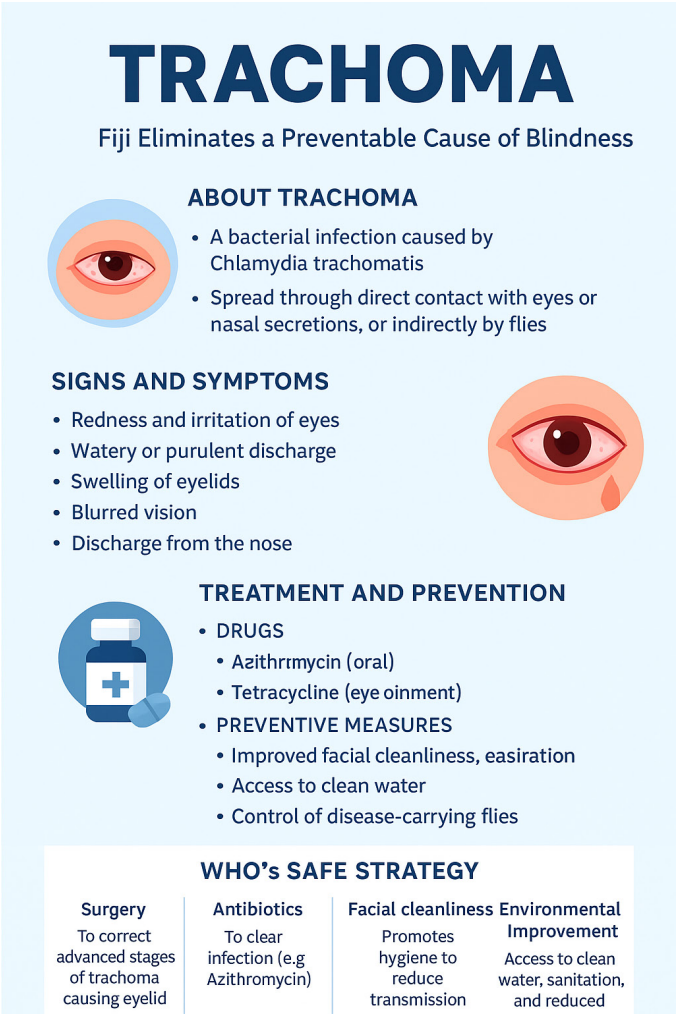
Between **December 2024 and March 2025**, India recorded **10 confirmed cases** of *Clade 1b Mpox*, all traced to *travel from Gulf countries*.

There has been **no community transmission** reported domestically so far. India continues to follow WHO-recommended surveillance and vaccination guidelines under the *National Centre for Disease Control (NCDC)*.

SIGNIFICANCE

- The local transmission of *Clade I* indicates the virus's capacity to adapt and spread beyond endemic regions.
- It underscores the need for *genomic monitoring*, *rapid diagnostics*, and *international cooperation* under the *International Health Regulations (IHR)* framework.

TRACHOMA: FIJI ELIMINATES A PREVENTABLE CAUSE OF BLINDNESS



CONTEXT

Fiji has become the **26th country** in the world to eliminate *Trachoma* as a public health problem, as validated by the **World Health Organization (WHO)**. This marks a major step towards achieving the global goal of ending trachoma by **2030** under the *WHO NTD Roadmap*.

WHAT IS TRACHOMA?

Trachoma is a **bacterial eye infection** caused by *Chlamydia trachomatis*. It spreads through:

- Direct contact with the eyes, eyelids, or nasal secretions of an infected person.
- Indirect contact via contaminated towels, clothing, or flies that have come into contact with discharge from infected eyes or nose.

If untreated, repeated infections lead to **scarring of the inner eyelid**, causing eyelashes to turn inward and scratch the cornea, ultimately leading to **irreversible blindness**.

SIGNS AND SYMPTOMS

- Redness and irritation of eyes
- Watery or purulent discharge
- Swelling of eyelids
- Blurred vision
- Discharge from the nose

TREATMENT AND PREVENTION

- **Drugs:**
  - *Azithromycin* (oral)
  - *Tetracycline* (eye ointment)
- **Preventive Measures:**
  - Improved facial cleanliness and sanitation
  - Access to clean water
  - Control of disease-carrying flies

WHO'S SAFE STRATEGY

The **WHO** recommends the **SAFE Strategy** to eliminate trachoma as a public health problem:

SAFE Strategy	Description
Surgery	To correct advanced stages of trachoma causing eyelid deformities
Antibiotics	To clear infection (e.g., Azithromycin)
Facial cleanliness	Promotes hygiene to reduce transmission
Environmental improvement	Access to clean water, sanitation, and reduced fly population

GLOBAL AND INDIAN CONTEXT

- According to WHO, **150 million people** are still at risk of trachoma globally, mainly in **Africa, the Middle East, and parts of Asia**.
- The disease primarily affects **poor, rural communities** lacking sanitation and healthcare access.
- **India** has made significant progress under the *National Programme for Control of Blindness and Visual Impairment (NPCBVI)*, though surveillance continues in endemic areas.

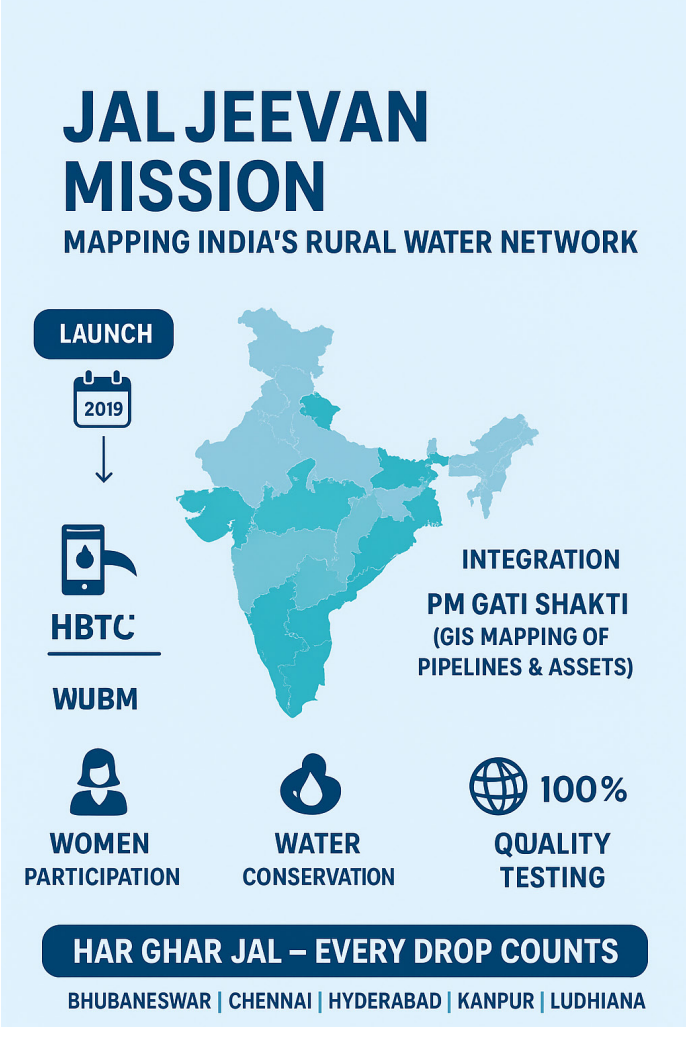
SIGNIFICANCE

Fiji's success demonstrates the effectiveness of **community-level health interventions**, strong surveillance, and cross-sector collaboration in eliminating neglected tropical diseases. It also strengthens global momentum toward **Universal Eye Health** and the **WHO's 2030 NTD Roadmap**.

INFRASTRUCTURE & WATER SECURITY

GS PAPER 3

JAL JEEVAN MISSION: MAPPING INDIA'S RURAL WATER NETWORK



CONTEXT

The Union government has announced plans to **map all drinking water assets**, including pipelines, created under the **Jal Jeevan Mission (JJM)**, on the **PM Gati Shakti platform** — a **Geographic Information System (GIS)-based** national master plan for integrated infrastructure planning.

This initiative aims to enhance **transparency, monitoring, and inter-departmental coordination** to ensure sustainable and equitable water delivery across rural India.

ABOUT JAL JEEVAN MISSION

Launched on **August 15, 2019**, the **Jal Jeevan Mission (JJM)** envisions providing **safe and adequate drinking water** to **every rural household** in India through **Functional Household Tap Connections (FHTCs)** by **2024**.

The Mission adopts a **community-based approach**, emphasizing **Information, Education, and Communication (IEC)** to promote water conservation and responsible usage.

- **Nodal Ministry:** Ministry of Jal Shakti
- **Type:** Centrally Sponsored Scheme

KEY COMPONENTS OF JJM

1. **Infrastructure Development:**
   - Creation of in-village piped water supply networks for every rural household.
2. **Community Participation:**
   - **Bottom-up planning** involving local bodies and Village Water and Sanitation Committees (VWSCs).
3. **Women Empowerment:**
   - Active involvement of women in decision-making, implementation, monitoring, and maintenance.
4. **Institutional Strengthening:**
   - Capacity building of local communities to manage operation and maintenance (O&M).
5. **Source Sustainability:**
   - Groundwater recharge, rainwater harvesting, and conservation of traditional water bodies.
6. **Greywater Management:**
   - Reuse of household wastewater for agriculture and groundwater replenishment.
7. **Water Quality Assurance:**
   - Regular testing to prevent water-borne diseases through **Water Quality Laboratories** and **Field Test Kits**.
8. **Special Focus:**
   - Ensuring tap water supply to **schools, anganwadi centres, tribal hostels, and healthcare institutions**.

FUNDING PATTERN

- **50:50** between Centre and States.
- **90:10** for Himalayan and North-Eastern States.
- **100% Central funding** for Union Territories.