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INDIA-UNITED STATES TRADE DEAL

The India-United States (US) trade deal, which aims for an interim agreement, faces criticism from various sectors in India. The Congress party has labeled it a surrender, and a farmers' organization has called for protests, highlighting concerns about the deal being more favorable to the US.

US Trade Policy Under Trump

- Donald Trump's administration prioritizes resetting America's economic relationships worldwide, often favoring the US in trade deals.
- Historically, post-World War II, the US favored economic partnerships that also benefited its trade partners to promote global peace and counter communism.
- Trump's strategy involves leveraging the US's economic and military power to restructure trade agreements.

Impact of Trade Deals

- The US-EU trade deal serves as a prime example of US dominance in trade negotiations, with the EU facing significant tariffs and committing to substantial US imports and investments.
- Similar one-sided agreements have been signed between the US and other allies like the UK, Japan, and South Korea.

India's Economic Context

- Despite a 50% tariff on Indian exports, India's total exports have risen by 4.4% year-on-year, with a 9.8% increase in exports to the US between April and December 2025.
- India's capital inflows are declining. The current account deficit stands at 1.3% of GDP, comparable to countries like Canada and Australia.
- Gross foreign direct investment (FDI) fell by 2% in 2024, and net FDI reached only $5.6 billion from April to November 2025.
- Foreign portfolio inflows (FPI) witnessed a negative trend, with a decline of $3.9 billion from April to December 2026.

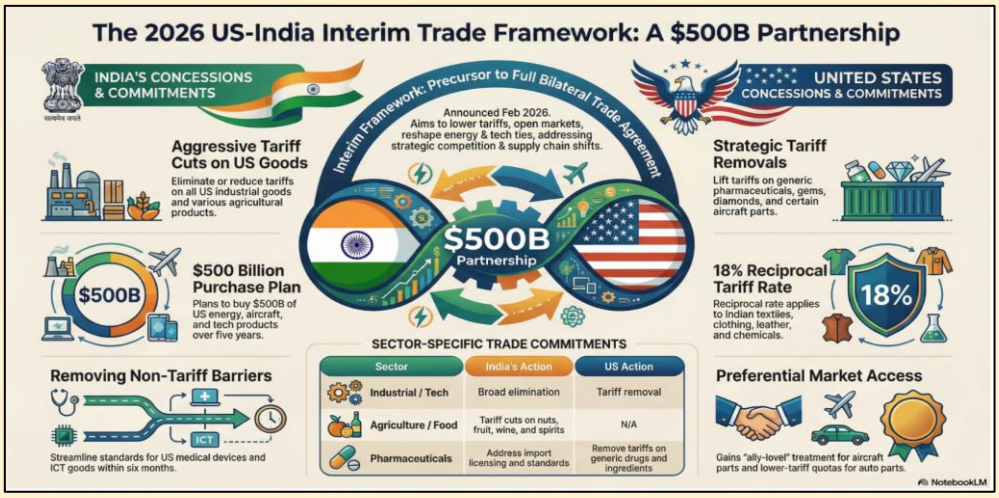
Strategic Importance of the Trade Deal

- The absence of a trade deal might continue to hamper capital flows and potentially affect service exports, defense collaboration, technology transfers, and the broader strategic partnership with the US.
- The deal is expected to shift the US's stance towards India from hostile to neutral, benefiting the Indian economy.
- Compromises in the deal include reducing oil imports from Russia and increasing US imports to $100 billion annually for the next five years.

The trade deal is not just about economic exchanges but involves strategic implications, shifting relations from potential hostility to neutrality, which is crucial for sustaining India's economic performance in the long term.

How are Indian Farmers Protected under the India - US Interim Trade Agreement?

- **Excluded Items:** India maintains a **trade surplus of USD 1.3 billion in agricultural trade with the US**, with exports of USD 3.4 billion and imports of USD 2.1 billion in 2024.
    - The US will apply zero additional duty on Indian exports worth USD 1.36 billion.
    - Additionally, **a strict "negative list" has been maintained.** No tariff relief has been granted to the US on sensitive agricultural products including:
        - Meat, poultry, and dairy.
        - Staple grains (wheat, rice, maize, millets).
        - Fruits and vegetables (bananas, strawberries, cherries, citrus, green peas).
        - Other commodities like soybean, sugar, oilseeds, ethanol, and tobacco.
- **GM Ban Continues:** India has firmly refused to open its doors to **Genetically Modified (GM)** items, specifically blocking American GM corn and soybean.
- **Boost to Indian Farmers:** India has secured duty-free entry into the US market for several sectors, with **duties dropping from 50% to 0% in many cases.**
    - **Agriculture Exports:** Zero-duty access has been granted for Indian spices, tea, coffee, cashew nuts, Brazil nuts, and coconuts (including oil and copra).
    - **Fruits and Vegetables:** Exports of mangoes, guavas, papayas, avocados, bananas, and mushrooms will benefit from tariff elimination.
    - **Processed Goods:** Select processed foods and cereals like barley will also enter duty-free, encouraging value addition within India before export.
- **Animal Feed Market:** With India's domestic production of maize and soybean unable to keep pace with the **rising demand from the poultry and livestock sectors,** the deal opens specific windows for **feed imports without compromising the ban on GM grains.**
    - The US can now **export Sorghum (Red Sorghum) to India**. It is seen as a vital non-GM alternative to corn for the Indian poultry industry.
    - **Distillers Dried Grains with Solubles (DDGS)** is a by-product of ethanol production. Although it may be derived from GM corn, India is allowing it **only as a processed feed input**.
        - It supports the **protein requirements** of livestock and poultry without opening the door to GM grains.



Calibrated Market Opening with Strong Safeguards

- For items that were opened, India used safeguards to prevent dumping:
  - **Tariff Rate Quotas (TRQs):** Applied to items like apples and almonds, where only a specific quantity can be imported at lower rates.
  - **Phased Rollouts:** Some tariffs will be reduced over a period (up to 10 years) to allow domestic industries to adjust.
  - **Minimum Import Price (MIP):** Imposed on wines and spirits to ensure only high-value premium products enter, protecting the domestic mass-market industry.

India's Feed Market

- Current Output: According to the United States Department of Agriculture (USDA), India's annual maize production is expected to be 43 million tonnes (mt) in 2025-26, with about 24 mt allocated specifically for feed use. Soybean output stands at approximately 12.5 mt.
- Compound Feed Industry: The total production of compound feed is pegged at 60 mt, comprising 40 mt for poultry, 18 mt for cattle, and 2 mt for aqua/shrimp feed.
- Domestic DDGS: Grain-based ethanol distilleries in India are currently supplying over 3 mt of DDGS to the feed industry, with a forecast of 4.2 mt in 2025-26.
- Yield Challenges: Domestic production struggles with low yields; maize yields average 3.75 tonnes/hectare (vs 11.25 in the U.S.), and soybean yields are below 1 tonne/hectare (vs 3.4 in the U.S.).

Demand Drivers

- Drivers: Rising incomes, urbanization, and a population expected to reach 1.5 billion by 2050 are driving a dietary shift toward protein (milk, eggs, meat), thereby increasing the demand for animal feed.
- Consumption Projections (USDA Report):
  - Maize: From 34.7 mt (2022-23) to 93 mt (2050) under a moderate growth scenario, or up to 200.2 mt under a rapid growth scenario.
  - Soybean Meal: From 6.2 mt (2022-23) to 28.3 mt (2050) under moderate growth, or up to 68.3 mt under rapid growth.

- Feed Composition: Maize is a critical component, making up 55-65% of broiler feed, 50-60% of egg-layer feed, and 15-20% of cattle feed.

US Role

- With India's production unable to keep pace with demand, the U.S. is positioned to fill the deficit. The USDA projects India could need to import up to 46 mt of maize and 19 mt of soybean meal by 2040 under rapid growth scenarios.

INDIA'S SPACE AMBITIONS

India's space sector is at an inflection point. Post-pandemic disruptions have eased, global space markets are rapidly commercialising, and India has formally opened its space ecosystem to private players since 2020.

Budget 2026–27 was therefore expected to move beyond stabilising the public space programme and actively enable a globally competitive private space industry.

Current Status: What the Budget Signals

- **Budgetary stabilisation of the public programme**: Space allocations in 2026–27 exceed the pre-pandemic peak (₹13,017 crore in 2019–20) by ~5.3%, signalling operational normalisation for **ISRO** and continuity for missions like Gaganyaan and planetary exploration.
- **Ecosystem scale still modest**: Including internal resource mobilisation by **NewSpace India Limited**, total ecosystem spending is ~₹15,000 crore — small relative to ambitions of capturing **10% of the global space economy by 2030** (from ~3% today).
- **Public-sector centric fiscal design**: The Budget largely channels funds to ISRO and administrative support for **IN-SPACe**, reinforcing a state-led rather than industry-facilitated growth model.

Key Structural Gaps Highlighted by Industry

- **No Production Linked Incentive (PLI) for space manufacturing**: Despite success of PLIs in electronics, Budget 2026–27 ignores demands for incentivising space-grade components, where costs are high, volumes low, and learning curves steep.
- **GST-induced liquidity trap**: Space firms pay ~18% GST on imported inputs and raw materials, but final outputs (launch services/satellites) are often exempt, leading to **non-refundable input taxes**. This creates a hidden manufacturing tax, making "Make in India" space hardware costlier than imports.

- **Absence of 'critical infrastructure' status**: Without this tag, private players cannot access long-term, low-cost institutional finance. Industry estimates suggest this raises cost of capital by **2–3 percentage points**, fatal in a sector with long gestation and high fixed costs.
- **The 'death valley' remains unaddressed**: The gap between R&D and first commercial revenue persists. While a ₹1,000 crore space VC fund exists (₹150 crore earmarked so far), **equity financing alone cannot substitute fiscal support**, tax credits, or R&D grants in deep-tech sectors.

Implications for India's Space Ambitions

- **Private firms risk remaining subcontractors** to ISRO rather than IP-owning innovators, limiting breakthroughs in reusable launch systems, satellite IoT, and downstream applications.
- **Global competitiveness erodes**, as U.S. and European firms access cheaper capital, tax incentives, and infrastructure support.
- **Brain drain risks rise**, with high-skilled engineers migrating to ecosystems that reward risk-taking and innovation.

Way Forward: What Budget Strategy Must Evolve Into

- **Shift from fund-provider to market-facilitator**: Allocate meaningful scheme-based funds to IN-SPACe (₹1,000 crore+), enabling demand creation for private launch vehicles, satellite platforms, and payloads.
- **GST zero-rating for space manufacturing**: Treat space outputs like exports to allow full input tax refunds and ease liquidity stress.
- **Grant 'critical infrastructure' status**: Enable access to long-tenure, low-cost finance for launch pads, ground stations, and telemetry networks.
- **Blend fiscal tools with venture capital**: Introduce time-bound tax holidays, R&D tax credits, and mission-mode grants to complement the VC fund and bridge the innovation "death valley".

Budget 2026–27 stabilises India's public space programme but falls short of catalysing a private-led space economy. Liberalisation without fiscal restructuring risks perpetuating a state-dominated, low-innovation equilibrium. For India to move from a launch-capable nation to a **space industrial power**, future budgets must align rhetoric on privatisation with decisive structural reforms that lower risk, cost, and uncertainty for private innovators.

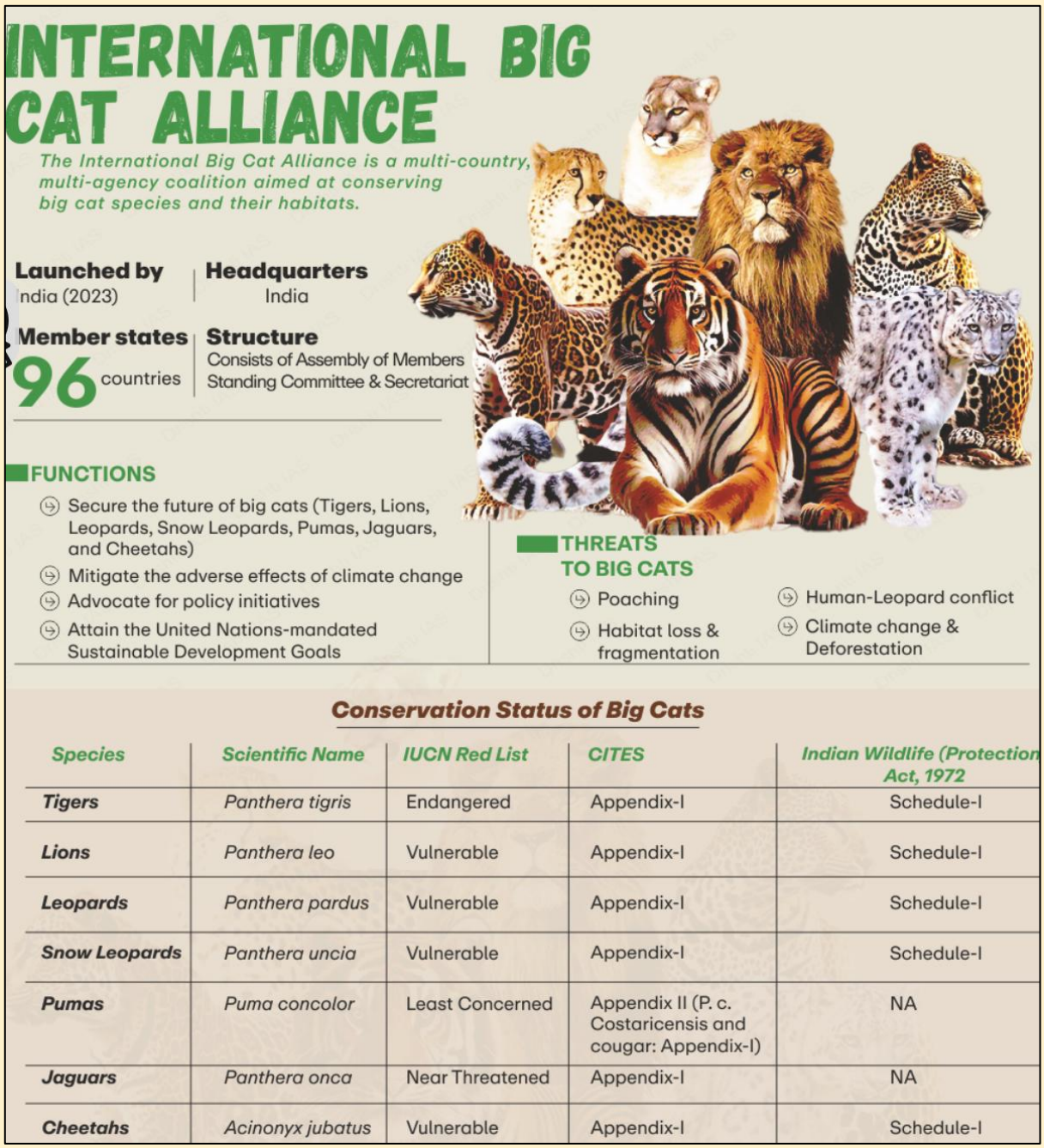
INTERNATIONAL BIG CAT ALLIANCE

India will organise the world's first international summit dedicated to the conservation of big cats in 2026, Union Finance Minister Nirmala Sitharaman announced while presenting the Union Budget 2026 in Parliament. The announcement underlines India's growing leadership in global wildlife conservation and environmental diplomacy.

Global Big Cats Summit Announcement

During her Budget speech, Sitharaman said the International Big Cat Alliance will organise the inaugural Big Cats Summit this year.

The summit is expected to bring together Heads of State, ministers, and senior officials from 95 big cat range countries. The focus will be on collective conservation strategies, habitat protection, and coordinated action to address threats such as habitat loss, poaching, and climate change.



Conservation Status of Big Cats

Species	Scientific Name	IUCN Red List	CITES	Indian Wildlife (Protection Act, 1972
Tigers	*Panthera tigris*	Endangered	Appendix-I	Schedule-I
Lions	*Panthera leo*	Vulnerable	Appendix-I	Schedule-I
Leopards	*Panthera pardus*	Vulnerable	Appendix-I	Schedule-I
Snow Leopards	*Panthera uncia*	Vulnerable	Appendix-I	Schedule-I
Pumas	*Puma concolor*	Least Concerned	Appendix II (P. c. Costaricensis and cougar: Appendix-I)	NA
Jaguars	*Panthera onca*	Near Threatened	Appendix-I	NA
Cheetahs	*Acinonyx jubatus*	Vulnerable	Appendix-I	Schedule-I

Role of the International Big Cat Alliance

The International Big Cat Alliance was launched by Prime Minister Narendra Modi on April 9, 2023. It formally came into force on January 23, 2025, and has since become a treaty-based intergovernmental organisation with international legal status.

The Alliance aims to promote cooperation among countries that host big cat species, facilitate knowledge sharing, and mobilise resources for conservation.

What Are Big Cats?

The term 'big cat' commonly refers to large members of the family Felidae, particularly those belonging to the genus Panthera. These include the tiger, lion, leopard, jaguar, and snow leopard, all of which are capable of roaring.

While puma and cheetah do not belong to Panthera, they are often included in broader classifications of big cats due to their size and ecological role. Big cats are considered flagship and umbrella species, meaning their conservation also protects entire ecosystems and numerous other species.

- The International Big Cat Alliance became operational in January 2025.
- India will host the first-ever global summit on big cats in 2026.
- Big cats are classified as flagship and keystone species.
- Members of genus Panthera are capable of roaring.

India's Conservation Legacy and Global Significance

The Indian subcontinent has historically been home to species such as the Bengal tiger, Asiatic lion, Indian leopard, snow leopard, and the Asiatic cheetah, which was declared extinct in 1952.In recent years, India has also undertaken cheetah reintroduction efforts. By hosting the Big Cats Summit, India seeks to strengthen transboundary cooperation for species such as the snow leopard in Inner Asia and tigers across South and Southeast Asia, positioning conservation as a shared global responsibility rather than a national concern.

PAATHARA/KHONI

On a fog-laden morning ahead of Sankranti, a 52-year-old farmer in Jalantara Saasanam village of Srikakulam district prepared a ritual that once defined agrarian life in Uddanam.

Marla Dillemma gathered clay, wildflowers, and freshly harvested paddy to consecrate her Paathara, a traditional underground grain storage system practised by farming communities along the Mahendratanaya River near the Andhra Pradesh–Odisha border. The ritual blends agriculture, faith, and household food security.

What is Paathara or Khoni?

Known as Khoni in Odia, the Paathara is a rectangular pit dug into the ground, lined with straw and clay, and sealed with cow dung. It is primarily used to store paddy for household consumption until the monsoon.

Historically built in front of thatched homes, Paatharas symbolised prosperity and joint family living. Every paddy-growing household once maintained one, storing enough grain for the entire year.

A Practice Shrinking with Changing Lifestyles

In Jalantara Saasanam, a village of nearly 200 households, only two Paatharas were built this year. Cement roads, concrete houses, and shrinking living spaces have pushed the tradition to the margins.

Farmers like Ms. Dillemma and Juttu Moinamma now dig pits outside cattle sheds or in relatives' yards due to lack of space. Elderly villagers, once custodians of straw-rope making and pit preparation skills, say the practice has nearly vanished in the past two decades.

Health, Taste, and Cultural Value

Paathara-stored paddy is valued for its distinct taste and perceived health benefits. Slight discolouration during storage enhances flavour, a quality not achieved through modern storage methods.

Traditionally, the size of the Paathara reflected landholding and family size. Rice from such storage was also used for rituals, including Talambraalu during weddings, believed to carry blessings of the land.

- Paathara (Khoni) is a traditional underground grain storage system used in north coastal Andhra and south Odisha.
- The system protects grain from moisture, rodents, theft, and contamination.
- Paddy stored in Paathara is meant only for consumption, not for seeds or commercial sale.
- The practice is linked to Kharif-only paddy cultivation in the Mahendratanaya canal command area.

Last Survivors and Structural Challenges

The tradition now survives in a handful of villages across Kanchili, Sompeta, and Itchapuram mandals. Limited irrigation, despite funding support from NABARD for canal improvement, has reduced paddy cultivation to the Kharif season. As bullock carts, oxen, and thatched homes disappear, farmers fear Paathara may follow. For families like Ms. Dillemma's, its survival rests with the next generation, caught between modern convenience and ancestral wisdom.

ADMINISTRATIVE SCORECARDS FOR PUBLIC SERVANTS

India's civil services were originally designed to serve a colonial, extractive state and have since faced the complex task of adapting to democratic governance, developmental responsibilities and rising citizen expectations.

- From constitutional safeguards and successive Administrative Reforms Commissions to transparency and digital governance initiatives, civil service reform has been **incremental rather than transformative**.
- The recent introduction of **"administrative scorecards" for Union Secretaries by the Cabinet Secretariat** must be viewed as part of this **long continuum of reform efforts** aimed at improving efficiency, accountability and outcome-oriented governance at the highest levels of administration.

What Are the Administrative Scorecards?

- **Performance Measurement Framework**: Union Secretaries and their departments are assessed on a **100-mark scorecard**, enabling both self-comparison over time and cross-departmental benchmarking.
- **Key Quantitative Parameters**:
  - File disposal (20 marks)
  - Output / activities (15 marks)
  - Expenditure on schemes and capital expenditure (15 marks)
  - Public grievance redressal
  - Timely completion of PMG-monitored projects
  - Timely disposal of bills by PAO and CCA
- **Discipline and Incentives**:
  - **Negative marks (up to 12)** for delayed MSME payments, excessive foreign travel, abnormal pendency
  - **Discretionary marks (5)** for exceptional performance, awarded by the Cabinet Secretary
- **Stated Rationale**: To ensure that administrative leadership is judged on **delivery and results**, reinforcing the principle that governance must produce outcomes, not explanations.\

How Scorecards Fit into Recent Civil Service Reforms

The scorecard initiative builds upon — and attempts to correct the limitations of — several **recent reform measures**:

- **Mission Karmayogi (2020)**: Introduced to shift civil services from rule-based to **role-based and competency-based governance**, focusing on continuous capacity building through digital learning platforms (iGOT).
- **PRAGATI Platform**: Enabled real-time monitoring of infrastructure projects and grievance redressal through direct Prime Ministerial review, improving inter-ministerial coordination and execution speed.
- **E-Office and Digitisation Reforms**: Adoption of electronic file systems aimed at reducing delays, enhancing transparency and enabling faster decision-making.
- **Lateral Entry at Senior Levels**: Introduced to bring domain expertise from outside government into policymaking roles, though limited in scale and subject to debate on institutional continuity.
- **Right to Information Act, 2005**: A landmark reform that transformed bureaucratic culture by making decision-making processes subject to public scrutiny.

Despite these measures, a persistent criticism has been that **performance evaluation remained subjective**, politically influenced and weakly linked to outcomes — a gap that scorecards attempt to address.

Positive Contributions of Administrative Scorecards

- **Operationalising Second ARC Recommendations**: The **Second Administrative Reforms Commission (2009)** strongly advocated performance management systems, objective assessment and outcome orientation — principles directly reflected in scorecards.
- **Reducing Subjectivity in Evaluation**: Unlike confidential reports or informal reviews, scorecards rely on **measurable indicators**, limiting arbitrary assessments.
- **Strengthening Financial and Administrative Discipline**: Penalising delayed payments, inefficiencies and avoidable expenditure reinforces fiscal responsibility and service delivery discipline.
- **Embedding Accountability at the Apex Level**: By focusing on Secretaries, the reform targets the **commanding heights of administration**, signalling seriousness of intent.

Concerns and Structural Limitations

- **Risk of Mechanical Compliance**: Bureaucracies have historically absorbed reforms into routine processes; scorecards may degenerate into a **box-ticking exercise**.
- **Metric Dominance over Meaningful Outcomes**: There is a danger that **scores overshadow substance**, where numerical performance matters more than policy quality or long-term impact.
- **Residual Executive Control**: Discretionary marks and centralised oversight may still allow political preferences to shape evaluations.
- **Incomplete Reflection of Governance Complexity**: Quantitative indicators may inadequately capture complex functions such as inter-governmental coordination, institutional reform or crisis management.

What More Needs to Be Done

- **Integrate Scorecards with Career Progression**: Performance assessments should be meaningfully linked to promotions, postings and training pathways under Mission Karmayogi.
- **Balance Quantitative Metrics with Qualitative Review**: Independent audits, peer review and outcome evaluation should complement numerical scoring.
- **Institutionalise Autonomy with Accountability**: Reform must reduce fear-driven decision-making while maintaining responsibility — a core concern highlighted across reform commissions.
- **Continuous Feedback and Refinement**: As sought by the Cabinet Secretary, iterative redesign is essential to prevent reform fatigue and ensure credibility.

Administrative scorecards represent an **evolutionary reform**, not a revolutionary one. They address a long-standing weakness in India's civil service architecture — the absence of objective, outcome-linked evaluation at senior levels.

- If implemented thoughtfully and integrated with broader reforms such as Mission Karmayogi and digital governance, they can strengthen the democratic "steel frame". If reduced to procedural compliance, they risk becoming another absorbed reform. The difference lies in political commitment and institutional follow-through.

WOMEN-LED SELF-HELP GROUPS (SHGS)

Women-led Self-Help Groups (SHGs) have emerged as one of India's most effective instruments for poverty reduction, financial inclusion and grassroots democracy.
Over the last decade, the rural economy has diversified beyond subsistence agriculture, raising aspirations among women for enterprise-led growth rather than mere income support.

- As India enters the next planning cycle (2026–31), the question is how to transition rural women from **collective micro-finance participants to independent, scalable entrepreneurs**.

Current Status: What DAY-NRLM Has Achieved

- **Scale and Reach:** Deendayal Antyodaya Yojana–National Rural Livelihoods Mission has mobilised **10 crore rural households** into **91 lakh SHGs**, federated into **5.35 lakh Village Organisations** and **33,558 Cluster-Level Federations (CLFs)**.
- **Financial Inclusion:** SHGs have leveraged over **₹11 lakh crore bank credit** with **NPAs of just ~1.7%**, far lower than conventional retail lending.
- **Income Outcomes:** The number of **Lakhpati Didis** has crossed **2 crore**, reflecting successful livelihood diversification.
- **Political and Social Capital:** SHGs have strengthened women's bargaining power, enabling States to use women collectives as delivery platforms for DBT schemes (e.g., **Ladli Laxmi Yojana – MP**, **Jeevika – Bihar**, **Kudumbashree – Kerala**).
- **Institutional Backbone:** CLFs function as sub-block institutions anchoring finance, livelihoods, training and social mobilisation.

Key Challenges Limiting the Next Leap

- **Weak Autonomy of CLFs:** Many CLFs function under administrative control of officials, diluting their original vision as **community-owned institutions**; leadership decision-making remains constrained.
- **Idle and Poorly Governed Funds:** Over **₹56,000 crore** of capitalisation support lies with community institutions, increasing risks of underutilisation and misuse in absence of strong social and statutory audits.
- **Credit Ceiling for Mature Enterprises:** SHG-bank linkage loans are often too small for enterprise expansion; most women lack **individual credit histories or CIBIL scores**, restricting access to larger loans.
- **Overdependence on Debt Financing:** Current financing is dominated by loans; there is limited access to **equity, venture capital or blended finance**, which constrains innovation and scaling.
- **Fragmented Livelihood Support:** Sub-schemes operate in silos (farm, livestock, non-farm), reducing cumulative impact despite availability of planning tools like **Village Prosperity and Resilience Plans (VPRPs)**.
- **Severe Marketing Bottlenecks:** SHG products face weak branding, poor packaging, lack of logistics and minimal access to organised retail or e-commerce markets.

Way Forward: Strategy for 2026–2031

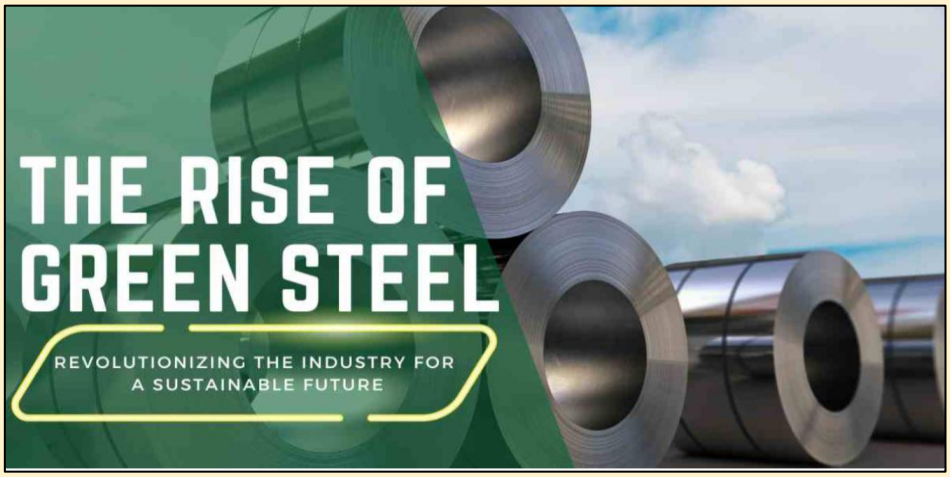
- **Reclaim CLFs as Community Institutions:** Strengthen CLFs as autonomous, professionally managed bodies on the lines of **Kudumbashree (Kerala)** and **Jeevika (Bihar)**, insulated from routine bureaucratic interference.
- **Robust Financial Governance:** Institutionalise **mandatory social audits**, statutory audits and transparent MIS for CLFs to ensure accountable use of large community funds.
- **Graduation to Individual Credit:** Generate **individual credit scores** for SHG members and position CLFs as guarantor-cum-monitoring agencies to facilitate higher-value enterprise loans.
- **Innovative Financing Models:** Move beyond micro-credit to **equity funding, blended finance and venture support**, in partnership with **SIDBI, NBFCs, fintechs and neo-banks**, tailored to rural women entrepreneurs.
- **Business Clinic Model:** Transform CLFs into **one-stop enterprise hubs** offering training, finance facilitation, compliance support, technology access and mentoring.

- **Institutionalised Convergence:** Establish a **Convergence Cell at NITI Aayog** to align NRLM with schemes of agriculture, dairy, food processing and MSMEs, reducing duplication and ensuring scale.
- **Dedicated Marketing Architecture:** Create a **National Marketing Vertical** for SHG products focusing on branding, quality certification, logistics and partnerships with private players; select CLFs can act as regional logistics hubs.
- **Professional Human Resources:** Deploy trained professionals (finance, marketing, agri-business, digital commerce) while respecting the organic growth pace of community institutions.

The next phase of rural women entrepreneurship must shift from **credit-led inclusion to enterprise-led transformation**. If CLFs are empowered as autonomous institutions, finance is diversified beyond debt, and market access is professionalised, DAY-NRLM can evolve from a poverty alleviation programme into India's largest platform for **women-led rural economic growth**, social leadership and resilient livelihoods.

GREEN STEEL & CLIMATE RESILIENCE GOALS

At **COP30 in Belém (2025)**, India committed to submitting a **revised, more ambitious Nationally Determined Contribution (NDC)**. Achieving this commitment requires **economy-wide decarbonisation**, especially in **hard-to-abate sectors**—with **steel being the most critical**.



India's steel sector:

- Produces ~**125 million tonnes/year**
- Needs to scale to **>400 million tonnes by mid-century**
- Contributes ~**12% of India's total carbon emissions**, primarily due to **coal-based blast furnace technology**

This places steel at the **centre of India's climate–growth dilemma**.

Green steel is not optional—it is a strategic necessity. Without rapid transition to **low-carbon steelmaking**, India risks:

- Lock-in of **carbon-inefficient infrastructure**
- Loss of **export competitiveness**
- Failure to meet climate commitments

Key Challenges

1. **Carbon Lock-in Risk**

- Steel investments today determine emissions for **30–40 years**
- Continued expansion of coal-based blast furnaces risks locking in **billions of dollars of high-carbon assets**

2. **High Cost & Technology Barriers**
- Low-carbon steel has **30–50% higher capital intensity**
- Technologies (hydrogen DRI, CCUS) are still:
    - Capital-heavy
    - Low-maturity
    - Scale-constrained
3. **Input Constraints**
- **Green hydrogen**: limited supply, high cost
- **Renewable energy**: insufficient dedicated capacity for steel
- **Scrap steel market**: informal, fragmented, limited availability
- **Natural gas**: limited availability as a transition fuel
4. **Policy Gaps**
- Despite:
    - **Green Steel Roadmap (Sept 2025)**
    - **Green Steel Taxonomy (Dec 2024)** – first globally
    - **National Green Hydrogen Mission**
    - **Carbon Credit Trading Scheme (CCTS)** covering **253 steel units**

Investment signals remain weak; incentives have not yet shifted capital away from coal-based routes.

Global Context & External Pressure
- **EU Carbon Border Adjustment Mechanism (CBAM)** penalises high-carbon steel imports
- Carbon prices in Europe reached **$90–100 per tonne of CO_2**, making green steel viable
- Countries unable to demonstrate low-carbon production risk:
    - Border taxes
    - Loss of premium export markets

Why It Matters
- Steel underpins:
    - Infrastructure
    - Manufacturing
    - Defence and urbanisation
- Decarbonising steel:
    - Enables India's **net-zero pathway**
    - Preserves **export competitiveness**
    - Prevents future stranded assets
- Early movers in green steel gain **first-mover advantage** globally

Way Forward
1. **Carbon Pricing & Market Signals**
- Roll out **carbon price regime early**
- Use price signals to disperse green steel costs across value chains
2. **Scale from Pilots to Commercialisation**
- Fast-track:
    - Demonstration plants
    - Near-zero emission full-scale facilities
- Mandate all **new steel capacity** to be **low or near-zero carbon**
3. **Public Procurement & Demand Creation**
- Create **domestic demand** via:
    - Public procurement of green steel
    - Infrastructure mandates
- Socialise **Green Steel Taxonomy**

4. **Infrastructure & Shared Ecosystems**

- Government-led hubs for:
  - Green hydrogen
  - Renewable energy
  - CO_2 transport and storage
- Shared infrastructure to reduce costs for MSME steel producers

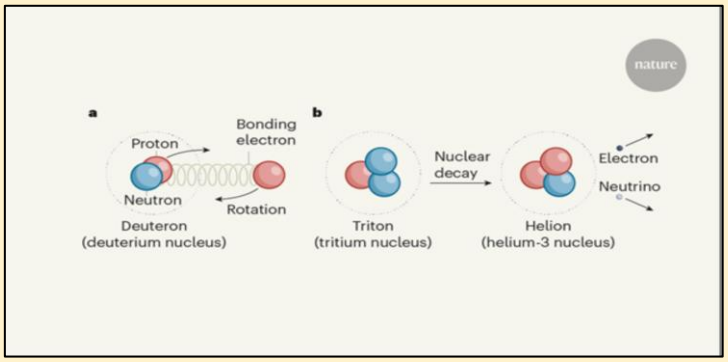
5. **Equitable Transition**

- Fiscal support for:
  - Small and medium producers
  - Workforce reskilling
- Ensure transition is **just and inclusive**

Steel is India's **next climate frontier**. What renewable energy was to India a decade ago, **green steel is today**—a test of policy credibility, industrial vision and climate leadership. By combining: **Decisive corporate action, Robust, market-aligned policy frameworks, Early investment signals,** India can decarbonise steel, safeguard growth, and shape the future of global sustainable industrialisation.

DEUTERON

Recently, a new study out of the ALICE collaboration at CERN's Large Hadron Collider (LHC) has explained how deuterons survive high-energy particle collisions.



About Deuteron:

  - **Nature:** A deuteron is a **stable isotope of hydrogen** with a nucleus containing one proton and one neutron.
- **Symbol:** It is denoted by the symbol **"^{2}H" or "D".**
- **Presence:** It is found in small amounts **in natural water and in the atmosphere of Jupiter and Saturn.**
- **Mass:** The mass of a deuteron is approximately about **twice the mass of a proton.**
  - **Charge:** A deuteron has a **net positive charge of +1,** since it contains one proton.
  - **Spin:** The deuteron has a **nuclear spin of 1,** which means that it behaves like a tiny magnet with a north pole and a south pole.
- **Magnetic moment:** The deuteron has a magnetic moment that is approximately 0.8574 nuclear magnetons, which is about **0.31 times the magnetic moment of a proton.**
- **Applications:**
  - It is used in the production of **heavy water**, which is used as a moderator in nuclear reactors.
  - It is used in the production of **deuterium**, which is used as a fuel in fusion reactors.
  - It is used in the production of **tritium**, which is used in nuclear weapons.

MAHAKALESHWAR TEMPLE

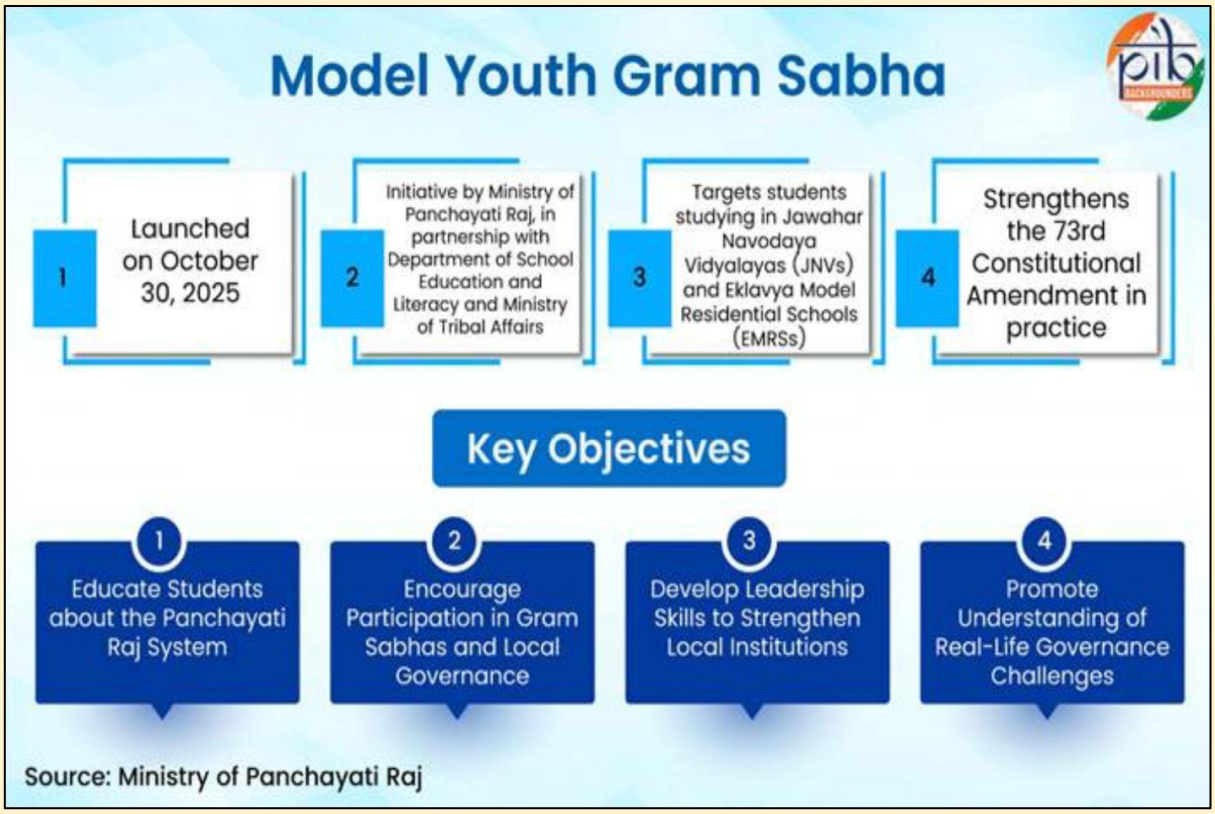
Supreme Court of India recently declined to entertain a plea against the practice of 'VIP Darshan' at the Shri Mahakaleshwar Temple in Ujjain.

About Shri Mahakaleshwar Temple:

- **Location:** It is a Hindu temple located on the banks of the River Shipra at **Ujjain in Madhya Pradesh.**
- **Significance:** It is dedicated to Lord Shiva. It is **one of the 12 Jyotirlingas in India.**
- **Uniqueness:** It is the **only Jyotirlinga that faces south (Dakshinamukhi),** a unique feature associated with Tantric traditions where Shiva is considered the 'Lord of Time and Death'.
- **History:** The history of the temple dates back to ancient times, with **references** to the temple found **in various Hindu scriptures and texts**. The temple finds mention in the **Puranas**. The renowned poet Kalidas also mentioned this temple in his creations.
- **Construction:** The current structure of the temple was built **in the 18th century by the Maratha ruler Ranoji Shinde.** However, the temple has been destroyed and rebuilt several times throughout history.
- **Architecture:** The architecture of the temple shows the **influence of Maratha, Bhumija, and Chalukya styles** of structural design.
- **Spread:** The temple complex is spread **over five levels,** one of which is underground. The Sabha Mandap (assembly hall) and Garbha Griha (sanctum sanctorum) are adorned with elaborate sculptures depicting various Hindu deities and mythological scenes.
- **Craftsmanship:** The sanctum houses the Jyotirlinga, which is the focal point of devotion and rituals. The **grand spire (shikhara), intricately carved pillars, and ornate ceilings** are proof of the exquisite craftsmanship.

MODEL YOUTH GRAMSABHA

The Ministry of Panchayati Raj recently organised a National Award Ceremony to felicitate the winners of the Model Youth Gram Sabha.



About Model Youth Gram Sabha:

- **Nature:** It is a simulated forum for **school children to participate in mock Gram Sabha sessions.**
- **Objective:** It is a pioneering initiative to **strengthen Janbhagidari and promote participatory local governance** by engaging students in simulated Gram Sabha sessions.
- **Uniqueness:** It is an initiative **based on the Model UN** – an educational simulation of the United Nations – in schools across the country.
- **Nodal ministries:** It is an initiative of the **Ministry of Panchayati Raj,** in collaboration with the **Ministry of Education and the Ministry of Tribal Affairs.**
- **Implementation:** It will be rolled out across **more than 1,000 schools nationwide,**including Jawahar Navodaya Vidyalayas, Eklavya Model Residential Schools (EMRSs), and State Government Schools.
- **Focus:** Students from **classes 9-12** will play the roles of sarpanch, ward members, and village-level officials, including village secretary, Anganwadi worker etc. They will hold mock meetings of the Gram Sabha, discuss various issues, and prepare the village budget and development plans.
- **Financial support:** The Panchayati Raj Ministry also provides a support of **Rs 20,000 to each school** for holding the mock Gram Sabha.

HOYA NAGAENSIS

Recently, a new plant species has been discovered in Nagaland and it's named as Hoya Nagaensis.

About Hoya Nagaensis:

- **Location:** It is a new plant species found in the **high-altitude forests of Nagaland.**
  - **Nature:** It is a member of the **'wax plant family'** discovered in the Kavunhou Community Reserved Forest in Phek district.
  - **Genus:** It belongs to the **Hoya genus**, a group known for its ornamental value.
  - **Uniqueness:** It is currently **known from only a single location**, making it highly vulnerable.
  - **Features:** The plant displays unique leaf shapes and floral features. It produces **distinctive star-shaped flowers and exudes milk-like latex,** a characteristic of many species in the Apocynaceae or milkweed family.
  - **Habitat:** It was found growing in a **temperate forest ecosystem** that remains largely unexplored by science.

- **Threats:** Major threats to this plant include **shifting cultivation and forest disturbance.**
- **Ecological significance:** It highlights the importance of **community-protected forests** of Nagaland **as a vital refuge for rare and endemic plants**. It underscores the Eastern Himalaya as a reservoir of undiscovered plant diversity.
- **Conservation status:** It is classified as **'Critically Endangered'** (provisional classification) as per the IUCN Red List.

EXERCISE 'KHANJAR'

The annual India–Kyrgyzstan joint special forces exercise 'Khanjar' commenced on February 4 at Missamari in Assam, reinforcing defence cooperation between the two countries. The bilateral drill underscores the shared commitment of India and Kyrgyzstan towards enhancing counter-terrorism capabilities and promoting regional peace and stability.

Participating Forces And Duration

The exercise will be conducted from February 4 to February 17 and involves a 20-member contingent from the Indian Army's Parachute Regiment (Special Forces) and an equal-strength team from the ILBRIS Special Forces Brigade of Kyrgyzstan.

The training is being held at Missamari, a key military station in Assam, known for hosting joint exercises and operational readiness activities.

Focus On Counter-Terrorism And Special Operations

According to the Ministry of Defence, the primary aim of Exercise Khanjar is to exchange best practices and operational experiences in counter-terrorism and special forces missions.

The training focuses on urban and mountainous terrain, reflecting real-world operational environments. Key skill areas include sniping, complex building intervention, and advanced mountain craft, enhancing the tactical proficiency of participating troops.

Enhancing Interoperability Under UN Mandate

Senior defence officials stated that the exercise is designed to improve interoperability between the special forces of both nations.

Emphasis is being placed on joint operations in urban warfare and counter-terrorism scenarios under a United Nations mandate. This reflects the growing alignment between India and Kyrgyzstan on global security challenges, including terrorism, extremism, and transnational threats

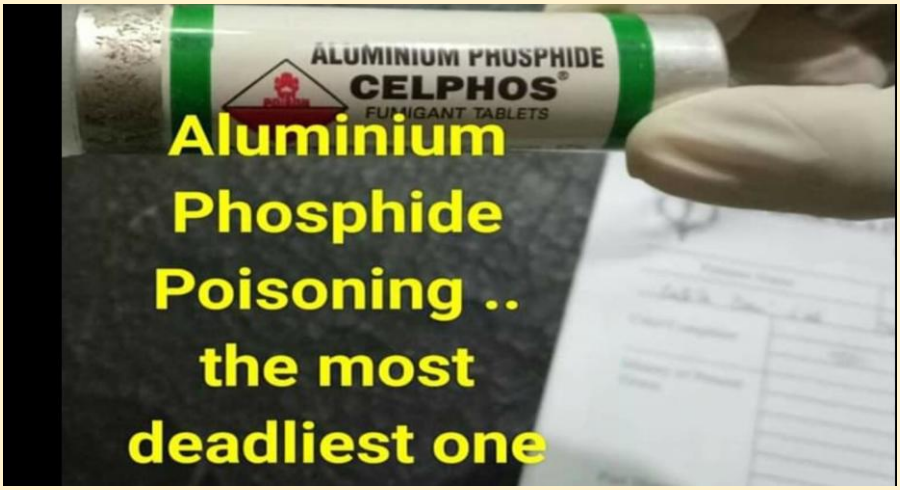
India–Kyrgyzstan relations have expanded steadily in recent years, particularly in defence and security cooperation.

Key areas include training of Kyrgyz military personnel at Indian defence institutions, regular joint exercises, exchange programmes, and collaborative research at the Kyrgyz–India Mountain Bio Medical Research Centre in Bishkek. Exercise Khanjar continues to serve as a cornerstone of this evolving strategic partnership.

CELPHOS

Doctors at the Postgraduate Institute of Medical Education and Research (PGIMER) have reported a major global breakthrough in the treatment of aluminium phosphide poisoning, commonly known as Celphos.

The innovation offers a new, affordable, and life-saving approach to managing one of the most lethal pesticide poisonings prevalent in India, particularly in rural and agricultural regions.



Breakthrough Clinical Study at PGIMER

The research, conducted by the Department of Internal Medicine at PGIMER, is the first clinical study worldwide to demonstrate the effectiveness of intravenous lipid emulsion therapy in aluminium phosphide poisoning.

The findings have been published in the internationally reputed journal "European Review of Medical and Pharmacological Sciences", bringing global recognition to the work. The study was carried out under the guidance of Dr Sanjay Jain, Dean (Academics) and Head of Internal Medicine at PGIMER.

Improved Outcomes With Lipid Emulsion Therapy

The randomised clinical study showed that patients receiving intravenous lipid emulsion in addition to standard medical care had significantly lower mortality rates.

They also experienced faster correction of severe metabolic acidosis, improved haemodynamic stability, and better recovery even in cases presenting with shock and cardiac complications.

Early administration of the therapy was found to substantially alter the otherwise fatal clinical course of aluminium phosphide poisoning.

Affordable Solution for Rural Healthcare

A key advantage of intravenous lipid emulsion therapy is its practicality. The treatment is inexpensive, widely available, and already stocked in most hospitals, including district and peripheral healthcare facilities.

This makes it particularly valuable for rural and remote areas, where the burden of Celphos poisoning is highest and access to advanced critical care infrastructure is limited.

- Aluminium phosphide is commonly known as Celphos.
- It is widely used as a grain preservative in agriculture.
- Intravenous lipid emulsion is now shown to reduce mortality.
- Punjab, Haryana, and Uttar Pradesh report high poisoning incidence.

Public Health Significance and Research Impact

Aluminium phosphide poisoning remains a serious public health challenge in several Indian states due to its widespread agricultural use and extremely high fatality rates.

The PGIMER-led study, funded by the institute's Medical Education and Research Cell, underscores the importance of locally relevant, evidence-based research. By identifying an effective and accessible treatment, the breakthrough has the potential to save thousands of lives and significantly strengthen emergency care outcomes across India.

DUMPSITE REMEDIATION ACCELERATOR PROGRAMME (DRAP)

India's urban cleanliness journey, strengthened by a decade of progress under the Swachh Bharat Mission, has entered a decisive new phase focused on eliminating legacy waste dumpsites. These long-standing waste accumulations pose serious environmental and public health risks.

To accelerate their removal, the Government of India launched the Dumpsite Remediation Accelerator Programme (DRAP) in November 2025, with the goal of achieving "Lakshya: Zero Dumpsites" by October 2026.

Legacy Dumpsites and Environmental Concerns

A dumpsite refers to land used by Urban Local Bodies for disposing municipal solid waste, often accumulated over decades through unscientific methods. Such sites contaminate soil and groundwater, degrade air quality, emit methane, and pose fire and health hazards. Across India, around 2,479 legacy dumpsites have been identified, collectively holding nearly 25 crore metric tonnes of waste spread over about 15,000 acres.

Scale of the Challenge and Current Progress

India currently generates nearly 1.62 lakh tonnes of municipal solid waste daily, with projections rising sharply by 2030 and 2050. Without remediation, emissions from this sector could reach 41.09 million tonnes of CO_2-equivalent by 2030.

At present, remediation work is underway at 1,428 dumpsites, with over 62% of legacy waste already processed. In 2025 alone, 459 dumpsites across 438 cities achieved complete remediation.

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Dumpsite Remediation Accelerator Programme (DRAP)

Under DRAP, 214 high-impact dumpsites across 30 States and UTs have been prioritised, as they account for nearly 80% of the remaining legacy waste, about 8.6 crore metric tonnes.

The programme follows a dual strategy of removing existing dumpsites and preventing new ones by ensuring scientific processing of fresh waste. Land reclaimed through remediation is earmarked for solid waste management infrastructure or green cover development.

Important Facts for Exams

- DRAP was launched in November 2025 with a target of Zero Dumpsites by October 2026.
- India has identified about 2,479 legacy dumpsites containing ~25 crore metric tonnes of waste.
- High-impact dumpsites under DRAP account for nearly 80% of remaining legacy waste.
- Biomining is the key technology used for legacy waste remediation.

Framework, Biomining, and Way Forward

DRAP is anchored in the 5P framework of SBM–Urban 2.0: Political Leadership, Public Finance, Partnerships, People's Participation, and Project Management.

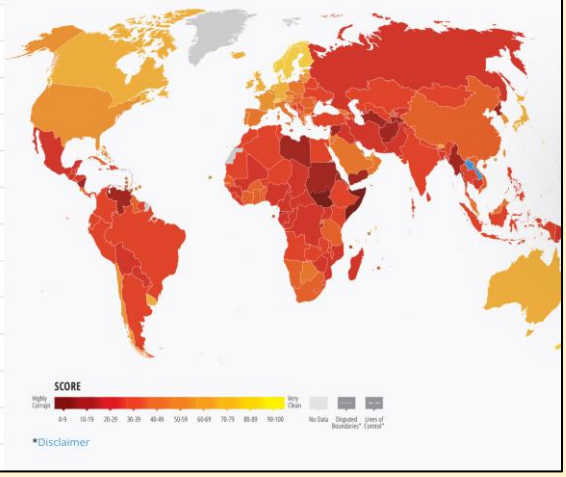
Legacy waste is treated through biomining, where waste is stabilised, segregated, and channelled into reuse pathways such as road construction, waste-to-energy, recycling, and composting, with only non-reusable rejects sent to scientific landfills.

Strengthened processing infrastructure under SBM–Urban 2.0 and the Mission Zero Dumpsites vision is expected to support sustainable urban growth, reduce emissions, and align India's cities with long-term environmental and development goals.

CORRUPTION PERCEPTION INDEX

India has been ranked 91st out of 182 countries and territories on the Corruption Perceptions Index for 2025, released recently.

Score	Country	Rank
89	Denmark	1
88	Finland	2
84	Singapore	3
81	New Zealand	4
81	Norway	4
80	Sweden	6
80	Switzerland	6
78	Luxembourg	8
78	Netherlands	8
77	Germany	10
77	Iceland	10
76	Australia	12
76	Estonia	12
76	Hong Kong	12



About Corruption Perceptions Index:

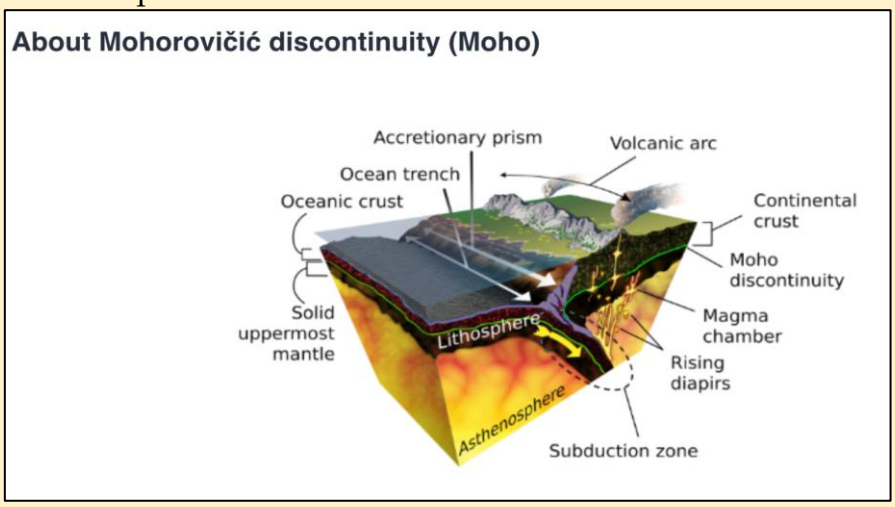
- **Nature:** It is the **most widely used global corruption ranking** in the world.
- **Objective:** It measures **how corrupt each country's public sector is perceived to** be, according to experts and business people.
- **Publishing agency:** The index has been published by **Transparency International**, a Berlin-based non-governmental organisation (NGO).
- **Frequency:** It has been published **annually since its inception in 1995.**
- **Methodology used:** It ranks countries "by their perceived levels of public sector corruption, as determined by **expert assessments and opinion surveys**."

- **Scale:** It uses a scale of **zero to 100, where "zero" is highly corrupt and "100" is very clean.** The score for each country is derived from a minimum of three data sources, selected from 13 distinct corruption surveys and assessments.

- **Sources:** These sources are gathered by a range of reputed organisations, such as the **World Bank and the World Economic Forum.**
- **Key highlights of Corruption Perceptions Index (CPI) 2025:**
  - **Least Corrupt nations: Denmark**, Finland and Singapore.
  - **Most Corrupt nations: South Sudan**, Somalia and Venezuela.
- Performance of **India:** Its rank improved **from 96 (2024) to 91 (2025).**

CONTINENTAL MANTLE EARTHQUAKES

Recently the Stanford researchers have produced the first global map of a rare type of earthquake i. e Continental mantle earthquakes.

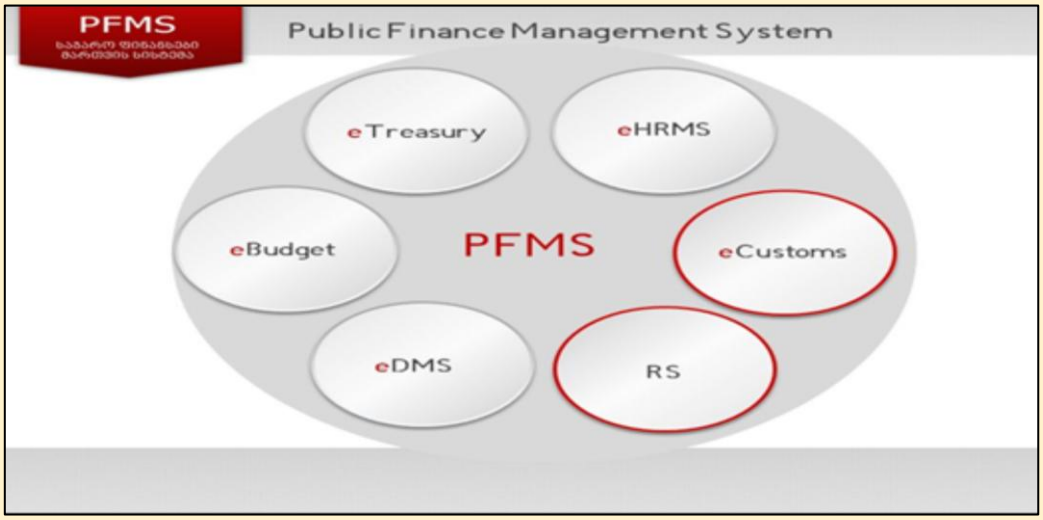


About Continental Mantle Earthquakes:

- **Nature:** These are seismic events which **originate in the mantle beneath continents.**
  - **Origin:** They occur in the **mantle lithosphere**, significantly deeper than standard crustal earthquakes.
  - **Identification method:** Scientists distinguish them **using a waveform-based method** that compares Sn waves (which travel through the mantle) and Lg waves (which travel through the crust). A high Sn/Lg ratio indicates a mantle origin.
  - **Global distribution:** While rare (only 459 confirmed globally since 1990), they are regionally clustered.
  - **Major clusters lie Beneath the Himalayas** (Southern Asia) **and the Bering Strait** (between Asia and North America), other locations include Italy, Tibet, the Caucasus, East Africa, Alaska, and Idaho.
  - **Difference with common earthquakes:** Unlike most earthquakes, which originate in the Earth's cold, brittle crust at depths of around 10 to 29 kilometres, mantle earthquakes often **occur more than 80 km below the Mohorovičić discontinuity** (boundary between the crust and the mantle).
  - **Impact:** Due to their extreme depth, they typically **cause minimal shaking or danger** at the Earth's surface.
- **New observation:** Their existence proves the mantle is not purely ductile (plastic-like) but can host brittle-like failures, **challenging the view that seismicity is confined to the crust.**
- **Significance:** The new map will help scientists learn more about **the mechanics of mantle earthquakes.**

PUBLIC FINANCIAL MANAGEMENT SYSTEM (PFMS)

Recently, the Minister of State for finance informed the Rajya Sabha about the Public Financial Management System (PFMS)



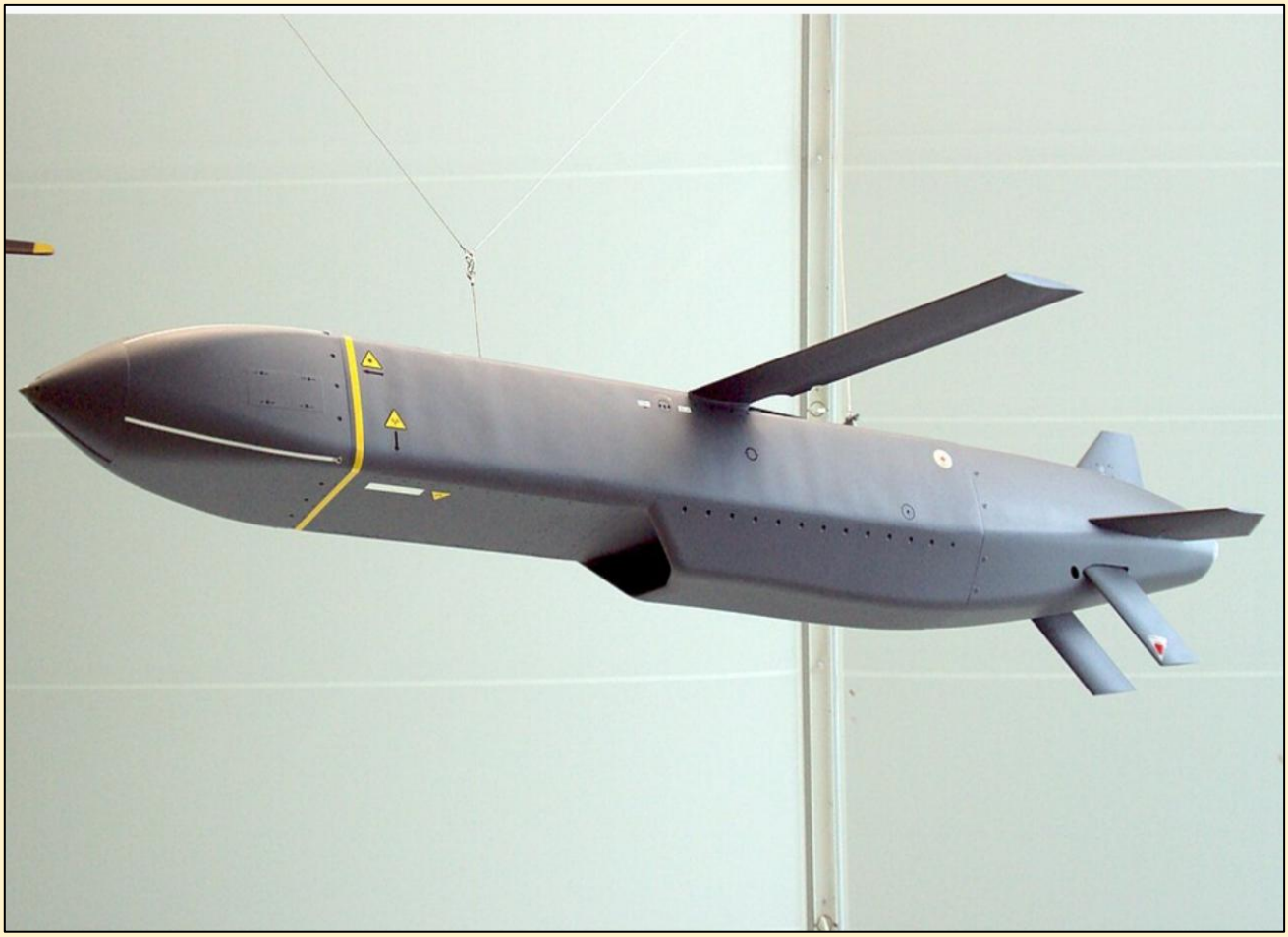
About Public Financial Management System (PFMS):

- **Nature:** It is a **Centralized Transaction System & Platform, providing end to end financial management services to all stakeholders**. It is a web-based online transaction system for fund management and e-payment to implementing agencies and other beneficiaries.
- **Origin:** It was launched **in 2009 as a Central Sector Scheme** of the Planning Commission (initially called the Central Plan Schemes Monitoring System or CPSMS).

- **Objective:** It aims to facilitate a sound Public Financial Management System for Government of India by **establishing an efficient fund flow system as well as a payment cum accounting network.**
- **Implementation:** It is developed and implemented by the **Controller General of Accounts (CGA), Department of Expenditure, Ministry of Finance**, Government of India.
- **Coverage:** It includes **all Central Sector and Centrally Sponsored Schemes** (CSS), as well as other expenditures like Finance Commission Grants.
- **Integration:** It is linked with the **Core Banking System (CBS) of over 300 banks**(public, private, RRBs, and cooperative) and the National Payments Corporation of India (NPCI) for Aadhaar-linked payments.
- **Tracking of funds:** It tracks funds **released under all Plan schemes of Government of India,** and real time reporting of expenditure at all levels of Programme implementation. The government has mandated PFMS as a single platform for payment, accounting & reconciliation of government transactions and DBT.
- **Cash management modules:** It has been introduced on PFMS **for better fund management like Single Nodal Agency (SNA), Treasury Single Account (TSA),**Central Nodal Agency (CNA) and Single Nodal Agency Samyochit Pranali Ekikrit Shighra Hastantaran (SNA SPARSH).
- **Grievance Redressal System:** PFMS has introduced the **Customer Relationship Management (CRM) system,** to strengthen the grievance redressal mechanism for PFMS users/ beneficiaries.
- **Transparency & Accountability:** It has **reduced manual intervention** and has provided a clear audit trail of every rupee spent.
- **Decision Support System (DSS):** It has provided reliable data to ministries **for better budget planning** and evidence-based policy analysis.

SCALP MISSILE

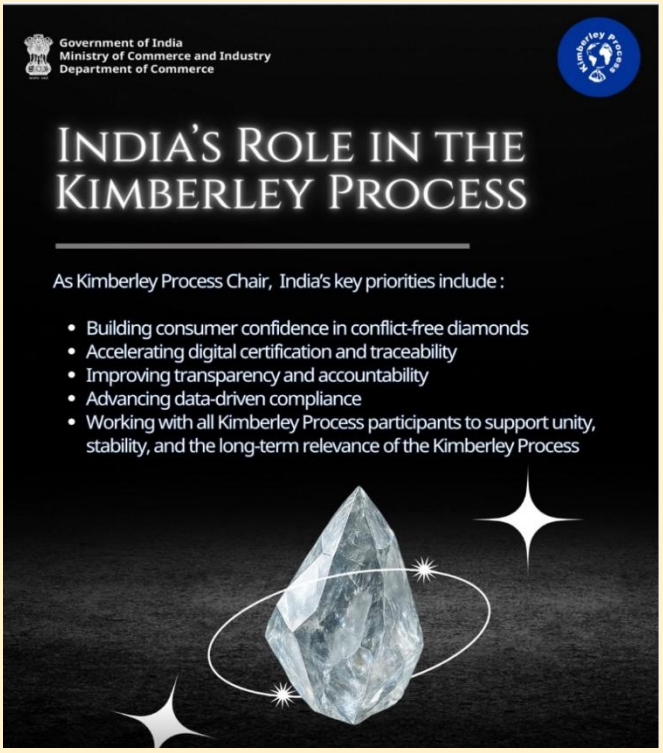
India and France are in discussions to finalise a major deal for the procurement of SCALP cruise missiles, following their successful use during Operation Sindoor last year.



About SCALP Missile:

- **Nature:** The SCALP missile is a **long-range, air-launched cruise missile.**
- **Other names:** It is also known as **Storm Shadow.**
- **Full form:** Its full form is **Système de Croisière Autonome à Longue Portée.**
- **Development:** It was developed together **by France and the United Kingdom.**
- **Deployment:** It is in service with **multiple NATO and allied air forces.**
- **Structure:** The missile has a launch **weight of around 1,300 kg** and a **length of approximately 5.10 m.**
- **Range:** It is powered by turbojet engines and has a range of **250 km.**
- **Warhead:** The missile has a **tandem warhead configuration**, comprising a shaped charge for initial penetration and a secondary high-explosive charge for enhanced lethality.
- **Stealth design:** Its stealth design and **advanced navigation system** (INS, GPS, and terrain referencing) allow it to fly low, **evade detection,** and strike deep into enemy territory.
- **Precision strike:** On approaching the target, **its onboard infrared seeker matches the target image with the stored picture** to ensure a precision strike and minimal collateral damage.
- **Operational capability:** Capable of **night and all-weather operations**, SCALP is particularly effective for penetrating hardened bunkers and ammunition stores.

KIMBERLEY PROCESS (KP)



India has assumed the chair of the Kimberley Process (KP) for the year 2026.

About Kimberley Process:

- **Nature:** It is a **coalition of governments, civil society and the diamond industry**, which regulates the international trade in rough diamonds.
- **Establishment:** It was launched **in 2003 following UN General Assembly Resolution 55/56.**
- **Objective:** It aims to **eliminate the trade in so-called conflict diamonds.**
- **Definition of conflict diamonds:** These are defined by the relevant United Nations Security Council resolution (UNSC resolution 1459) as **"rough diamonds used by rebel movements or their allies to finance conflict** aimed at undermining legitimate governments".
- **Eligibility:** Participants in the scheme are required to:
  - **Satisfy 'minimum requirements'** and establish national legislation, institutions and import/export controls;
  - **Commit to transparent practices** and to the exchange of critical statistical data;
  - **Trade only with other participants** in the Scheme;
  - **Certify shipments** as conflict-free.
- **Participants:** Currently it has **60 participants, representing 86 countries** (with the EU as a single participant) which account for more than 99% of the global rough diamond production and trade.
- **Meeting:** The KP meets **twice a year** at the Intersessional and Plenary meetings. It is chaired by a participating country on an annual, rotating basis.
- **Consensus based:** As a consensus-based body, the KP relies on the **constructive engagement from all participants** of the tripartite structure.

About Kimberley Process Certification Scheme (KPCS):

- **Nature:** It is the mechanism the KP uses to **prevent the trade of conflict diamonds**.
- **Objective:** Under this scheme, the **Government implements safeguards on shipments of rough diamonds** and certifies the diamond as conflict-free.
- **Certification:** According to this Scheme, each rough diamond shipment must be accompanied by the Kimberley Process certificate and transported in a tamper-resistant container. The KP certificate **states the authenticity of the rough diamond.**
- **Role of India: Since 2003,** India has been **actively participating** in the KPCS process.
- **Nodal department:** The **Department of Commerce** is the nodal Department. Gem & Jewellery Export Promotion Council (GJEPC) is designated as the KPCS Importing and Exporting Authority in India.
- **Strategic importance:** India is the **world's leading hub for cutting and polishing diamonds,** processing nearly 90% of the world's diamonds.

MANGROVE CLAM

Recently, the ICAR–Central Marine Fisheries Research Institute (CMFRI) has successfully achieved captive breeding of the mangrove clam (Geloina erosa).

About Mangrove Clam:

- **Nature:** It is a **burrowing bivalve inhabiting organic-rich muddy substrates** in intertidal mangrove ecosystems.
- **Other names:** Mangrove clams, commonly known as **mud clams**, are locally called **'Kandal Kakka'** in northern Kerala.
- **Scientific Name:** Its scientific name is **Geloina erosa** (also referred to as Polymesoda erosa).
- **Habitat:** They are found in **muddy, brackish, and even nearly freshwaterregions** within mangrove swamps.

- **Distribution:** These are widely distributed in the **Indo-Pacific region.**

- **Tolerant:** This species displays remarkable tolerance, enabling them to **thrive across a broad spectrum of salinity levels.**
  - **Life cycle:** The life cycle of the clam consists of **four distinct phases:** larval stage, spat, juvenile and adult clam.
  - **Feeding behaviour:** It is a **filter-feeding species**, primarily active during low-tide immersion stages characterized by frequent inundation.

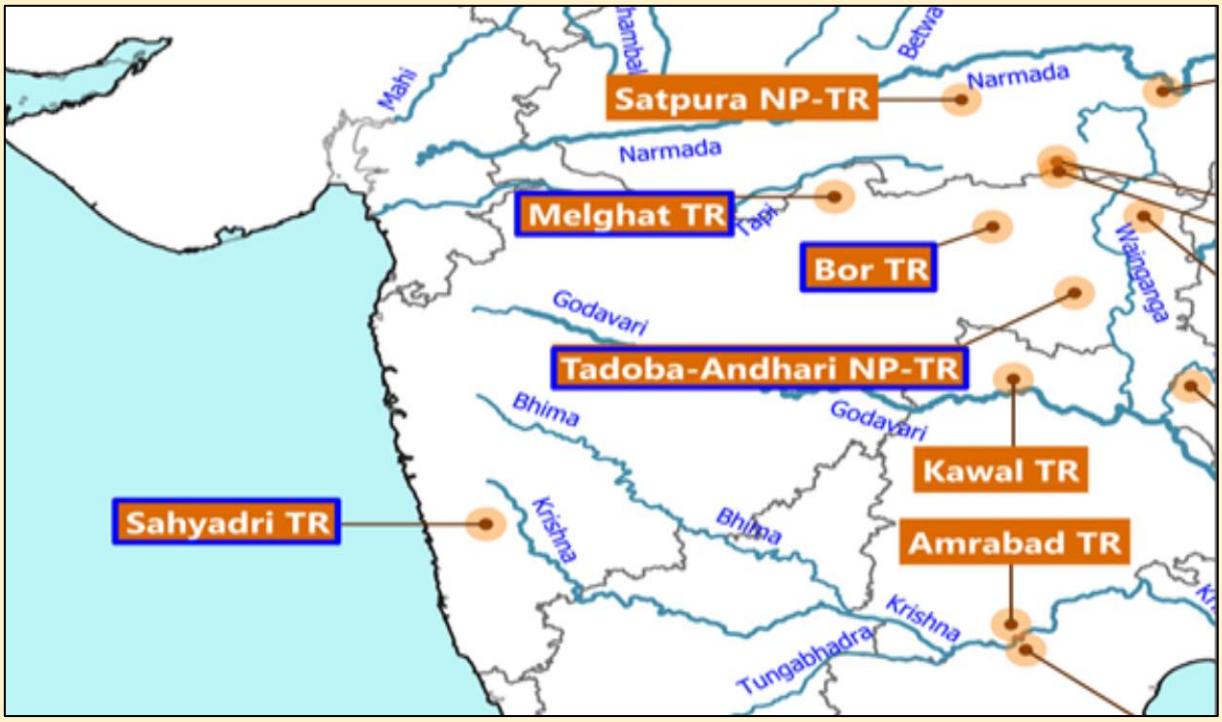
- **Ecological role:** It plays a crucial ecological role by **recycling nutrients, stabilising sediments and strengthening mangrove ecosystems.**
  - **Significance:** It provides **food security and livelihoods** in coastal regions.

- **Threats:** In India, particularly along the east coast and in island regions, wild stocks have been steadily declining due to **indiscriminate harvesting, habitat degradation, pollution and coastal development.**

- **Conservation applications:**
  - **Mangrove Ranching:** Releasing **hatchery-produced seeds into degraded mangrove areas** to restore natural populations.
  - **Estuarine Aquaculture:** Enabling environment-friendly farming **that requires minimal external inputs.**

SAHYADRI TIGER RESERVE

In a significant boost to tiger conservation in western Maharashtra, a third tigress was released into the wild at the Sahyadri Tiger Reserve (STR) recently.



About Sahyadri Tiger Reserve (STR):

- **Location:** It is located in the Sahyadri Ranges of the **Western Ghats in Maharashtra**. It is the northernmost tiger habitat in the Western Ghats.
- **Recognition:** It is the first tiger reserve of Western Maharashtra and the **fourth tiger reserve of the State.**
- **Spread:** It spans **four districts of Satara, Sangli, Kolhapur, and Ratnagiri.** It is spread over two protected areas of Koyana Sanctuary (KWLS) and Chandoli National Park.

- **Rivers:** The central portion of STR is occupied by the "Shivsagar" reservoir of the **Koyana River** and the "Vasant Sagar" reservoir of the **Warana River.**
- **Connectivity:** It is linked to **Radhanagari Wildlife Sanctuary (north) and Kali Tiger Reserve in Karnataka (south)** via the Sahyadri-Konkan corridor.
- **Terrain:** The habitat of Sahyadri is composed of **woodlands, grasslands, and plateaus,** the latter **locally referred to as "Sadaa",** which are lateritic in nature with considerable habitat value.
- **Vegetation:** The forest cover here is that of **moist evergreen, semi-evergreen, moist, and dry deciduous vegetation.** It is the only place where climax and near-climax vegetation are plentiful and prospects of adverse anthropogenic influence in the future are minimal.
- **Flora:** Dense tree cover includes species such as **teak, bamboo, Indian laurel, and jamun.** Medicinal plants like **Asparagus racemosus and Aegle marmelos** grow abundantly. Unique Western Ghats endemics, including rare orchids and shrubs, flourish in the reserve's humid microclimates.
- **Fauna:** It is home to the endangered species of top carnivores such as **Tiger, Wild dog, and Leopard.** The herbivores include **Gaur, Sambar, Four Horned Antelope, Mouse Deer, and Giant Squirrel.** The habitat also supports hornbills, and many other endemic birds.

KONDAVEEDU FORT

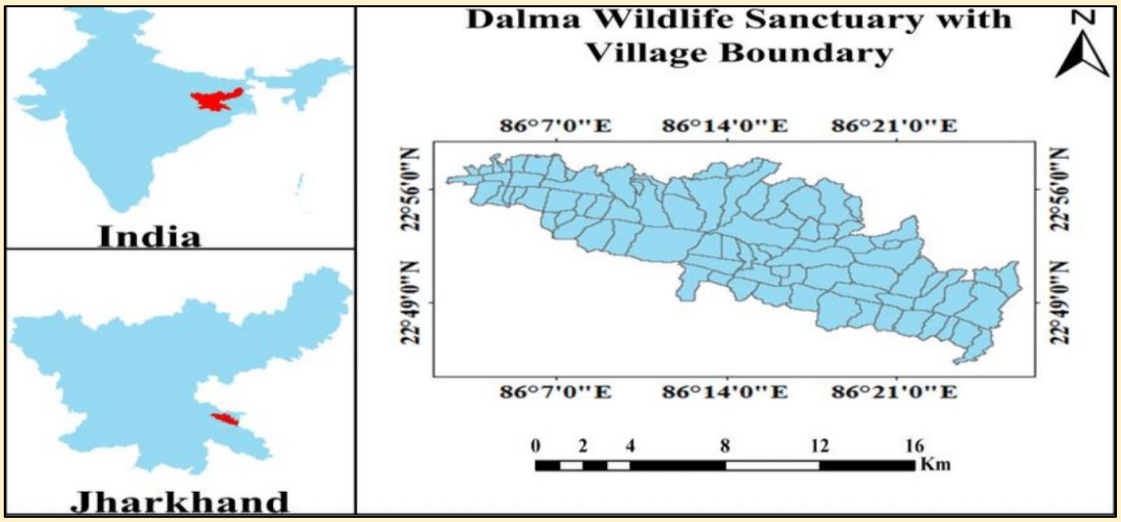
The Union minister of state recently announced plans for the comprehensive development of the historic Kondaveedu Fort.

About Kondaveedu Fort:

- **Location:** Kondaveedu Fort is a historical fortification located at Kondaveedu village in the **Guntur district of Andhra Pradesh.**
- **Other names:** It is also known as **Kondavid Fort.**
    - **Height:** It is spread across a range of hills at **around 1,050 feet elevation.**
- **Significance:** It is the **largest hill fort in** present **Andhra Pradesh.**
    - **Construction:** It was constructed during the time of the **Telugu Chodas**, strengthened by the **Kakatiyas** and occupied by Prolaya Vema Reddy, who shifted his capital from Addanki to Kondaveedu in 1323 AD.
    - **Later rulers:** Later it was taken over by the **Gajpathis of Orissa** and ravaged by the Bahmani Sultans in 1458. The fort later came under the control of the **Vijayanagara Empire, the Golconda Sultanate, the Mughals**, the French, and the British.
    - **Related personalities:** The **great Telugu poet Srinatha** was associated with the Reddy court and praised the fort in his writings.
- **Architecture:** The architecture displays a **blend of Hindu and Islamic styles.**
- **Building materials:** It was mainly constructed with **granite stones and lime mortar.**
- **Notable features:** It features massive granite fortifications, 23 bastions connected by **defensive walls,** and two main entrances called **Kolepalli Darwaza and Nadella Darwaza.**
- **Engineering marvels:** The fort is renowned for its **advanced water conservation systems,** utilizing natural depressions and three main reservoirs: Mutyalamma, Puttalamma, and Vedulla cheruvus.
- **Cultural artifacts: Ruins of temples, pillared halls, and a mosque** are located within the premises. Recent archaeological findings include **Buddhist stupa remains dating** to the 1st or 2nd century CE.

DALMA WILDLIFE SANCTUARY

The Jharkhand tourism minister recently launched a jungle safari and laid the foundation for 30 eco-cottages at Dalma Wildlife Sanctuary in East Singhbhum.



About Dalma Wildlife Sanctuary:

- **Location:** It is located near Jamshedpur, in the **East Singhbhum district of Jharkhand.** It is situated around the Dalma Hills on the Chottanagpur Plateau.
- **Nomenclature:** The Sanctuary gets its name from the **"Dalma mai", a local goddess** who is revered and worshipped by the local people and the people of adjoining villages of Dalma.

- **Establishment:** It was inaugurated in 1975 and **officially notified in 1976.**
  - **Terrain:** The terrain here is **hilly and rocky, with dense forests** and grasslands.
  - **Rivers:** The entire forest of Dalma Sanctuary falls in the catchment of the **Subarnarekha River and Dimna Lake** of Jamshedpur.
- **Waterfalls:** It features two prominent waterfalls, **Sitaguldi and Dassam.**
- **Temple:** A temple **dedicated to Lord Shiva**, known as the Dalma Temple, is inside the cover.
- **Elephant corridor:** It is a vital **link in the traditional migration route to West Bengal** (Purulia district) during August–September, with herds returning by January.
- **Vegetation:** The forests of Dalma come under the category **Dry peninsular Sal and Northern dry mixed deciduous forest.** Most of the Dalma forests shed leaves in the summer and attain their full bloom at the onset of monsoon.
- **Flora:** Medicinal plants like **Ananatmula, Satawari, Sarpgandha,** etc. are abundant in the sanctuary. Various types of trees, climbers, herbs, shrubs, and orchids are found here.
- **Fauna:** Besides elephants, the sanctuary has a considerable population of other wildlife like **barking deer, wild boar, giant squirrel, porcupine, pangolin, sloth bear,** etc. Commonly seen birds in the sanctuary are falcons, golden orioles, Indian tree pies, paradise fly catchers, grey hornbills, Indian peafowl, etc.

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