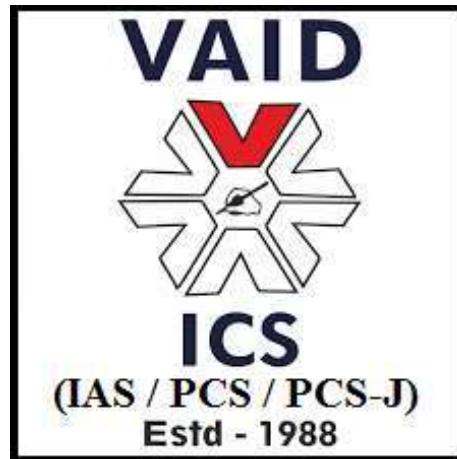


# VAID ICS LUCKNOW



## CURRENT AFFAIRS MAGAZINE

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## Jan Vishwas 2.0

**Why in news ?** The Jan Vishwas (Amendment of Provisions) Bill, 2025, introduced in the Lok Sabha last week, seeks to **amend 16 Central Acts** in order to **decriminalise and rationalise certain offences and penalties**.

- This is the **second Jan Vishwas legislation** by the Modi government.
  - The first (2023) amended **183 provisions in 42 Central Acts** administered by **19 ministries/departments**.
- Aim: To promote **trust-based governance, ease of doing business**, and reduce unnecessary criminal penalties.

### Why was the Bill needed?

According to the **Vidhi Centre for Legal Policy**:

- India has **882 Central laws**, of which **370 contain criminal provisions**.
- Together, they create **7,305 offences**.
- Over 75% of these laws regulate areas **beyond core criminal justice** (e.g., environment, taxation, financial institutions, municipal governance).
- Over-criminalisation leads to:
  - Burden on judiciary → **3.6 crore pending cases in India** (23% pending for more than 10 years).
  - Fear and harassment for entrepreneurs and businesses.
  - Hindrance to **growth, job creation, and GDP**.

### What does the 2025 Bill propose?

Amends **355 provisions**:

- **288 provisions decriminalised** (technical/minor offences).
- **67 provisions rationalised** (penalties simplified).

Covers **16 Central Acts** administered by **10 ministries/departments**, including:

- Reserve Bank of India Act, 1934
- Drugs and Cosmetics Act, 1940
- Road Transport Corporation Act, 1950
- Tea Act, 1953
- Coir Industry Act, 1953
- Handlooms (Reservation of Articles for Production) Act, 1985
- Delhi Municipal Corporation Act, 1957
- Apprentices Act, 1961
- Motor Vehicles Act, 1988
- New Delhi Municipal Council Act, 1994

- Electricity Act, 2003, etc.

### Key Features of the Bill:

#### Warning & Improvement Notices:

- For first-time offenders in 10 Acts (e.g., Motor Vehicles Act, Apprentices Act).
- Example: Instead of a fine under the **Legal Metrology Act, 2009**, offenders will be first asked to correct the error within a specified period.

#### Decriminalisation:

- Removes imprisonment clauses for **minor, technical, and procedural offences**.
- Replaces them with **monetary penalties or warnings**.
- Penalties now range from Rs 10,000 to Rs 10 lakh.

#### Harsher Penalties for Repeat Offences:

- Automatic **10% increase in penalties every three years**.
- Intended to ensure **deterrence without legislative delay**.

#### Significance:

- Promotes a **more business-friendly environment**.
- Reduces **fear of imprisonment** for procedural lapses.
- Helps in **reducing judicial backlog**.
- Simplifies **legal compliance** for industries, entrepreneurs, and citizens.
- Aligns with the government's vision of **ease of living and ease of doing business**.

## FOTD System

**Why in News?** Modern warfare has become highly precise, so **deception techniques (decoys)** are now vital to protect aircraft, tanks, and warships.

- India reportedly used the **X-Guard Fibre-Optic Towed Decoy (FOTD) system** on Rafale jets during **Operation Sindoor**, confusing Pakistan's J-10C fighters and their long-range missiles.
- The Indian Navy (e.g., **INS Karanj**) also employs torpedo decoy systems, while the Indian Army recently sought tank decoys to counter drones and missiles.

#### Significance of FOTD:

- **How it works:** A lightweight (30 kg), reusable system that trails ~100m behind the aircraft, mimicking its radar and electronic signature.

#### Capabilities:

- Replicates the aircraft's radar cross-section (RCS), velocity, and jamming signals.
- Integrates with Rafale's **SPECTRA EW suite**, creating a multi-layered shield.

- Misleads both human operators and advanced tracking systems.

#### Impact:

- Protects expensive platforms like Rafale jets.
- Wastes enemy missiles and creates confusion.
- Enhances survivability in contested airspaces.

#### Applications in other Nations:

##### Europe:

- *Leonardo's BriteCloud* (used on Eurofighter Typhoons, Gripen-Es, and some F-16s).

##### U.S.:

- *Raytheon/BAE AN/ALE-50/55* towed decoys (used on F/A-18E/F Super Hornets).
- *Nulka decoy* for warships – an active, self-propelled decoy that misleads radar-guided missiles.

##### Ukraine:

- Uses **wooden and 3D-printed decoys** of artillery, radars, and missile systems to trick Russian drones and missiles.

##### Russia & China:

- *Inflatech decoys* simulate tanks, artillery, or missile batteries with radar/thermal signatures.
- China invests in camouflage and deception systems for both ground and naval forces.

##### U.S. & NATO:

- Also experiment with **drone-mounted decoys** to spoof radar and exhaust enemy missile stocks.

#### What is Deception technology?

- Deception technology is a strategy to attract cyber criminals away from an enterprise's true assets and divert them to a decoy or trap. The decoy mimics legitimate servers, applications, and data so that the criminal is tricked into believing that they have infiltrated and gained access to the enterprise's most important assets when in reality they have not.
- The strategy is employed to minimize damage and protect an organization's true assets.
- Deception technology is usually not a primary **cybersecurity** strategy that organizations adopt. The goal of any security posture is protection against all unauthorized access, and deception technology can be a useful technique to have in place once a suspected breach has occurred. Diverting the cyber criminal to fake data and credentials can be key to protecting the enterprise's real assets.

## Invasive alien species (IAS)

**Why in News?** Invasive alien species (IAS) — non-native plants and animals spreading into new ecosystems — are silently imposing a huge economic and ecological burden worldwide. A recent study published in *Nature Ecology & Evolution* highlights that global damages from IAS between 1960 and 2022 exceeded **\$2.2 trillion**, yet costs are significantly underestimated. India, in particular, faces an alarming gap in reporting management expenses, raising critical concerns about its preparedness to tackle this growing threat.

### Global Findings of the Study:

- The study analysed data from **InvaCost**, a global database on the economic costs of biological invasions.
- It found that costs may have been **underestimated by 16 times** compared to earlier assessments.

### Cost distribution by species group (1960–2022):

- Non-native plants: **\$926.38 billion** (most impactful and costliest to manage).
- Arthropods (e.g., insects): **\$830.29 billion**.
- Mammals: **\$263.35 billion**.

### Cost distribution by region:

- Europe: **\$1.5 trillion** (71.45% of global costs).
- North America: **\$226 billion**.
- Asia: **\$182 billion**.
- Africa: **\$127 billion**.
- Australia & Oceania: **\$27 billion**.

### India's Hidden Costs:

- The study revealed **India had the highest discrepancy** in reported management costs: **1.16 billion percent**.
- This suggests a huge amount of **unrecorded or underreported expenditure** on invasive species management.
- Possible reasons include:
  - **Lack of centralised data systems.**
  - **Limited inter-agency coordination.**
  - **Competing conservation priorities.**
  - **Reports in local languages not included in InvaCost database.**
- Example: Bandipur National Park is heavily infested with **Lantana camara**, a highly combustible invasive weed threatening biodiversity and increasing wildfire risks.

### India's Challenges:

- Inadequate **documentation and reporting** of management costs.
- Lack of **strategic funding** and **dedicated institutional mechanisms**.
- Dependence on **limited resources** despite the growing ecological threat.
- **Economic and ecological double burden**: loss of biodiversity and rising costs of management.

### Globalisation and the Spread of Invaders:

- Invasive species spread through **trade, travel, and bilateral agreements**.
- Common examples:
  - **Japanese knotweed** (*Reynoutria japonica*).
  - **Common lantana** (*Lantana camara*).
- Researcher Brian Leung cautions: not all non-native species should be eradicated blindly since **many agricultural crops are also non-native**.
- The challenge: balancing **economic globalisation** with **environmental protection**.

### International Policies and Control Measures:

#### Ballast Water Management Convention (IMO):

Prevents spread of harmful aquatic organisms via ships' ballast water.

#### Convention on Biological Diversity (CBD):

- India is a party.
- Calls for **prevention, control, or eradication** of invasive alien species threatening ecosystems.

#### National-Level Strategies (India):

- Yet to develop a **comprehensive framework** for IAS management.
- Efforts remain fragmented.

### Way Forward for India:

- **Strengthen data collection and reporting** to reduce underestimation.
- Establish a **centralised authority or database** for invasive species monitoring.
- Promote **inter-agency coordination** between forestry, agriculture, and trade departments.
- Increase **strategic funding** and integrate IAS management into national biodiversity and climate policies.
- Raise **public and local community awareness** about the threats of invasive species.

### About Invasive alien species (IAS):

- They are animals, plants, or other organisms that are introduced into places outside of their natural range, negatively impacting native biodiversity and in some cases ecosystem services or human well-being.



- IAS are one of the biggest causes of biodiversity loss and species extinctions, and are also a global threat to food security and livelihoods.
- IAS are compounded by climate change, which facilitates the establishment and spread of many alien species and creates new opportunities for them to become invasive.

## CEREBO

**Why in News?** CEREBO, a novel **hand-held, portable, non-invasive brain injury diagnostic tool**, has been developed through collaboration between:

- ICMR
- Medical Device & Diagnostics Mission Secretariat (MDMS)
- AIIMS Bhopal
- NIMHANS Bengaluru
- Bioscan Research
- It has been clinically validated, received regulatory approvals, and recommended for wider adoption in India and globally.

**About CEREBO:**

- **Technology:** Uses **near-infrared spectroscopy + machine learning**.
- **Function:** Detects **intracranial bleeding & edema** within **1 minute**.
- **Users:** Safe for **infants, pregnant women**, and can be operated by **paramedics/unskilled staff**.
- **Output:** Provides **colour-coded, radiation-free, cost-effective results**.
- **Deployment Areas:**
  - Ambulances
  - Trauma centres
  - Rural clinics
  - Disaster response units
  - Military & emergency healthcare

**Importance of the Device:**



- Addresses limitations of **CT & MRI scans** (high cost, radiation, need for infrastructure, trained staff).
- Offers **rapid triage** → helps doctors decide if advanced imaging is urgently needed.
- Can **improve outcomes** by enabling **early detection** of TBIs in remote or resource-poor settings.
- Reduces **diagnostic errors** common in Glasgow Coma Scale (GCS)-based assessments.
- **Health Technology Assessments** suggest:
  - Speeds up CT scans in tertiary care.
  - Optimises triage.
  - Cuts imaging costs.

#### About Traumatic Brain Injury (TBI):

- **Definition:** Sudden trauma/injury to the head disrupting normal brain function.
- **Severity:**
  - Mild (concussion) → observation needed.
  - Severe → can cause long-term disability or death.
- **Causes in India** (Epidemiology data):
  - **Road traffic accidents** → ~60%
  - **Falls** → 20–25%
  - **Violence/assaults** → ~10%
- **Public Health Burden in India:**
  - ~1.5–2 million TBIs annually.
  - ~1 million deaths per year.
  - Major cause of morbidity, disability, and socio-economic losses.
- **Complications:** Intracranial bleeding, brain swelling, long-term physical, cognitive, and emotional impairments.

## Purchasing Managers' Index (PMI)

### Why in News

**Why in News?** India's manufacturing sector activity (August 2025) expanded at the fastest pace in 17.5 years, as per the HSBC India Manufacturing Purchasing Managers' Index (PMI).

- PMI rose to **59.3 in August 2025** (up from 59.1 in July), the highest since mid-2008.
- The surge was driven by **strong demand, rise in new orders, higher production, and job creation**.
- However, **U.S. tariff hike on Indian goods (50%)** slightly impacted new export orders.

### Key Points:

- **Fastest Expansion Since 2008** – PMI at 59.3 marks strongest improvement in operating conditions in over 17 years.
- **Domestic Demand Surge** – Sharp increase in new orders and production volumes (quickest in 5 years).
- **Employment Boost** – Companies created more jobs in anticipation of sustained demand.
- **Stocking Up** – Firms increased raw material purchases to meet future demand.
- **External Challenge** – Growth in export orders softened due to **U.S. tariff uncertainty**.

### About Purchasing Managers' Index (PMI):

- **Definition:** An **economic indicator** derived from monthly surveys of private sector companies (manufacturing & services). It signals the prevailing business conditions.
- **Compiled by:** In India, PMI is published by **HSBC (earlier S&P Global / IHS Markit)**.
- **Range:**
  - **Above 50** → Expansion in activity.
  - **Below 50** → Contraction in activity.
  - **Exactly 50** → No change.
- **Significance:**
  - Provides **early indication** of economic trends.
  - Helps policymakers (RBI, Govt.) and investors assess the **health of the economy**.

- Covers **output, new orders, employment, suppliers' delivery times, inventory levels.**

#### Types in India:

1. **Manufacturing PMI** – tracks industrial production trends.
2. **Services PMI** – gauges activity in service sector.
3. **Composite PMI** – combines both.

## Global Governance Initiative (GGI)

**Why in News?** The **Shanghai Cooperation Organisation (SCO) Summit 2025** was held in **Tianjin, China**, chaired by Chinese President Xi Jinping.

- The **Tianjin Declaration** was adopted, condemning terrorism (including Pahalgam, Jaffar Express, and Khuzdar attacks).

#### Key Points of the Summit & Tianjin Declaration:

##### Condemnation of Terrorism

- Strongly condemned terrorism in all forms and manifestations.
- Called for ending the cross-border movement of terrorists.
- PM Modi highlighted the need to oppose terrorism “in all its forms and colours.”

##### Opposition to Unilateral Sanctions

- Declaration opposed **unilateral coercive measures** (economic sanctions/tariffs) that violate the **UN Charter & WTO rules** – a veiled reference to U.S. actions.

##### Geopolitical Concerns

- Condemnation of Israel's strikes in Gaza and the U.S.-Israel strikes on Iran's nuclear facilities.
- Support for a **two-state solution** to the Palestine issue.
- Reaffirmed UNSC resolution 2231 (lifting sanctions on Iran).
- Urged an inclusive government in **Afghanistan**.

##### Institutional & Structural Decisions

- Merger of “Observer” and “Dialogue Partner” into one category: **Partner Country**.
- **Laos** added as a partner → SCO now has **10 members + 17 partners = 27 countries**.
- Agreement to set up an **SCO Development Bank** (long-term Chinese ambition).

#### China's Announcements:

- Proposed **Global Governance Initiative (GGI)**.
- Announced **¥2 billion grants in 2025** and **¥10 billion loan facility over 3 years** for SCO banks.
- Pushed for greater support for the **Belt and Road Initiative (BRI)** (India remained opposed).

#### India's Stand

- Condemned terrorism & highlighted dangers of state-sponsored terrorism.
- Supported humanitarian approach in Gaza but opposed China's **BRI**.
- Modi also met **Putin**, stressing **ceasefire** in Ukraine and deeper bilateral cooperation.

#### About the Tianjin Declaration (2025):

- **Focus Areas:**
  - Condemnation of terrorism, separatism, extremism.
  - Rejection of unilateral economic coercion.
  - Support for multipolarity & Global South cooperation.
  - Deep concern over Gaza war and humanitarian crisis.
  - Call for inclusive governance in Afghanistan.
  - Reaffirmation of Iran nuclear deal resolution.
  - Support (except India) for Belt and Road Initiative.
  - Promotion of SCO Development Bank.

#### About Global Governance Initiative (GGI)

- Proposed by **Xi Jinping** at the SCO Summit 2025.
- Seeks to:

- Promote a **fair, just, multipolar world order**.
- Reform the **global governance system** with multilateralism at its core.
- Support the **UN's central role** in global decision-making.
- Encourage **Global South leadership** in governance reforms.
- Prioritize **people-centered approach**, equality, and adherence to international rule of law.
- Seen as a **Chinese counter to Western-dominated institutions** (like IMF, World Bank, WTO).

## International Carbon Price Floor (ICPF)

**Why in News?** The **International Carbon Price Floor (ICPF)**, first proposed by the **IMF in 2021**, has again come into focus in global climate negotiations in 2024–25.

- Discussions are ongoing at forums like the **World Economic Forum (WEF)** and **COP summits**, as countries debate carbon pricing as a tool to meet the **Paris Agreement** goals.
- The **WEF** recently suggested a **three-phase approach** to operationalise the ICPF, making it a key topic in climate policy and global climate finance debates.

**About the International Carbon Price Floor (ICPF):**

**Origin:**

- Proposed by the **International Monetary Fund (IMF)** in **June 2021**.
- Aimed to set a *minimum carbon price* across countries to prevent “carbon leakage” (shifting of polluting industries to low-regulation countries).

**Pricing Tiers Suggested by IMF (2021):**

- **Low-income countries** → \$25 per ton of CO<sub>2</sub>
- **Middle-income countries** → \$50 per ton of CO<sub>2</sub>
- **High-income countries** → \$75 per ton of CO<sub>2</sub>

**Purpose & Objectives:**

- Ensure a **fair and equitable** distribution of decarbonization costs.
- Provide **predictability** to businesses & investors in the energy transition.

- Support climate finance for developing economies.
- Help in achieving the **1.5°C target** under the Paris Agreement.

#### World Economic Forum (WEF) Proposal (2022–24):

Suggested a **three-phase roadmap** for ICPF:

- **Phase 1:** Voluntary adoption & transparency in carbon pricing policies.
- **Phase 2:** Broader participation with carbon price convergence.
- **Phase 3:** Binding global framework for carbon price coordination.

#### Other Initiatives by IMF :

##### Climate Finance Facility (2022–23):

- IMF proposed expanding **Resilience and Sustainability Trust (RST)** to provide **long-term, low-interest financing** to developing nations for climate action.
- Aimed at helping vulnerable economies manage transition risks and climate shocks.

##### Green Public Investment & Subsidy Reforms:

- IMF recommended **phasing out fossil fuel subsidies** and redirecting funds to renewable energy and green infrastructure.
- Suggested *green taxes* and stronger climate-related fiscal frameworks.

##### Global Carbon Price Coordination (Beyond ICPF):

- IMF has been advocating for a **minimum global carbon price** (ICPF was one model).
- It also explored **international emissions trading systems** to harmonize carbon markets.

#### Initiative taken by WEF:

##### Three-Phase International Carbon Price Roadmap (linked to ICPF):

- Phase 1: Voluntary transparency.
- Phase 2: Gradual convergence of carbon prices.
- Phase 3: Binding global framework.

##### Mission Possible Partnership (MPP):

- WEF initiative to decarbonize **hard-to-abate sectors** (steel, cement, shipping, aviation) through collaborative financing and carbon pricing.

#### First Movers Coalition (2021):

- Launched at **COP26** with the U.S. and WEF.
- Companies commit to buy low-carbon products (green steel, sustainable aviation fuel, etc.) to create **demand-pull for clean technologies**.

#### Global Risk Report & Climate Governance Principles:

- WEF regularly publishes frameworks on **climate governance, ESG standards, and green finance mechanisms** to guide global investment.

### Immigration and Foreigners Order, 2025/ Foreigners Tribunal

**Why in News?** The Union Home Ministry has notified the **Immigration and Foreigners Order, 2025**, replacing the old **Foreigners (Tribunal) Order, 1964**.

- This **empowers Foreigners Tribunals (FTs)**, which were so far unique to **Assam**, with the **powers of a First-Class Judicial Magistrate**.
- It aims to **streamline the process of detecting, detaining, and deporting illegal migrants** across India.
- Comes in the backdrop of **NRC (National Register of Citizens)** exercise and issues related to illegal immigration, especially from neighboring countries.

#### About Foreigners Tribunals (FTs):

Aspect	Details
Definition	Quasi-judicial bodies established to <b>determine whether a person is a foreigner</b> under the <b>Foreigners Act, 1946</b> (now replaced by 2025 Act).
Jurisdiction	Earlier <b>exclusive to Assam</b> , but can now function across India under the new order.
Composition	Headed by retired <b>judicial officers</b> or experienced <b>civil servants</b> .
Role in Assam NRC	Crucial in deciding the citizenship claims of those <b>excluded from NRC</b> , ensuring due process and fair hearing.
Current Status	100 FTs operational in Assam, handling NRC-related cases and illegal migrant disputes.

#### Significance of the New Order:



- **Strengthens legal backing** for handling illegal migration issues, especially in border states like Assam, West Bengal, and Tripura.
- Reduces dependency on **executive discretion**, providing a **judicial framework** for detention and deportation.
- Aims to **curb infiltration and illegal employment** of foreigners in sensitive sectors.
- Brings **uniformity across India**, though initial implementation remains focused on Assam.

#### Related Supreme Court Cases:

Case	Year	Relevance
Sarbananda Sonowal v. Union of India	2005	Struck down the <b>IMDT Act, 1983</b> , terming it unconstitutional as it failed to prevent illegal migration in Assam.
Assam NRC Case	2013-2019	SC supervised the entire NRC update process in Assam, leading to the exclusion of 19 lakh people.
State of Assam v. Moslemuddin	Ongoing	Deals with operational powers and functioning of FTs.

### Field Abundance—Museum Abundance (FAMA)

**Why in News ?** The collapse of grassland bird communities in the Nilgiri hills of India's Western Ghats, as revealed by a 2025 study, underscores a significant ecological crisis driven by historical landscape changes. Researchers from institutions like Columbia University and the Cornell Lab of Ornithology analyzed bird specimens from the early and late 1800s alongside modern field surveys, using a novel Bayesian statistical method called Field Abundance—Museum Abundance (FAMA)..

#### Key Points of the Study

- **Drastic Grassland Bird Decline:** Eight of nine grassland bird species in the Nilgiris have seen a 90% reduction in relative abundance since the **1850s**. **Species like the Nilgiri pipit** and Malabar lark, reliant on grasslands, have suffered the most.
- **Stable Forest Bird Populations:** About **53% of forest bird** species have remained stable, as they adapted to timber plantations, unlike grassland birds, which lack alternative habitats.

- **Habitat Loss:** Grassland area in the Nilgiris shrank by **80%, from 993 sq. km in 1848** to 201 sq. km in 2018, due to conversions to tea, eucalyptus, and pine plantations during colonial times.
- **Data Integration:** The study combined 19th-century museum specimens, historical maps, and records with modern field surveys and satellite imagery to reconstruct and compare bird populations across time.
- **Conservation Call:** It urges prioritizing grassland restoration and policy focus on open ecosystems to support the recovery of declining bird species.

#### **About the Field Abundance—Museum Abundance (FAMA) Method:**

The FAMA method is a Bayesian statistical tool designed to estimate species abundance across historical and modern periods by integrating museum and field data. Here's a detailed overview:

- **Purpose:** FAMA enables accurate comparisons of species abundance despite biases in historical museum collections, such as uneven sampling or collector preferences.
- **Data Sources:** It uses historical museum specimens (including species, collection date, and location) and modern field surveys from the same sites, supplemented by land-cover analysis from historical maps and satellite imagery.
- **Bayesian Modeling:** The method employs Bayesian statistics to handle uncertainties in historical data, modeling the probability of species presence based on specimen counts and modern observations. This produces reliable abundance estimates over time.
- **Key Strength:** FAMA overcomes limitations of traditional methods by standardizing disparate datasets, enabling researchers to quantify long-term population trends, such as the severe decline of Nilgiri grassland birds.
- **Broader Utility:** The method's flexibility makes it applicable to other regions and species, leveraging museum collections to study biodiversity changes globally.

#### **Conclusion**

The study reveals a catastrophic decline in Nilgiri grassland bird communities, driven by colonial-era habitat loss, and underscores the stability of forest birds in contrast. The innovative FAMA method provides a robust tool to quantify these changes, highlighting the urgent need for grassland conservation. Its newsworthiness stems from its alarming findings, novel methodology, and call for action, making it a pivotal contribution to understanding and addressing biodiversity loss.

## Graphite Spyware

**Why in News:** The Trump administration has unfrozen a stalled contract with Paragon Solutions, an Israeli spyware company.

- This move gives the U.S. Immigration and Customs Enforcement (ICE) access to Graphite, an advanced spyware tool.
- The Biden administration had earlier paused the contract in March 2023 over concerns of privacy violations and potential misuse.
- ICE plans to deploy Graphite to crack down on undocumented immigrants, sparking debate over surveillance, privacy, and human rights.

**What is Graphite Spyware?**

- Graphite is a sophisticated spyware tool designed to remotely access mobile phones and gain total control.
- It can monitor calls, read messages, and track user locations.
- The spyware can intercept encrypted communications on apps such as WhatsApp and Signal.
- It can turn a phone into a listening device by secretly activating the microphone and camera.
- This provides law enforcement with extensive surveillance capabilities.

**Company behind It:**

- Graphite is developed by Paragon Solutions, which was co-founded by former Israeli Prime Minister Ehud Barak.
- The company is backed by Advent International Partners, a U.S.-based investment group that acquired it for \$900 million.
- Paragon has strong links to former CIA officials and other intelligence agencies, making it a key player in the global spyware market.

**The Stalled Contract:**

- In September 2024, the Biden administration signed a \$2 million contract with Paragon Solutions for ICE to use Graphite.
- The contract was put on hold in March 2023 due to concerns over potential misuse.
- The pause was aimed at reviewing the spyware's use and addressing legal and privacy issues.
- The Trump administration has now lifted the pause, allowing ICE to move forward with the spyware deployment.

**Purpose of Use:**

- ICE intends to use Graphite to **track undocumented immigrants**.
- It will also help in monitoring communications during enforcement operations.
- There are concerns that it may also be used to **target pro-immigration activists and advocacy groups**.

#### Controversies and Concerns:

- **Privacy experts and human rights advocates** have raised alarms about Graphite's deployment.
- The spyware could be used to **spy on journalists, activists, and political opponents**.
- Critics warn it could lead to **serious human rights violations**.
- The situation is being compared to global controversies surrounding **Pegasus spyware**.
- There are fears of **government overreach** without **adequate legal safeguards**.

#### Significance:

- Highlights the **growing use of advanced surveillance technologies** in immigration enforcement.
- Deepens the **conflict between national security and personal privacy rights**.
- Brings renewed focus to **spyware regulation debates** in the U.S. and globally.
- Has **geopolitical implications** for U.S.-Israel relations and **global cybersecurity policies**.

## Two-Rate GST System Introduced

**Why in News:** The Goods and Services Tax (GST) Council, in its **56th meeting**, announced a **major overhaul of the GST tax structure**, introducing a simplified **two-rate system** with a **special higher rate** for sin and luxury goods. This reform aims to make the GST regime simpler, reduce the burden on common people, boost consumption, and improve compliance. The new rates will be effective from **September 22, 2025**, for most items.

#### Key Recommendations of GST Council:

##### Two-Rate GST System Introduced:

##### 5% Rate:

For essential goods and common-use items.

- Examples: hair oil, soap, shampoo, toothpaste, bicycles, kitchenware, namkeens, sauces, pasta, instant noodles, chocolates, coffee, butter, handicrafts, bio-pesticides, and intermediate leather goods.

##### 18% Rate:

- For standard goods and services.

**Examples:** ACs, TVs, dishwashers, small cars, motorcycles ( $\leq 350\text{cc}$ ), buses, trucks, ambulances, auto parts.



### Special 40% GST Rate for Sin & Super-Luxury Goods:

To apply only to products such as:

- Tobacco products – pan masala, gutka, cigarettes, beedi, chewable tobacco, zarda, unmanufactured tobacco.
- Aerated water and caffeinated beverages.
- High-end luxury goods – large cars, motorcycles (>350cc), yachts, helicopters.

## GST reform lightens load on common man

The GST Council on Wednesday approved a two-tier rate structure of 5 and 18 per cent, which will be implemented from September 22. The marathon 56th meeting of the GST Council lasted for 10.5 hours, in which the Centre and states thrashed out key tax proposals. Here are some of the key items for which GST rates were revised:

DAILY ESSENTIALS	FROM	TO
Hair Oil, Shampoo, Toothpaste, Toilet Soap Bar, Tooth Brushes, Shaving Cream	18%	5%
Butter, Ghee, Cheese & Dairy Spreads	12%	5%
Pre-packaged Namkeens, Bhujia & Mixtures	12%	5%
Utensils	12%	5%
Feeding Bottles, Napkins for Babies & Clinical Diapers	12%	5%
Sewing Machines & Parts	12%	5%

HEALTHCARE SECTOR	FROM	TO
Individual Health & Life Insurance	18%	Nil
Thermometer	18%	5%
Medical Grade Oxygen	12%	5%
All Diagnostic Kits & Reagents	12%	5%
Glucometer & Test Strips	12%	5%
Corrective Spectacles	12%	5%

EDUCATION	FROM	TO
Maps, Charts & Globes	12%	Nil
Pencils, Sharpeners, Crayons & Pastels	12%	Nil
Exercise Books & Notebooks	12%	Nil
Eraser	5%	Nil

AUTOMOBILES	FROM	TO
Petrol & Petrol Hybrid, LPG, CNG Cars (not exceeding 1200 cc & 4000mm)	28%	18%
Diesel & Diesel Hybrid Cars (not exceeding 1500 cc & 4000mm)	28%	18%
3 Wheeled Vehicles	28%	18%
Motor Cycles (350 cc & below)	28%	18%
Motor Vehicles for transport of goods	28%	18%

FARMERS & AGRICULTURE	FROM	TO
Tractor Tyres & Parts	18%	5%
Tractors	12%	5%
Specified Bio-Pesticides, Micro-Nutrients	12%	5%
Drip Irrigation System & Sprinklers	12%	5%
Agricultural, Horticultural or Forestry Machines for Soil Preparation, Cultivation, Harvesting & Threshing	12%	5%

ELECTRONIC APPLIANCES	FROM	TO
Air Conditioners	28%	18%
Television (above 32") (including LED & LCD TVs)	28%	18%
Monitors & Projectors	28%	18%
Dish Washing Machines	28%	18%

Source: CRIC

### Zero GST Rate for Essential Items:

#### From 5% → 0%:

- Ultra-high temperature milk.
- Paneer.
- All Indian breads – rotis, chapatis, parathas.
- Individual life and health insurance policies.
- 33 life-saving medicines.

### Major GST Rate Reductions:

- **Cement:** 28% → 18%.
- **Spectacles for vision correction:** 28% → 5%.
- **Manmade fibre:** 18% → 5%.
- **Manmade yarn:** 12% → 5%.
- **Sulphuric acid, nitric acid, ammonia (fertiliser inputs):** 18% → 5%.

### Inverted Duty Structure Rectified:

- Textile sector: reduced GST on inputs like manmade fibre/yarn to prevent accumulation of unutilized tax credits.
- Fertiliser sector: to reduce production costs and benefit farmers.

### Specific Sector Benefits:

- **Farmers & Agriculture:** Cheaper fertiliser inputs and essential agri-products.
- **Health Sector:** Zero GST on life-saving drugs and insurance.
- **Middle Class:** Reduced GST on daily-use products like soaps, shampoos, toothpaste, bicycles, etc.
- **Labour-Intensive Industries:** GST lowered for handicrafts, leather goods, and construction materials.

### Revenue Impact:

- Estimated **Rs 48,000 crore annual fiscal implication**, based on 2023–24 consumption patterns.
- Actual impact to be determined by current consumption levels.
- Government expects **higher tax compliance and buoyancy effect** due to simplification.

### Significance of the Reform:

- Simplifies the GST structure for better compliance.
- Reduces burden on common consumers and middle-class families.
- Supports key sectors like agriculture, health, textiles, and MSMEs.

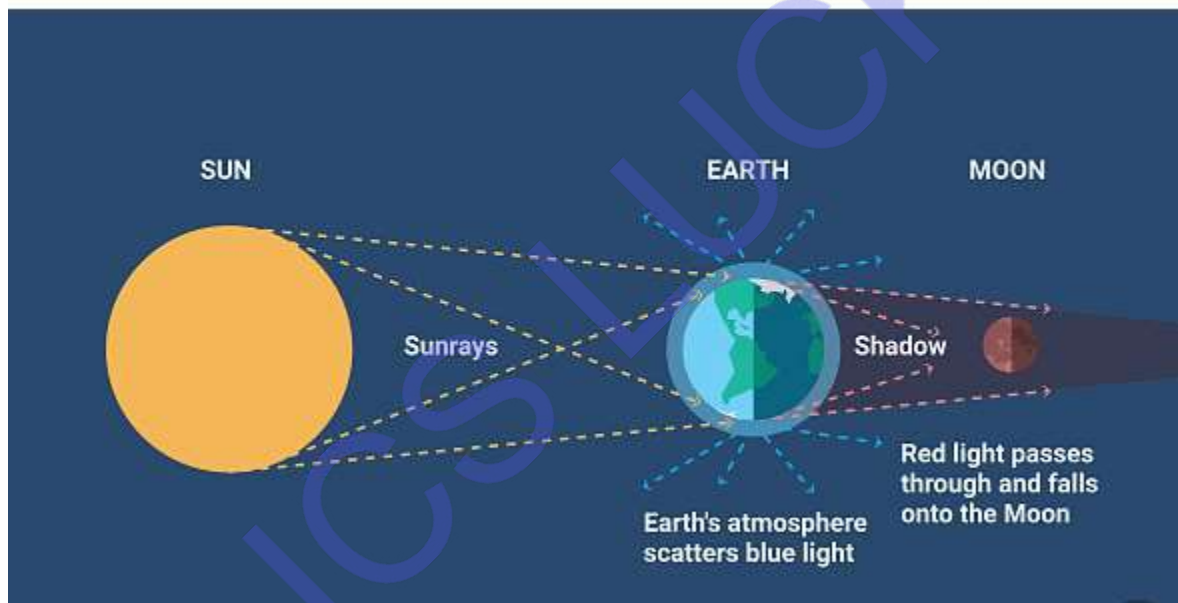
- Promotes economic activity through lower rates and rationalisation.
- Ensures luxury and sin goods are taxed heavily to discourage consumption.

This reform marks a **major structural shift** in India's indirect taxation, aligning GST with its original goal of being a "**Good and Simple Tax**" while ensuring equity and revenue neutrality.

## Blood Moon

**Why in News?** Celestial enthusiasts across the world witnessed a stunning event on September 7 evening — a total lunar eclipse, also known as '**Chandra Grahan**'. This lunar eclipse, which is the second one for this year, also produced a "**Blood Moon**".

A fully eclipsed Moon is sometimes called a Blood Moon for its reddish color. The term is also used to describe another astronomical phenomenon.



### Three Definitions:

Although not a scientific term, *Blood Moon* is commonly used to refer to three different phenomena:

1. A total lunar eclipse
2. A lunar tetrad
3. The Full Moon in October





### Why are Blood Moons Red?

- A total lunar eclipse happens when the Moon travels through the Earth's umbra, which **blocks all direct sunlight** from illuminating the Moon's surface. However, some red light still reaches the lunar surface indirectly, via the Earth's atmosphere, bathing the Moon in a reddish, yellow, or orange glow.
- As the Sun's rays pass through the atmosphere, some colors in the light spectrum—those towards the violet spectrum—are **filtered out** by a phenomenon called Rayleigh scattering. This is the same mechanism that causes colorful sunrises and sunsets. Red wavelengths are least affected by this effect, so the light reaching the Moon's surface has a reddish hue, causing the fully eclipsed Moon to take on a red color.
- Depending on the **composition of the atmosphere**, different parts of the light spectrum are filtered out, so the Moon may also look yellow, orange, or brown during a total lunar eclipse.

### About Total Lunar Eclipse :

- A **total lunar eclipse** occurs when the **Earth comes directly between the Sun and the Moon**, and **Earth's shadow completely covers the Moon**.
- This happens **only during a full moon** when the Sun, Earth, and Moon are perfectly aligned in a straight line, a condition known as **syzygy**.

### What is Lunar Tetrads?

- A **Blood Moon** can also refer to a **lunar tetrad**, which is **four total lunar eclipses occurring over two years**, each about six months apart with five full moons in between. Since only about one-third of lunar eclipses are total, tetrads are rare.
- The **2014–2015 tetrad** gained attention when some religious groups linked it to biblical prophecy, citing a verse in the Book of Joel about the Sun darkening and the Moon turning red as signs of the end times.

### How Often Do Lunar Tetrads Happen?

- Italian astronomer Giovanni Schiaparelli calculated that the frequency of lunar tetrads **varies over centuries**. Some have several lunar tetrads, while others do not have any. For example, the years between **1582 and 1908** did not have any tetrads, whereas the next **250 years—from 1909 to 2156**—will have 17 tetrads.
- The current century—2001 to 2100—will have **eight tetrads**. The first tetrad of the 21st century took place in 2003-2004, the second was in 2014–2015, and the next will be in 2032–2033, with the following eclipses:
  - April 25/26, 2032
  - October 18/19, 2032
  - April 14/15, 2033
  - October 8, 2033

#### All eclipses 1900 – 2199:

##### Hunter's Moon:

- The third definition of a Blood Moon is **unrelated to lunar eclipses**. It originates from certain **North American traditions**, which use the term to describe the Full Moon in October.
- It refers to the fact that October is usually the time of the year to **hunt game** and prepare meat for the coming winter. The October Full Moon is also **known as Hunter's Moon or Harvest Moon**.

#### Upcoming 5 Total Lunar Eclipses

	7–8 Sep 2025	Lunar Eclipse (Total)	Europe, Asia, Australia, Africa, West in North America, East in South America, Pacific, Atlantic, Indian Ocean, Arctic, Antarctica	
	2–3 Mar 2026	Lunar Eclipse (Total)	East in Europe, Asia, Australia, North America, South America, Pacific, Atlantic, Indian Ocean, Arctic, Antarctica	
	31 Dec 2028–1 Jan 2029	Lunar Eclipse (Total)	Europe, Asia, Australia, Africa, North/West North America, Pacific, Atlantic, Indian Ocean, Arctic	
	25–26 Jun 2029	Lunar Eclipse (Total)	Europe, West in Asia, Africa, North America, South America, Pacific, Atlantic, Indian Ocean, Antarctica	
	20–21 Dec 2029	Lunar Eclipse (Total)	Europe, Asia, North/West Australia, Africa, North America, South America, Pacific, Atlantic, Indian Ocean, Arctic	

## Long-Term Visas (LTVs)

**Why in News?** The Union Home Ministry issued an order last week exempting **undocumented Sri Lankan Tamil refugees** who entered India **before January 9, 2015**, from **penal provisions** under the **Foreigners Act, 1946**.

**Key points :**

- This order **removes their tag as "illegal migrants"**, but **does not make them eligible for Long-Term Visas (LTVs)**.
- **LTVs are a key step towards acquiring Indian citizenship**, but the government has clarified that Sri Lankan Tamils **cannot apply for LTVs at present**.
- They can, however, apply for **citizenship directly** under the **Citizenship Act, 1955**, through **registration** or **naturalization**, if they fulfill the required criteria.

**Impact on Citizenship:**

- LTV holders are usually considered for **naturalization and eventual citizenship**.
- Without LTV, Sri Lankan Tamils must **directly apply for citizenship**, which has stricter criteria.

**Existing Legal Provision:**

- Under the **Citizenship Act, 1955**, any foreigner can apply for Indian citizenship:
- **Registration** (e.g., if married to an Indian citizen or having Indian origin).
- **Naturalization** (after a specified period of residence).

**About Long-Term Visa (LTV):**

- **Definition:** A visa granted to foreign nationals who face **religious persecution** or are **minority communities from neighboring countries** like Afghanistan, Pakistan, and Bangladesh.
- **Duration:** 1 to 5 years, renewable.
- **Issued By:** Ministry of Home Affairs (MHA).

**Purpose of LTVs:**

- Provide **legal residency status** to persecuted minorities.
- A step towards **naturalization and eventual Indian citizenship**.
- Access to limited social, educational, and employment benefits.

**Eligibility for LTV:**

- Religious minorities from **Pakistan, Afghanistan, and Bangladesh** (Hindus, Sikhs, Buddhists, Jains, Parsis, Christians).
- Entered India **on or before December 31, 2014**.
- Facing **religious persecution** in their home country.
- **Sri Lankan Tamils are not covered** under this category.

### Types of Visas in India:

Type of Visa	Purpose	Validity
Tourist Visa	Tourism, casual visits	30 days – 10 years
Business Visa	Business meetings, trade, commerce	1 year – 5 years
Employment Visa	Employment in India	1 year – 5 years
Student Visa	Education in India	Duration of course
Medical Visa	Medical treatment in India	60 days – 1 year
Entry Visa (X-Visa)	For dependents of foreign nationals	6 months – 5 years
Research Visa	Academic or scientific research	Up to 5 years
Conference Visa	Attending seminars or conferences	Duration of event
Transit Visa	Passing through India en route to another country	15 days
Long-Term (LTV)	Visa Residency for persecuted minorities, path to citizenship	1 – 5 years

## India won Hockey Asia Cup: 2025

**Why in News ?** The 2025 Men's Hockey Asia Cup, the 12th edition of the tournament, was held from August 29 to September 7, 2025, at the Bihar Sports University Hockey Stadium in Rajgir, Bihar, India.

Organized by the Asian Hockey Federation (AHF), it served as a qualifier for the 2026 FIH Men's Hockey World Cup in **Belgium and the Netherlands**, with the winner earning a direct berth and teams finishing second to sixth advancing to World Cup Qualifiers.

India emerged champions after a **commanding 4–1 victory over defending champions South Korea** in the final, held at Rajgir.

### History of the Men's Hockey Asia Cup:

The Men's Hockey Asia Cup, launched in 1982, is a quadrennial tournament organized by the AHF.

**Inception:** The tournament began in **Karachi, Pakistan, in 1982** and is typically held every four years.

### Winners and Dominance:

- **South Korea:** Most successful with 5 titles (1994, 1999, 2009, 2013, 2022).

- **India:** 4 titles (2003, 2007, 2017, 2025), with 2025 marking their return to the top after 2017.
- **Pakistan:** 3 titles (1982, 1985, 1989), dominant in the early years.

#### Key Moments:

**1982:** Pakistan won the inaugural edition, defeating India.

**2003-2007:** India's golden period with back-to-back titles under coaches Rajinder Singh and Joaquim Carvalho.

**2017:** India's last win before 2025, defeating Malaysia in Dhaka.

**2022:** South Korea won, with India taking bronze, a reminder of their inconsistent form post major successes like the **2021 and 2024 Olympic bronzes**.

#### Records:

- India and Pakistan have been consistent contenders, with India holding the highest world ranking among Asian teams.
- The 2025 edition saw India's record **15-0 win over Kazakhstan**, one of the largest margins in tournament history.

### About the Asian Hockey Federation (AHF):

- The Asian Hockey Federation (AHF) is the governing body for field hockey in Asia, founded in **1958 and headquartered in Kuala Lumpur, Malaysia**.
- It oversees the development, promotion, and organization of hockey across the continent, managing **37 member associations**.

## RNAscope and Xenium

**Why in News ?** Researchers are using advanced spatial techniques like **RNAscope** and **Xenium** to precisely confirm that RNA signatures truly belong to **progenitor cells**, which are vital for tissue regeneration and development.

#### About RNA scope:

RNAscope is an advanced **in situ hybridization (ISH) technology** designed to detect and visualize RNA molecules **directly inside tissues** at a **single-cell and even subcellular resolution**.

#### How it Works?

- Uses a unique **“double-Z” probe system**, where two adjacent probes must bind perfectly to the target RNA sequence.
- Once bound, a **signal amplification cascade** occurs, producing visible dots where each dot represents a single RNA molecule.



- This design **minimizes background noise** and enhances specificity.

#### Key Features:

- **High sensitivity and specificity** – even low-abundance RNA molecules can be detected.
- **Quantitative visualization** – each dot corresponds to one RNA molecule, allowing exact counting.
- Can detect **multiple RNA targets simultaneously** (multiplexing).
- Can be combined with **immunohistochemistry** to study RNA and protein in the same tissue.

#### Applications:

- Validating gene expression data from bulk or single-cell RNA sequencing.
- Identifying rare cell populations like stem or progenitor cells.
- Understanding tissue organization and disease pathology, such as in cancer or neurological diseases.

#### About Xenium:

- Xenium is a **spatial transcriptomics platform** developed for **high-plex, subcellular resolution mapping** of gene expression across tissue sections.

#### How it Works?

- Uses **padlock probes** that hybridize to target RNAs.
- These probes are **circularized** and amplified using **rolling-circle amplification**.
- Fluorescent markers are then used to visualize and identify each RNA molecule in its exact **spatial location**.
- Imaging cycles **capture** thousands of genes across the tissue in a single experiment.

#### Key Features:

- **High multiplexing capacity** – can detect thousands of different RNA targets simultaneously.
- **Subcellular resolution** – shows exactly where inside the cell each RNA molecule is located.
- Advanced software for **data visualization and analysis**, giving precise maps of gene expression.
- Can be combined with other techniques like Visium HD for broader tissue analysis followed by detailed zoom-in mapping.

#### Applications:

- Mapping tissue architecture in health and disease.

- Understanding developmental processes by locating progenitor cells and their RNA signatures.
- Studying tumor microenvironments and immune cell interactions.
- Linking genetic expression patterns to functional outcomes in specific tissue regions.

#### Why Both Techniques are used together?

- **RNAscope** provides a **precise, targeted validation** of a few specific RNA molecules, confirming their presence and location with high accuracy.
- **Xenium** provides a **broad, high-throughput view**, mapping thousands of RNA species at once to show complex tissue patterns.

### ESG standards

**Why in News** The U.K.-India Infrastructure Financing Bridge (UKIIFB) marked its **first anniversary** with the release of a report in London.

- The initiative, launched in **September 2024** by the governments of India and the U.K., aims to **boost investment in India's infrastructure sector**, which needs **\$2 trillion by 2030**.
- The report shifted focus from earlier project-specific investments to **eight strategic recommendations** for making Indian infrastructure projects **more attractive to global investors**, with a special focus on the **renewable energy sector**.

#### Key suggestions include:

- **Aligning procurement processes** with global best practices like the U.K.'s **Five Case Model**.
- **Integrating Environmental, Social, and Governance (ESG) standards** into project planning.
- Reducing **operational risks** and addressing issues of **unpredictability and lack of transparency** in infrastructure construction.

#### About ESG (Environmental, Social, Governance) :

**ESG standards** are a set of criteria used to evaluate a company's or project's **sustainability and ethical impact**. They are crucial for attracting **global institutional investors** and ensuring long-term, responsible growth.

#### Environmental (E):

- Focuses on a project's impact on the environment.
- Includes climate change mitigation, pollution control, renewable energy use, and efficient resource management.

#### Social (S):



- Addresses the project's impact on people and communities.
- Covers labor rights, diversity and inclusion, community development, and safety standards.

#### **Governance (G):**

- Relates to management practices, transparency, and accountability.
- Includes anti-corruption measures, fair decision-making, and compliance with regulations.

#### **Importance of ESG in India's Infrastructure:**

- Attracts **foreign capital** by meeting global investment norms.
- Builds **investor trust** through transparency and sustainable practices.
- Reduces long-term risks by ensuring **environmental and social compliance**.
- Essential for sectors like **renewable energy, smart cities, and transportation** to meet climate and development goals.

### **The National Alliance for Climate and Ecological Justice (NACEJ)**

**Why in News:** The National Alliance for Climate and Ecological Justice (NACEJ), a forum of the National Alliance of People's Movements (NAPM), has sent a **memorandum** to the **Union Ministry of Environment, Forests and Climate Change** and the **Haryana Chief Minister** demanding the **cancellation of the proposed Aravali Zoo Safari Park project**. The group raised concerns over ecological damage, violation of community rights, and non-compliance with environmental laws.

#### **Key Points:**

- The memorandum highlights that the **Aravalis are an ecologically fragile region** and serve as a natural barrier protecting Delhi-NCR from desertification.
- The proposed safari park could **disturb wildlife corridors**, reduce forest cover, and **threaten biodiversity**.
- It **emphasizes the Forest Rights Act**, arguing that local communities must be involved in decision-making.
- Suggested **alternatives to promote eco-tourism** without harming the ecosystem, like community-led conservation and regulated tourism.
- Urged the government to prioritize **climate-resilient planning and conservation policies**.

#### **About Aravali Zoo Safari Park Project:**

- Proposed by the **Haryana government** in the **Gurugram and Nuh districts**.

- **Area covered:** Around 10,000 acres of the Aravalli region.
- Aims to become **one of the world's largest curated safari parks**, with sections for:
  - Big cats (lions, tigers, leopards)
  - Exotic birds and animals
  - Reptile zones
  - Aquatic biodiversity zones

**Concerns raised:**

- May lead to **deforestation** and **fragmentation of wildlife habitats**.
- Risk of **human-wildlife conflicts** and **commercial exploitation** of forests.
- Possible **violation of environmental norms** under the **Forest Conservation Act, 1980** and **Wildlife Protection Act, 1972**.

**About National Alliance for Climate and Ecological Justice (NACEJ):**

- A **national collective of grassroots activists, ecologists, climate scientists, environmental researchers, and legal experts**.
- **Part of the National Alliance of People's Movements (NAPM)**, which works on social and environmental justice issues.

**Objectives:**

- Advocate for **climate justice and ecological sustainability**.
- Protect **community rights under laws like the Forest Rights Act, 2006**.
- Challenge **destructive development projects** that harm ecosystems and local livelihoods.
- Promote **sustainable alternatives** like community-driven conservation and equitable resource management

## **The Protection of Aboriginal Tribes Regulation (PATR), 1956**

**Why in News?** The Union government has sought a **factual report** from the **Andaman and Nicobar Islands administration** after a complaint by the **Tribal Council of Little and Great Nicobar**.

The complaint alleges that **forest rights were not settled** before diverting **13,000 hectares of forest land** for the **Rs 81,000-crore Great Nicobar Island project** in **August 2022**. The council claims that its **consent was obtained under pressure** and later **formally withdrawn**. This has raised serious concerns about **violation of the Forest Rights Act (FRA), 2006**, and the **lack of dialogue** with the local tribal community.

**Key Points:**

**Background of the Project:**

- The project involves a massive development plan worth Rs 81,000 crore on Great Nicobar Island.
- Around 13,000 hectares of forest land have been earmarked for diversion to implement this project.
- The aim includes creating tourism hubs, a transshipment terminal, defense infrastructure, and improved connectivity.

#### Complaint by Tribal Council:

- The Tribal Council of Little and Great Nicobar alleges that the Forest Rights Act (FRA), 2006 was not implemented before clearing the forest land.
- The council's consent for diversion of land was taken under pressure and later withdrawn formally through a letter to the government.
- The council discovered a certificate dated August 18, 2022, issued by the Deputy Commissioner, falsely stating that the identification and settlement of rights had been completed.
- The council asserts that no such process was even initiated on the ground.

#### Protection of Aboriginal Tribes Regulation Act, 1956 (Andaman and Nicobar Islands Regulation, 1956):

- The Protection of Aboriginal Tribes Regulation (PATR), 1956, is a special law enacted to protect the indigenous tribes of the Andaman and Nicobar Islands, ensuring their land, culture, and rights are safeguarded. It applies exclusively to these islands, which are home to particularly vulnerable tribal groups (PVTGs) such as the Sentinelese, Nicobarese, Shompens, Great Andamanese, Jarwas, and Onges.

#### Key Objectives:

- To protect the aboriginal tribes from exploitation, displacement, and loss of traditional land.
- To preserve the unique culture and lifestyle of the indigenous communities.
- To regulate the entry and activities of outsiders in tribal areas.
- To prevent alienation of tribal land to non-tribal people.

#### Key Provisions:

##### Protection of Tribal Land

- Tribal land cannot be transferred or sold to non-tribal persons without administrative approval.
- Any unauthorized occupation or transfer of tribal land is illegal and can be evicted by authorities.

##### Restricted Areas (Buffer Zones):

- Certain tribal reserves are declared “**restricted areas**”, prohibiting free movement of outsiders.
- Entry into these areas requires **special permits** issued by the administration.
- This is aimed at **protecting tribes from outside influence**, exploitation, and health hazards due to exposure to new diseases.

#### **Regulation of Activities:**

- Activities such as **trade, tourism, fishing, and construction** are strictly regulated within and around tribal reserves.
- **Commercial exploitation** of forests, marine resources, or tribal labor without permission is prohibited.

#### **Administrative Powers:**

- The **Lieutenant Governor/Administrator of Andaman and Nicobar Islands** is empowered to:
  - Declare areas as **tribal reserves**.
  - **Regulate entry and exit** of non-tribals.
  - **Enforce penalties** for violations of the regulation.

#### **Protection Against Exploitation:**

- Non-tribal individuals or companies are prohibited from **engaging in exploitative trade** or taking advantage of tribal communities.
- The administration can **cancel illegal agreements** or contracts made with tribes.

#### **Tribes Protected Under the Act:**

- **Sentinelese** – live in total isolation on North Sentinel Island.
- **Nicobarese** – primarily inhabit the Nicobar Islands.
- **Shompens** – semi-nomadic tribe on Great Nicobar Island.
- **Great Andamanese, Jarwas, and Onges** – inhabiting different parts of the Andaman Islands.

## **Grand Ethiopian Renaissance Dam (GERD)**

**Why in News ?** Ethiopia has inaugurated the **Grand Ethiopian Renaissance Dam (GERD)**, the **largest hydroelectric project in Africa**, aimed at boosting the country's energy production. The move has triggered **strong opposition from Egypt**, which relies on the Nile River for **97% of its water needs** and views the dam as a serious **threat to its water security**. Egypt has taken the matter to the **United Nations Security Council**, calling it a violation of international law.

#### **Key Points:**

**National Significance:** The dam is a **symbol of pride and unity** for Ethiopia, especially during times of internal conflict.

**Egypt's Opposition:**

- Egypt considers the dam an **“existential threat”** and has protested at the **UN Security Council**, stating that Ethiopia acted unilaterally without a proper agreement.



**Sudan's Position:**

- Sudan has expressed concerns about the dam's impact on water flow but has maintained a relatively neutral stance.

**Regional Tensions:**

The issue has the potential to **escalate into a regional conflict** if not addressed through diplomatic negotiations.

**About the Grand Ethiopian Renaissance Dam (GERD):**

**Location:** Built on the **Blue Nile River**, near the Ethiopia–Sudan border.

**Height:** 170 meters

**Other Major Dams on African Rivers:**

**Aswan High Dam (Egypt):** Built on the Nile River, crucial for irrigation, flood control, and power generation.

**Kariba Dam (Zambia–Zimbabwe):** Built on the Zambezi River, known for creating one of the world's largest man-made lakes.

**Cahora Bassa Dam (Mozambique):** Also on the Zambezi River, a vital source of electricity for Mozambique and surrounding countries.



**Inga Dams (Democratic Republic of Congo):** Located on the Congo River and central to Africa's long-term hydropower development plans.

## **International Centre for Integrated Mountain Development (ICIMOD)**

**Why in News ?** ICIMOD has been actively **researching climate and environmental risks** in the Himalayas, including **glacial lake outburst floods (GLOFs)**, landslides, and other natural hazards.

- Recent reports by ICIMOD highlighted that the **Himalayan region is warming faster than the global average**, leading to **rapid glacier melt** and rising disaster risks.

**About ICIMOD:**

- **Established:** 1983
- **Headquarters:** Kathmandu, Nepal
- **Nature:** Regional intergovernmental organization focused on the **Hindu Kush Himalaya (HKH)** region.
- **Member Countries (8):**
  - Afghanistan
  - Bangladesh
  - Bhutan
  - China
  - India
  - Myanmar
  - Nepal
  - Pakistan

**Mission:**

Promote **sustainable mountain development** and improve **living standards** of people in the Hindu Kush Himalayan region through research, knowledge sharing, and policy advocacy.

**Key Functions of ICIMOD:**

**Climate Change Monitoring:**

- Studies the impact of rising temperatures on glaciers, snow cover, and biodiversity.
- Provides data on **glacier retreat and formation of glacial lakes**.

**Disaster Risk Reduction:**

- Researches causes and impacts of **GLOFs, landslides, and floods**.
- Develops **early warning systems** and strategies to prevent disasters.

#### **Sustainable Livelihoods:**

- Promotes **eco-tourism**, agroforestry, and local entrepreneurship for communities in mountain regions.

#### **Transboundary Cooperation:**

- Encourages cooperation between the eight member countries on **water resources, biodiversity conservation, and climate resilience**.

#### **Data Sharing and Knowledge Hub:**

- Acts as a platform for **scientific research** and **policy-making support** for the Himalayan region.

### **National Security Strategies Conference-2025**

**Why in News?** Union Home Minister **Amit Shah** has directed the **Bureau of Police Research & Development (BPR&D)** to prepare a **Standard Operating Procedure (SOP)** to deal with **mass agitations** and protests driven by vested interests by **studying past protests** and their funding patterns.

#### **Key Points:**

##### **Purpose of the SOP:**

- To prevent and effectively manage **mass agitations** in the future.
- Focus on protests influenced by **vested interests** and **financial backing**.

##### **Analysis of Past Protests:**

- BPR&D will study all major **post-Independence protests**, especially those after **1974**.
- It will examine:
  - **Reasons** behind the protests.
  - **Financial aspects** (sources of funding).
  - **Final outcomes** of the protests.
  - **“Behind-the-scene players”** influencing such movements.

##### **Involvement of Agencies:**

- **State police departments** to provide old case files and CID reports.
- **Financial investigation agencies** like:
  - Enforcement Directorate (ED),
  - Financial Intelligence Unit-India (FIU-IND),
  - Central Board of Direct Taxes (CBDT), to track protest funding sources.

##### **Coordination with Religious Gatherings:**



- BPR&D to work with state police to **study incidents like stampedes** at religious congregations.
- Create SOPs for **monitoring and regulating large gatherings**.

#### National Security Agencies' Role:

NIA, BSF, and Narcotics Control Bureau (NCB) to develop strategies to:

- Identify **unknown terror networks**.
- Handle issues like **Khalistani extremism** and organized crime, especially in **Punjab**.
- Disrupt domestic criminal networks operating **from inside jails**.

#### Intelligence-Based Approach:

- A **multi-agency task force** to design a **framework for preventing mass agitations**.
- Includes coordination between central and state agencies for real-time intelligence sharing.

#### Significance:

- Aims to **strengthen internal security** and prevent violent mass agitations.
- Helps in **tracking foreign and domestic funding** of protests.
- Enhances coordination between law enforcement and intelligence agencies.

### About Financial Intelligence Unit – India (FIU-IND):

- It was **Established on 18 November 2004**
- **Headquarters:** New Delhi
- **Administrative Control:** Under the Department of Revenue, Ministry of Finance, Government of India.

#### Primary Role:

- Acts as the **central national agency** for receiving, processing, analyzing, and disseminating information related to **suspicious financial transactions**.
- Plays a key role in India's fight against **money laundering, terrorism financing, and economic crimes**.

#### Functions of FIU-IND:

##### Collection of Financial Intelligence:

Collects information from **reporting entities** such as:

- Banks,
- Financial institutions,
- Intermediaries,
- Stock exchanges,
- Insurance companies,

- Casinos, etc.

These entities are required to submit:

- **Suspicious Transaction Reports (STRs)**
- **Cash Transaction Reports (CTRs)**
- **Cross Border Wire Transfer Reports (CBWTRs)**
- **Non-Profit Organisation Transaction Reports (NTRs)**

#### **Analysis of Reports:**

Conducts **data mining and analysis** to identify:

- Money laundering patterns,
- Terror financing routes,
- Illicit financial flows.

#### **Dissemination of Intelligence:**

After analysis, the FIU-IND shares actionable intelligence with:

- Enforcement Directorate (ED),
- Central Bureau of Investigation (CBI),
- National Investigation Agency (NIA),
- Income Tax Department,
- Police forces,

## **Pink Tax**

**Why in News?** The issue of Pink Tax is in the news as it highlights the gender-based price discrimination where products and services targeted at women cost more than similar products for men. Though not an actual tax, it silently impacts household budgets and reflects economic inequality.

#### **Key Points:**

##### **What is Pink Tax?**

- Not a real tax, but a **pricing phenomenon** where women pay extra for gender-targeted products and services.
- Examples include:
  - Haircuts and salon services
  - Pink toys and accessories
  - Razors, shampoos, lotions, deodorants
  - Clothing like T-shirts and jeans
  - Dry-cleaning services

- The price hike is often due to **marketing tactics**, not actual production costs.

#### Global Perspective:

- **Origin of term:** U.S., California (1994).
- Studies reveal:
  - Women's personal care products **13% costlier** than men's.
  - Women's clothing **7-8% costlier**.
  - Dry cleaning of women's shirts **90% more expensive**.
  - In the U.K.,
    - Women's deodorant **8.9% costlier**.
    - Women's facial moisturizer **34.28% costlier**.
- **United Nations (2017):** Urged countries to **end gender-based price discrimination** to promote equal economic participation.

#### Pink Tax in India:

##### Awareness is low:

- A study by **IFSA** found **67% of Indians unaware** of the Pink Tax.

##### 2018 GST reform:

- Sanitary napkins and tampons were **exempted from 12% GST**, highlighting gender pricing issues.

##### Consumer protection:

- **NCDRC ruling:** Companies must follow **fair pricing policies** and avoid gender-based discrimination.

#### Impact:

- Women often **earn less than men**, so paying more worsens **economic inequality**.
- Adds an **unseen burden on household finances**, especially in families where women are not working.

#### Ways to Avoid Pink Tax:

- **Choose gender-neutral or men's variants** of products.
- **Compare unit prices** (per ml or gram) before buying.
- Opt for **unisex salons** or negotiate for fair pricing.
- Research **gender-neutral brands** and support **consumer advocacy groups**.
- Check **e-commerce platforms** for price differences before purchasing.

## 16th Combined Commanders' Conference (CCC): 2025

**Why in News:** Prime Minister Narendra Modi inaugurated the 16th Combined Commanders' Conference (CCC) in Kolkata.

- He directed the **Ministry of Defence** to take **swift measures** to **strengthen self-reliance (Atmanirbharta)**, **innovation**, and **jointness** among the armed forces.
- The conference theme is “**Year of Reforms – Transformation for the Future.**”

#### **Key Points:**

##### **Review of Security Situation:**

- PM Modi reviewed the **operational preparedness** of the armed forces.
- Special focus on the **new normal** created by **Operation Sindoor**, **future warfare technologies**, and **modern tactics**.

##### **Launch of Vision Document:**

- PM unveiled the “**Indian Armed Forces Vision 2047**”, outlining a **roadmap** for building a **future-ready military** to meet emerging global challenges.

##### **Operational Achievements Highlighted:**

- Modi praised the forces for their efforts in:
  - **Operation Sindoor** – securing strategic objectives.
  - **Anti-piracy missions** in international waters.
  - **Evacuation of Indian citizens** from global conflict zones.
  - **Nation-building activities** and disaster relief operations.

##### **Focus Areas of Discussion:**

- **Force modernization** with cutting-edge technology.
- **Jointness and integration** between the Army, Navy, and Air Force.
- Enhancing **operational readiness for multi-domain warfare** (land, air, sea, cyber, space).
- **Structural and administrative reforms** to improve efficiency.

##### **Participants:**

- **Defence Minister Rajnath Singh**, **NSA Ajit Doval**, and top officials of the **Army, Navy, and Air Force** attended.
- The CCC brings together **senior civilian and military leadership** for high-level strategic discussions.

##### **About Combined Commanders’ Conference (CCC):**

- It is held once every **two years**.
- It is the **apex-level brainstorming forum** of the armed forces.
- The **Prime Minister of India** presides over the **Combined Commanders’ Conference (CCC)**.
- The CCC is the **highest-level military forum** where the **Prime Minister** leads the deliberations with top civilian and military leadership.

- The Defence Minister, National Security Adviser (NSA), Chief of Defence Staff (CDS), and Service Chiefs (Army, Navy, Air Force) also actively participate.
- The PM provides **strategic direction**, sets **national security priorities**, and reviews **operational preparedness** of the armed forces.

#### Purpose:

- To **review strategic, operational, and structural matters** of national defence.
- To **foster inter-services synergy** and better coordination between civil and military leadership.
- To **prepare the forces for emerging global security challenges**.

#### Significance of the 16th CCC:

- Marks **2025 as the Year of Defence Reforms**.
- Sets the stage for **transformative changes** in India's defence ecosystem.
- Positions India's armed forces to **handle future multi-domain warfare** efficiently.
- Strengthens **Atmanirbhar Bharat** by encouraging indigenous defence production and innovation.

## General Financial Rules (GFR)

**Why in News ?** India has **reformed its General Financial Rules (GFR)** in June 2025 to boost **research and development (R&D) procurement**. The changes aim to **remove barriers created by rigid procurement processes** like the **Government e-Marketplace (GeM)**, which often delayed innovation and compromised research quality.

#### Key Points:

##### Issue with Previous System:

- Old GFR rules **mandated GeM purchases** for all R&D equipment below Rs 200 crore.
- Scientists had to undergo a **lengthy exemption process** for specialized tools.
- Vendors on GeM often supplied **low-quality materials**, affecting research outcomes.
- **Innovation was stifled** as rules prioritized procedural compliance over scientific needs.

##### Major Changes Introduced:

- **Bypassing GeM for specialized equipment** allowed for direct procurement by institutions.
- **Direct purchase limit increased:** from Rs 1 lakh to Rs 2 lakh.
- Relaxation in rules aims to **speed up research procurement** and ensure better quality tools.

##### Significance of Reforms:

- Encourages **innovation-driven procurement** rather than rigid, one-size-fits-all rules.
- Reduces **administrative delays** in acquiring global-standard scientific equipment.
- Aligns with global best practices by **promoting innovation through public spending**.

#### About General Financial Rules (GFR):

- **GFR** are a set of rules issued by the **Ministry of Finance, Government of India** to regulate **financial management** and procurement in government departments.
- Objective: **Ensure transparency, accountability, and efficiency** in public spending.
- Key areas covered:
  - Budgeting and expenditure
  - Procurement of goods and services
  - Management of public funds
- **Latest reform (June 2025):** Specifically targeted at **R&D procurement** to support India's innovation ecosystem.

#### Way Forward:

- **Continuous monitoring** to ensure quality and prevent misuse of relaxed rules.
- Development of **specialized R&D procurement policies** with global benchmarking.
- **Capacity building** for scientific institutions to handle procurement independently.
- Encouraging **collaboration with private sector and startups** to boost innovation.

## International Seabed Authority (ISA)

**Why in News ?** India has received its **first-ever global license** from the **International Seabed Authority (ISA)** to explore **polymetallic sulphides (PMS)** in the **Carlsberg Ridge** located in the northwest Indian Ocean. This is a major milestone for India's **deep-sea exploration** and **Blue Economy** goals.

The agreement was signed in **New Delhi** and will enable India to search for valuable minerals such as **manganese, cobalt, nickel, and copper**. These minerals are crucial for clean energy technologies, electric vehicle batteries, and electronic manufacturing.

India had applied in **January 2024** for exploration rights in two regions:

1. **Carlsberg Ridge**, which has now been approved.
2. **Afanasy-Nikitin Seamount (ANS)**, which is still pending approval because **Sri Lanka has also staked a claim** to this area.

Previously, India received two exploration contracts from the ISA:

- In **2002**, for the Central Indian Ocean Basin, which will expire in **March 2027** after two extensions.



- In **2016**, for polymetallic sulphides in another part of the Indian Ocean Ridge, valid until **September 2031**.

Currently, **19 countries worldwide** have exploration rights for such high-seas resources.

### **Carlsberg Ridge and its Importance:**

- The **Carlsberg Ridge** is a massive, 3,00,000 square kilometre mid-ocean ridge located between the **Indian and Arabian tectonic plates**. It stretches from near **Rodrigues Island** in the southwest Indian Ocean to the **Owen Fracture Zone** near the Arabian Sea.
- Polymetallic sulphides are found deep on the ocean floor and are rich in metals like **manganese, cobalt, nickel, and copper**. These metals are critical for manufacturing renewable energy infrastructure, electric vehicles, and electronics.
- Since this region lies **beyond the jurisdiction of any single country**, it is classified as part of the **high seas**, and exploration rights must be granted by the **ISA** under the rules of the **United Nations Convention on the Law of the Sea (UNCLOS)**.

### **About United Nations Convention on the Law of the Sea (UNCLOS):**

- UNCLOS is often referred to as the “**Constitution of the Oceans**”. It was adopted in **1982** and came into force in **1994**. Its headquarters is in **Montego Bay, Jamaica**.
- The convention sets out the legal framework for the use of oceans and their resources. It defines how far a country's sovereignty extends into the sea and governs navigation, environmental protection, and resource management.

### **Under UNCLOS:**

- A country can claim up to **200 nautical miles** from its baseline as an **Exclusive Economic Zone (EEZ)**, giving it exclusive rights to explore and exploit marine resources.
- The **continental shelf** can be extended up to **350 nautical miles**, and in certain regions like the **Bay of Bengal**, it can be extended up to **500 nautical miles**.
- Areas beyond national jurisdiction, known as the **high seas**, are considered the **common heritage of mankind**. No single country can claim ownership, and activities there are regulated collectively through the ISA.

India, being a signatory to UNCLOS, is entitled to apply for exploration rights in these international waters.

### **About International Seabed Authority (ISA):**

- The **International Seabed Authority** was established in **1994** under the framework of UNCLOS. It is headquartered in **Kingston, Jamaica**, and has **168 member states plus the European Union**.

- The ISA is responsible for regulating the **exploration and exploitation of mineral resources** in areas beyond national jurisdiction. This includes managing resources like **polymetallic nodules, polymetallic sulphides, and cobalt-rich crusts**.
- The guiding principle of the ISA is that these resources are the “**common heritage of mankind**”, meaning they must be managed for the collective benefit of all countries.
- India is recognized as a **pioneer investor country** because it was among the first to receive exploration contracts, starting in 2002. Decisions in ISA are made through three main bodies – the **Assembly, Council, and Secretariat**.

### **Significance for India:**

This development is strategically important for India in several ways:

**Critical Mineral Security** – The exploration rights will help India secure vital minerals like cobalt, nickel, manganese, and copper, which are essential for the clean energy transition and reducing reliance on imports, especially from China.

**Boost to the Blue Economy** – This aligns with India’s **Deep Ocean Mission** and long-term strategy for sustainable use of marine resources.

**Geostrategic Leverage** – Control over deep-sea exploration enhances India’s influence in the **Indian Ocean Region**, countering the growing presence of China and other major powers.

**Scientific Advancement** – The mission will boost India’s capabilities in oceanography, marine technology, and deep-sea research.

**Global Leadership Role** – By responsibly managing ocean resources, India can project itself as a leader in sustainable resource use and global ocean governance.

### **Challenges Ahead:**

Despite the opportunities, there are several challenges:

- **Environmental Concerns** – Deep-sea mining poses risks to fragile marine ecosystems and biodiversity.
- **Technological Limitations** – India needs advanced technologies like submersibles, robots, and sensors for deep-sea exploration and sustainable mining.
- **Geopolitical Competition** – Sri Lanka’s competing claim for the ANS region could lead to diplomatic tensions.
- **Legal Complexities** – Navigating the intricate rules and procedures of UNCLOS and the ISA can be difficult and time-consuming.
- **Funding Constraints** – Deep-sea exploration is capital-intensive and requires consistent financial support.

## Coastal Regulation Zone (CRZ)

**Why in News?** The National Green Tribunal (NGT) is hearing a plea to exclude fragile coastal areas in **Galathea Bay of the Great Nicobar Island (GNI)** from a proposed mega infrastructure project worth **Rs 81,000 crore**.

- The concern is that the law does not permit activities in ecologically sensitive areas.

### Project Details:

- The project includes:
  - An **international container transshipment terminal**.
  - **Township and area development**.
  - A **450 MVA gas and solar-based power plant**.
  - A **dual-use civilian and military airport**.

### Concerns Raised:

- Potential violation of environmental protection laws.
- Risk to **fragile ecosystems** and biodiversity in the Galathea Bay region.
- Balancing **economic development** with **ecological sustainability** remains a key challenge.

### About Coastal Regulation Zone (CRZ):

- Coastal Regulation Zones are governed by the **CRZ Notification, 2019** under the **Environment Protection Act, 1986**.
- These rules aim to **protect coastal ecosystems**, including **mangroves, coral reefs, sand dunes, and turtle nesting sites**, while allowing sustainable development.
- They regulate activities such as construction, tourism, fishing, and port development along India's **7,500 km coastline**, including islands.

### CRZ Categories for Mainland and Islands:

#### CRZ-I:

- **Ecologically sensitive areas** where **no development is allowed**.
- Includes **mangroves, coral reefs, marine parks, turtle nesting grounds, national parks, sanctuaries, and wildlife habitats**.
- Examples: Galathea Bay in Great Nicobar Island, Sundarbans in West Bengal.

#### CRZ-II:

- **Developed urban areas** close to the shoreline.
- Construction and redevelopment activities are allowed **in accordance with town planning norms**.
- Example: Coastal cities like Mumbai, Chennai.

#### CRZ-III:

- **Relatively undisturbed rural areas and coastal villages.**
- **Limited construction allowed beyond 50 meters from the High Tide Line (HTL) on islands and 200 meters on the mainland.**

#### **CRZ-IV:**

- **The water area from Low Tide Line (LTL) to 12 nautical miles into the sea, including tidal water bodies.**
- **Strict regulation of activities like fishing and waste disposal to protect marine biodiversity.**

#### **Special Provisions for Islands (A&N and Lakshadweep):**

- **50-meter no-development zone from the High Tide Line (HTL) for small islands.**
- **Priority to ecologically sustainable tourism and livelihood activities.**
- **No large-scale industrial activities in CRZ-I areas to preserve biodiversity and indigenous communities.**

#### **Relevance to Galathea Bay Issue:**

- **Galathea Bay in Great Nicobar falls under CRZ-I, making it a no-go area for major infrastructure projects.**
- **The proposed Rs 81,000 crore project may violate these CRZ norms, leading to the challenge before the National Green Tribunal (NGT).**

## **Iran and European powers**

**Why in News?** Iran and European powers (E3: Britain, France, Germany) held talks on September 17, 2025 to prevent the reimposition of U.N. sanctions on Iran over its nuclear program.

- **The discussions focused on delaying the "snapback mechanism", which would automatically restore sanctions if Iran violated the nuclear deal.**
- **Progress was limited, and Western diplomats warned that without a clear timeline, Iran might continue stonewalling inspections.**

#### **Key Points:**

##### **Snapback Mechanism:**

- **Introduced under the 2015 Iran Nuclear Deal (JCPOA).**
- **Automatically reimposes sanctions if Iran breaches the agreement.**
- **E3 proposed a 6-month delay to allow for negotiations.**

##### **Conditions by E3:**

- **Iran must restore access for U.N. nuclear inspectors.**
- **Iran must account for its stockpile of enriched uranium.**

- Iran must engage in talks with the **U.S. and international partners**.

#### About E3:

The **E3** refers to:

- **Britain (United Kingdom)**
- **France**
- **Germany**

These three European countries:

- Played a key role in negotiating the **JCPOA (Joint Comprehensive Plan of Action)** in 2015.
- Represent **Europe's diplomatic efforts** to contain Iran's nuclear program.
- Often coordinate with the **U.S., EU, and IAEA** on non-proliferation issues.

#### About JCPOA (Joint Comprehensive Plan of Action) - 2015:

- Signed between Iran and **P5+1 countries** (U.S., U.K., France, Russia, China, and Germany).
- Objective was to limit Iran's nuclear activities in exchange for lifting economic sanctions.
- Allowed strict monitoring by the International Atomic Energy Agency (IAEA).
- U.S. withdrew from the deal in 2018 under President Donald Trump, reimposing sanctions on Iran.

### Anti-Narcotics Task Force (ANTF)

**Why in news?** Union Home Minister **Amit Shah** emphasized the need for a **liberal approach to deportation processes** to ensure a strong mechanism for **deporting criminals**, especially those involved in **narcotics trade**. He highlighted the urgency to bring **drug lords operating from abroad** under the ambit of **Indian law**.

#### Coordination between Agencies:

The Home Minister urged **Anti-Narcotics Task Force (ANTF)** heads of States to **coordinate with the CBI Director** to build a **robust extradition system**.

- This system should target not only **drug trafficking** but also **terrorism and gang-related crimes**.
- He stressed that **extradition and deportation** must go hand in hand for effective action against **international criminals**.

#### Joint Mechanism Proposal:

Mr. Shah proposed a **joint mechanism** involving:

- Narcotics Control Bureau (NCB)
- Central Bureau of Investigation (CBI)
- State Police Forces

This collaboration aims to **bring back foreign criminals and fugitives linked to drug trafficking networks.**

#### **Role of NCORD in Drug-Free India Mission:**

The Minister highlighted the importance of the **National Narcotics Coordination Portal (NCORD)** in the **Drug-Free India campaign.**

- Success depends on **district-level sensitization** of police and education officers.
- While the number of **district-level NCORD meetings** has increased, **272 districts** have **not held a single meeting**, indicating a gap in coordination.

#### **Warning on Synthetic Drugs and Labs:**

Amit Shah warned about the **rising threat of synthetic drugs** and **illegal drug manufacturing laboratories.**

- Directed ANTF heads to **remain vigilant, identify, and dismantle such labs.**
- Acknowledged **significant progress** made over the past year but urged continued **preventive action** to stop new facilities from being set up.

#### **Destruction of Seized Drugs:**

The Home Minister informed that **1,37,917 kg of seized drugs**, worth approximately **Rs 4,800 crore**, were **destroyed at 11 locations** across India on Tuesday.

- Recommended a **scientific and standardized practice** of destroying seized drugs **every three months** in every state.

#### **About ANTF :**

- The **Anti-Narcotics Task Force (ANTF)** is a specialized unit established at the **state level** to combat the growing menace of **drug trafficking and narcotics-related crimes** in India.
- It **works** under the **state police departments** but coordinates closely with central agencies like the **Narcotics Control Bureau (NCB)**, **Central Bureau of Investigation (CBI)**, and other enforcement agencies.

#### **Objective of ANTF:**

- To **curb drug smuggling**, trafficking, and consumption.
- To **dismantle drug supply networks** operating at state, national, and international levels.
- To **identify, monitor, and take strict action** against organized crime syndicates involved in the narcotics trade.
- To **strengthen coordination** with other state and central agencies.

#### **Structure of ANTF:**



- Headed by a **senior police officer** (often at the rank of **Deputy Inspector General (DIG)** or **Inspector General (IG)**).
- Composed of specially trained personnel in **drug enforcement operations**.
- Works in **coordination with district-level police units** and **local intelligence networks**.
- Equipped with **modern surveillance and tracking tools** for monitoring drug networks.

## Anand Marriage Act, 1909

**Why in News ?** The **Supreme Court (SC)** recently directed **17 states and eight Union Territories (UTs)** to frame rules for registering **Sikh marriages under the Anand Marriage Act, 1909**, within **four months**.

- Until these rules are framed, states and UTs must accept and register **Anand Karaj marriages** under **existing marriage registration laws**.
- The purpose is to allow Sikhs to register marriages **according to their religious tradition**, something that has not been uniformly available so far.

### The Act and Its Amendment:

- **Anand Karaj** is a Sikh religious ceremony meaning "*blissful union*", performed in the presence of the **Guru Granth Sahib**.
- Initially, there was no specific provision for registering such marriages.
- In **2012**, the **Anand Marriage (Amendment) Act** introduced **Section 6**, requiring state governments to frame rules for registration.
- However, **most states and UTs have not framed these rules**, leaving Sikh couples to register under other laws.

### Supreme Court's Intervention:

- In **2022**, a petition was filed highlighting the lack of registration rules, which caused practical problems:
  - No marriage certificate for proof.
  - Issues related to **residence, maintenance, inheritance, and succession**.
- **The SC held that:**
  - States have a "**positive duty**" to create a functional registration system.
  - Failure to frame rules **withholds statutory benefits** Parliament has conferred.
  - Applications for registration **cannot be refused** simply because the state has not yet framed rules.

### Lingering Issues:

- Currently, most Sikh couples register under the **Hindu Marriage Act, 1955 (HMA)**, which doesn't:
  - Include provisions for **divorce** or **matrimonial disputes** specific to Sikh customs.
  - Reflect Sikh identity and religious practices adequately.
- The **2012 amendment** addressed registration but **did not cover divorce**, leading to dissatisfaction among Sikh community leaders.

#### Community Concerns:

- Leaders argue that the current framework is too narrow and symbolically limited.
- They demand:
  - **Comprehensive rules** reflecting Sikh marriage traditions and customs.
  - A legal framework that provides practical rights and remedies, not just symbolic recognition.

#### About Anand Marriage Act, 1909:

The **Anand Marriage Act, 1909** was enacted by the British Government to legally recognize Sikh marriages conducted through the **Anand Karaj** ceremony.

#### Background & Historical C:

- **Before 1909**, Sikh marriages were often registered under the **Hindu Marriage customs**, which did not reflect Sikh religious identity.
- The **Anand Karaj** (meaning "*blissful union*") is the traditional Sikh marriage ceremony performed in the presence of the **Guru Granth Sahib**, the holy scripture of Sikhism.
- There was a growing demand within the Sikh community to have their unique marriage rituals **legally recognized**.
- This demand became politically significant with the rise of **Sikh reform movements** such as the **Singh Sabha Movement**.
- **As a result**, the British enacted the Anand Marriage Act, 1909, giving **statutory recognition** to Sikh marriages performed via Anand Karaj.

## Smog-Eating Photocatalytic Coatings

**Why in News ?** Delhi has long struggled with **severe air pollution**, particularly in winter due to stubble burning, vehicular emissions, industrial activity, and weather conditions that trap pollutants.

- To combat this, the Delhi government plans to **study and potentially deploy a new technology** involving **titanium oxide-based photocatalytic coatings**.

### About the Technology:

- **Titanium Oxide-Based Photocatalytic Coatings:**

- These are special coatings applied to **roads and public surfaces**.
- They use **sunlight and ultraviolet light** to trigger a chemical reaction that **breaks down pollutants**, including:
  - **Nitrogen dioxide (NO<sub>2</sub>)**
  - **Harmful hydrocarbons (HCs)**
- Converts toxic gases into **less harmful compounds**, improving **air quality** in heavily populated or high-traffic areas.

### Global Use:

- Successfully tested and used in **some international cities**.
- **First time** being studied for large-scale application in **India**, especially in Delhi.

### Key Details of the Delhi Plan:

#### Step-by-Step Approach:

- **Within 30 days** → Selection of a **scientific partner** to evaluate the technology.
- **Field trials** → Conducted on **real city road stretches**.
- **Final report within six months** → Includes safety, sustainability, and cost-effectiveness assessment.

#### Deployment Strategy:

- If successful, a **Cabinet proposal** will be introduced for **city-wide implementation**.
- Priority locations:
  - **Busy traffic corridors**
  - **Markets**
  - **Public spaces**

#### Focus Areas for Evaluation:

- **Safety** – Ensure no harmful side effects.
- **Sustainability** – Long-term environmental impact.
- **Cost-effectiveness** – Feasibility of mass rollout.
- **Supplier Mapping** – Identify credible manufacturers.

#### Expected Benefits

- **Reduction of key pollutants** like NO<sub>2</sub> and hydrocarbons.
- Improved air quality in **high-density urban areas**.
- **People-first gains**, especially for:
  - **Children**

- Elderly
- Daily wage workers
- Vulnerable communities

#### Challenges & Considerations:

- **High cost** of titanium oxide and application process.
- **Durability** of the coating under Indian weather conditions.
- **Maintenance** requirements over time.
- Need for **scientific validation** through field trials before large-scale adoption.
- Coordination with **municipal bodies and road authorities**.

#### Significance for Delhi & India:

- If successful, Delhi could become a **model city** for other polluted urban centers in India.
- Aligns with India's **National Clean Air Programme (NCAP)** and global commitments like **SDG 11 (Sustainable Cities and Communities)**.
- Represents a **scientific and innovative approach** to pollution control, beyond just regulatory measures.

## Harmonized System of Nomenclature (HSN) Codes

**Why in News ?** Union Minister of Commerce and Industry, Shri Piyush Goyal, released the Guidebook on Mapping of Harmonized System of Nomenclature (HSN) Codes prepared by the Department for Promotion of Industry and Internal Trade (DPIIT) on 20<sup>th</sup> September 2025 during the event on “Celebrating 10 Years of Make in India and Discussion on Next Gen-Reforms 2.0” in New Delhi.

#### Key Highlights of the Guidebook

##### Scope and Coverage

- **12,167 HSN Codes** mapped to **31 Ministries and Departments** of the Government of India.
- Provides **clear ownership and accountability** for each product category.

##### Objective

- Promote **data-driven policy-making**.
- Strengthen **manufacturing development**.
- Facilitate **investment promotion**.
- Enhance **trade facilitation** and ease of doing business.

##### Followed

- **Value chain and use-case analysis** conducted for all 12,167 HSN Codes (data sourced from CBIC Tariff Manual).
- **Review of Allocation of Business (AoB) Rules, 1961** to align mapping with product nature and end-use.
- **Extensive consultations:**
  - Several **Inter-Ministerial Consultations**.
  - Multiple **Joint Working Group Meetings**.
  - **300+ one-on-one meetings** with ministries and departments.
  - Numerous **industry stakeholder consultations**.

#### About Harmonized System of Nomenclature (HSN):

- The **Harmonized System of Nomenclature (HSN)** is an internationally standardized system of **names and numbers** used to classify **traded products**.
- Developed by the **World Customs Organization (WCO)**, it serves as a **universal language for goods classification**, ensuring uniformity in international trade.
- **Launched globally: 1988**
- **Adopted by India: 1986** (before GST, used for customs and excise classification).

#### Purpose of HSN:

The HSN provides a **standardized framework** for:

##### Uniform Classification of Goods

- Helps countries identify goods consistently for trade and taxation.

##### Facilitating International Trade

- Common classification reduces confusion and disputes in global commerce.

##### Simplifying Taxation

- Governments use HSN codes for levying **customs duties, excise duties, and GST**.

##### Data Collection

- Enables collection of **trade statistics** and economic analysis.

## Ban on Caste-Based Political Rallies: Uttar Pradesh

**Why in News ?** On **16th September 2025**, Justice Vinod Diwaker of the Allahabad High Court issued a directive to the Uttar Pradesh government to **curb caste glorification in public and political spheres**. The Court emphasized that caste-based rallies, events, and public displays were **creating deep social divisions** and **threatening public order and national unity**.

**UP Government Notification:**

On **21st September 2025**, the Uttar Pradesh government, through officiating Chief Secretary **Deepak Kumar**, issued a comprehensive notification to implement the High Court's order. The notification was aimed at **maintaining social harmony, strengthening law and order, and discouraging caste-based mobilization** in the state.

The notification introduced **strict measures**, including:

- **Ban on Caste-Based Political Rallies:**

All political rallies, conferences, and gatherings organized in the name of caste were **prohibited**. Such activities were identified as major contributors to **caste conflict, social fragmentation, and public disorder**. District Magistrates and Police Chiefs were instructed to **strictly enforce this ban** across the state.

- **Tight Monitoring of Social Media:**

The government ordered **continuous surveillance** of social media platforms to **detect and act against content** that:

- Glorifies any caste,
- Condemns or insults other castes,
- Incites caste hatred or provokes violence. Strict legal action will be taken against violators under relevant cybercrime and criminal laws.

#### **Regulation of Vehicles:**

Displaying **caste names, stickers, or slogans on vehicles** has been completely banned. Vehicles found violating the rule **will be challaned under the Central Motor Vehicles Act, 1988**. Transport and traffic enforcement teams have been instructed to **regularly check vehicles** and take immediate action.

#### **Removal of Caste-Based Signboards:**

The notification instructed local authorities to **remove all caste-based signboards** or public displays that glorify a particular caste or declare certain areas as belonging to specific communities.

**Examples** include boards like **"Yadav Estate", "Thakur ka Ilaaka"**, or any similar caste-centric identifiers.

- **Reforms in Police Records:**

The caste of accused persons will **no longer be recorded in police case files** at police stations.

The **Crime and Criminal Tracking Network & Systems (CCTNS)** portal will be **updated by NCRB to remove the caste field** permanently. until the technical update is complete, the caste field is to be **left blank** in all case entries.

#### **Exception:**



- Cases registered under the **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989** will **continue to record caste details**, as these are legally necessary for ensuring protection and justice for SC/ST communities.

#### **Criticism and Issues :**

##### **Allegations of Double Standards :**

- Critics highlight the government's past organization of caste-based rallies and conferences, especially before elections.
- Public displays showcasing caste-wise leadership composition contradict the ban, raising questions about consistency and neutrality.

##### **Politically Motivated Timing :**

- The ban was announced soon after a major caste-based rally by rival groups was planned.
- This has fueled accusations that the move targets specific groups to curb their mobilization rather than addressing caste issues broadly.

##### **Suppression of Legitimate Advocacy :**

- The notification is feared to silence voices advocating for caste-related rights and representation.
- Critics argue it controls public expression on caste issues without tackling underlying inequalities.

##### **Concerns of Selective Enforcement :**

- There are apprehensions that the ban may be enforced unevenly, targeting certain groups while sparing others based on political affiliations.
- This raises doubts about the law's impartial application.

##### **Lack of Structural Reforms :**

- The ban focuses on restricting rallies but ignores deeper issues like caste discrimination and socio-economic disparities.
- Critics argue that without comprehensive reforms, the measure remains symbolic and ineffective.

#### **Significance of the Move:**

The notification is considered a **major step towards curbing caste polarization** in Uttar Pradesh.

- **Strengthening Public Order:**

Helps prevent caste-based violence and unrest, particularly during **election campaigns** when tensions are high.

- **Promoting Social Unity:**

Aims to **foster harmony among communities** by discouraging divisive caste politics.

- **Neutral Governance:**

Removing caste data from police records will encourage a **more objective and unbiased system of justice**.

## Small Modular Reactors

**Why in News?** India is exploring a strategic shift toward Small Modular Reactors (SMRs) to power the booming AI data centre sector, which has seen a **massive energy demand**. As per the news reported on September 22, 2025, the Centre is encouraging an SMR-led nuclear push to meet the clean energy needs of this trend, already evident in the US and other countries.

**Objectives:**

- This move aims to address the limitations of renewable energy, with projections suggesting India's data centre market could grow to a **\$10 billion valuation by 2026**, up from **\$5.12 billion in 2024**, driven by AI and cloud computing demands.

**Key Points:**

- **AI Data Centre Boom:** The rapid expansion of AI applications has tripled data centre energy needs, with India's demand rising due to global tech giants setting up facilities.
- **SMR as a Solution:** SMRs, with a capacity of **300 MW to 3000 MW**, offer a clean, round-the-clock power source to support AI operations, overcoming renewable energy's intermittency.
- **Government Initiative:** The Centre is open to exploring nuclear energy, with key expenditure heads like power consumption and infrastructure costs already under review.
- **Global Context:** The US and other nations are adopting SMRs, while India lags, prompting a potential policy shift to attract investment and meet future energy demands.
- **Challenges Ahead:** Monsoon disruptions and renewable reliance have slowed progress, necessitating a balanced approach with nuclear integration by 2030.

**About Small Modular Reactors (SMRs) :**

- **Small Modular Reactors (SMRs):** SMRs are advanced nuclear reactors designed with a power capacity ranging from **less than 300 MW(e) to 3000 MW(e)**, significantly smaller than traditional reactors.
- They are factory-built and modular, allowing for easier transportation, installation, and scalability. In India, SMRs are being explored to meet the growing energy demands of AI data centres, offering a **clean, reliable, 24/7 power source** with reduced construction

timelines (3-5 years vs. 10+ for conventional plants). Their compact size and enhanced safety features make them suitable for diverse locations, including remote areas.

#### Types of Reactors:

**Pressurized Water Reactors (PWRs):** The most common type globally, using pressurized water as both coolant and moderator. They operate at **around 1500 MW(e)** and are widely used in the US and Europe for stable baseload power.

**Boiling Water Reactors (BWRs):** Similar to PWRs but allow water to boil in the reactor core, producing steam directly for turbines. They range from **500-1500 MW(e)** and are prevalent in Japan and the US.

**Gas-Cooled Reactors (GCRs):** Use carbon dioxide or helium as coolant, with graphite as a moderator. The UK's Magnox and AGR reactors (up to **1000 MW(e)**) fall here, known for high-temperature operations.

**Fast Breeder Reactors (FBRs):** Use fast neutrons to produce more fissile material than they consume, ideal for resource-scarce regions. India's prototype FBR at Kalpakkam generates **500 MW(e)** and supports thorium utilization.

**Molten Salt Reactors (MSRs):** Experimental reactors using molten salt as fuel and coolant, offering inherent safety and potential for **100-1000 MW(e)**. They are still in development globally, including in China.

## Industrial Production (IIP) and Index of Core Industries (ICI)

**Why in News?** India's core sector output surged to a **13-month high of 6.3% YoY growth in August 2025**, driven by a rebound in coal production and strong performance in steel and cement. This marks a sharp recovery from the **-1.5% contraction in August 2024** and **3.7% growth in July 2025**, fueled by a low base effect and easing monsoon disruptions. The data, released by the Ministry of Commerce & Industry on September 22, 2025, signals positive momentum for industrial production (IIP), with projections of **4.5-5.5% IIP growth for August**. It highlights resilience in infrastructure sectors amid FY26's slower cumulative growth of **2.8% (April-August) vs. 4.6% last year**.

#### Key Points:

- **Overall Core Sector Performance:** The Index of Core Industries (ICI), covering eight sectors with **40.27% weight in IIP**, rebounded sharply due to mining and manufacturing upticks, though crude oil and natural gas dragged it down.
- **Low Base Effect:** Growth boosted by **-1.5% output in August 2024**, allowing easier YoY comparisons; cumulative FY26 growth remains subdued at **2.8%**.

- **Sectoral Drivers:** Coal, steel, and cement led the surge, with positive contributions from refinery products, fertilisers, and electricity; analysts attribute the coal rebound to post-July contractions.
- **Economic Implications:** Indicates infrastructure recovery and potential IIP boost; forecasts suggest **4.5-5.5% IIP growth**, supported by mining turnaround after four months of contraction.
- **Challenges Ahead:** Monsoon impacts lingered in cement (10-month low growth), and FY26's early slowdown raises concerns for sustained momentum without policy support.

### About Industrial Production (IIP) and Index of Core Industries (ICI):

#### Industrial Production (IIP):

- IIP is a composite indicator measuring the growth rate of industrial activity in India, covering mining, manufacturing, and electricity sectors.
- It reflects the volume of production and is a key economic health indicator, released monthly by the **Ministry of Statistics and Programme Implementation**. For August 2025, IIP growth is projected at **4.5-5.5%**, influenced by the recent core sector rebound.

#### Index of Core Industries (ICI):

- ICI tracks the output of eight critical infrastructure sectors—coal, crude oil, natural gas, refinery products, fertilisers, steel, cement, and electricity—which constitute **40.27% of the IIP weight**.
- It serves as a leading indicator for industrial trends. In August 2025, ICI recorded a **6.3% YoY growth**, the highest in 13 months, driven by coal (**11.4%**) and steel (**14.2%**), despite drags from crude oil and natural gas.

## New START Treaty

**Why in News ?** Russian President **Vladimir Putin** announced on Monday that Moscow will continue to **adhere to nuclear arms limits** under the **New START Treaty** with the United States for **one more year**, despite the treaty's scheduled expiration in **February 2026**. He also called on Washington to **follow the same approach**.

#### Key Points:

#### New START Treaty Background:

- The **2010 New START Treaty** is the **last remaining nuclear arms control pact** between the U.S. and Russia.

- It imposes **central quantitative limitations** on deployed strategic nuclear warheads, bombs, and launchers for both countries.
- The treaty is set to **expire on 5th February 2026**, raising concerns among arms control experts.

#### Russia's Position:

- President Putin warned that the **termination of the treaty could destabilize global security** and fuel **nuclear weapons proliferation**.
- He emphasized that maintaining the **status quo** would help **prevent a new strategic arms race** and ensure an **acceptable level of restraint**.
- Russia is prepared to **adhere to the treaty's central limitations for one year beyond its expiration date**.

#### Global Implications:

- Arms control advocates have long expressed concern that the **looming expiration** of New START could **trigger a renewed nuclear arms race**.
- Without the treaty, both countries could **expand nuclear arsenals unchecked**, increasing the **risk of strategic instability and potential nuclear conflict**.

#### Significance:

- Russia's announcement signals a **commitment to stability in strategic arms control**, even amid geopolitical tensions.
- The extension provides **temporary reassurance** to the global community, buying time for potential **renewed negotiations** on arms control.
- Observers note that **U.S. response** will be critical in determining whether a **mutual extension or new agreement** can be reached.

#### Other related Treaties:

##### Strategic Arms Reduction Treaty I & II (START I & II):

- **START I (1991–2001)**: Bilateral U.S.-Soviet/Russian treaty limiting deployed strategic nuclear warheads and delivery systems.
- **START II (1993–2009, never fully implemented)**: Aimed to reduce strategic nuclear arsenals further and **banned MIRVed ICBMs** (multiple independently targetable reentry vehicles).

##### Intermediate-Range Nuclear Forces Treaty (INF Treaty, 1987–2019):

- Bilateral treaty between the U.S. and USSR/Russia banning **ground-launched ballistic and cruise missiles with ranges 500–5,500 km**.
- The U.S. withdrew in 2019 citing **Russian violations**.

##### Treaty on the Non-Proliferation of Nuclear Weapons (NPT, 1968):



- Multilateral treaty with **190+ signatories**.
- Objective: Prevent the spread of nuclear weapons, promote **disarmament**, and facilitate **peaceful nuclear energy**.
- Core obligations:
  - **Non-nuclear states:** Cannot develop nuclear weapons.
  - **Nuclear states:** Commit to disarmament efforts.

#### **Comprehensive Nuclear-Test-Ban Treaty (CTBT, 1996):**

- Bans **all nuclear explosions** for testing purposes globally.
- Signed by 185 states, but **not yet in force** because key nuclear-capable states have not ratified.

#### **Strategic Offensive Reductions Treaty (SORT / Moscow Treaty, 2002–2011):**

- Bilateral U.S.-Russia treaty to reduce **deployed strategic nuclear warheads** to 1,700–2,200 each.
- Superseded by New START in 2011.

#### **Treaty on Conventional Armed Forces in Europe (CFE, 1990):**

- While primarily **conventional arms**, it aimed to **balance military forces** and reduce risks of large-scale conflict in Europe.

#### **Various Plutonium & Fissile Material Agreements:**

- **Plutonium Management and Disposition Agreement (PMDA, 2000):** Between U.S. and Russia to dispose of weapons-grade plutonium.
- **Fissile Material Cut-off Treaty (FMCT, proposed):** Not yet in force; aims to **ban production of fissile material for nuclear weapons**.

## **Mission Shakti 5.0**

**Why in News ?** Mission Shakti 5.0, a flagship initiative for women's safety and empowerment in Uttar Pradesh, has rolled out with **new guidelines issued by DGP Rajeev Krishna on September 23, 2025**. This update comes amid ongoing efforts by Chief Minister Yogi Adityanath to strengthen police response to crimes against women, making it timely news as it expands single-window complaint centers across the state.

#### **Key Objectives of Mission Shakti 5.0**

- **Single-Window System for Complaints:** Designed to provide women a **one-stop solution** for lodging complaints related to domestic violence, harassment, and other issues, reducing bureaucratic delays.



- **Strengthening Prevention and Rehabilitation:** Focuses on **prevention activities**, including community sensitization, legal aid, medical examinations, and rehabilitation support for survivors.
- **Investigation Efficiency:** New protocols ensure **prompt FIR registration** and investigations, with **special emphasis on sensitive disposal** of cases to avoid prolonged trials.

#### **New Guidelines for Police Stations:**

- **Staffing Requirements:** Each center must have **at least 40-50% women staff**, including **up to four additional sub-inspectors** for investigations, plus trained counselors and home guards.
- **Infrastructure Mandates:** Centers require **dedicated rooms** with basic facilities like records, stationery, and women's toilets; must be **operational within two weeks** of launch.
- **Training and Eligibility:** Officers handling transfers will be **trained for 3-5 years**; guidelines include **prevention of cybercrimes**, anti-Romeo squads, and priority for women's complaints.
- **Supervisory Structure:** **Designated supervisory officers** (including ICPs) will conduct regular inspections; **range officers** to review monthly crime meetings and ensure compliance.

#### **About Mission Shakti:**

- Mission Shakti is a flagship initiative of the Government of Uttar Pradesh, launched in 2020 by the Chief Minister, aimed at **women's safety, dignity, and empowerment**. It works on a comprehensive approach covering **security, self-reliance, and awareness**, making it a **key program** for gender justice in the state.
- The scheme has been implemented in **phases**, with the latest being **Mission Shakti 5.0**, launched in September 2025 during the Sharadiya Navratri.

#### **Objectives:**

1. To **ensure the safety and dignity of women and girls** by preventing crimes and responding effectively to violence against women.
2. To **empower women economically and socially** through training, skill development, and entrepreneurship support.
3. To spread **awareness about legal rights and government schemes** related to women's welfare.
4. To **increase participation of women in governance and policing** by improving their representation in key sectors.

5. To create **institutional support systems** for immediate grievance redressal and long-term rehabilitation.

### Special Operations:

Under Mission Shakti, several targeted operations have been launched:

- **Operation Garuda** – Against cybercrime targeting women and children.
- **Operation Majnu** – To curb harassment and stalking in public spaces.
- **Operation Bachpan** – For child protection and rescue.
- **Operation Nasha Mukti** – To fight substance abuse among youth.
- **Operation Raksha** – Focused on domestic violence cases.
- **Operation Eagle** – Special focus on sexual offence investigations.

## H-1B Visa : Impact on Indian IT Industry

**Why in News?** The Trump administration has introduced a **\$100,000 annual fee on H-1B visas**. The policy aims to curb **labour arbitrage by India's IT giants** and Big Tech firms while protecting **U.S. universities and startups**. The broader impact on the **U.S. innovation ecosystem** remains uncertain.

### Background:

- H-1B workers now account for **65% of America's IT workforce**, up from 32% in 2003.
- Despite this, **computer science graduates** face unemployment of 6.1%, and **computer engineering graduates** face 7.5%.
- Some tech companies filed **over 10,000 H-1B applications in FY2024** while conducting mass layoffs of U.S. workers.

### Impact on Indian IT Industry:

- Companies like **Tata Consultancy Services, Infosys, and Wipro** relied on **H-1B visas costing a few thousand dollars** to import engineers at lower wages.
- At **\$100,000 per visa**, this becomes economically prohibitive: Companies must either **raise prices or shift work offshore**, reducing their competitive edge.

### Impact on U.S. Tech Companies:

- Each H-1B hire now represents **significant capital allocation**, requiring executive approval.
- This may **filter applications** toward **exceptionally skilled candidates**, aligning with the program's original purpose.

- **Startups and mid-sized companies** may be disproportionately affected compared to **large firms like Google and Microsoft**.

#### Collateral Consequences:

- **International students** contribute over **\$40 billion annually** to the U.S. economy; more than half are in **STEM fields**.
- The fee may **discourage global talent**, pushing them toward **Canada, Australia, or the UK**.
- This risks **losing the next generation of technological innovators** to competing nations, especially amid **geopolitical tensions with China**.

#### Policy Criticism:

- **Design simplicity over sophistication**: Fee applies uniformly rather than being based on **salary levels, elite graduates, or research fields**.
- Could be seen as a **sledgehammer approach**, harming **innovation and talent attraction**.
- May **accelerate offshoring** of jobs instead of creating more opportunities for U.S. workers.

#### Key Takeaways:

- **Objective**: Reduce H-1B wage arbitrage and protect domestic workers.
- **Risks**: Diminished U.S. global talent attraction, concentration of opportunities in large firms, potential offshoring of jobs.
- **Indian IT Impact**: Higher costs may force **price hikes** or **offshore delivery models**, challenging competitiveness.
- **Global Implications**: Competitor countries may **capture exceptional talent** that the U.S. may no longer attract.

#### Conclusion:

The **\$100,000 H-1B fee** is a **radical measure** targeting labour arbitrage but carries significant **collateral risks**: It may **reduce U.S. competitiveness**, **accelerate offshoring**, and **divert global talent** to other nations. The balance between **domestic worker protection** and **innovation retention** will determine the policy's long-term success.

## COP30 in Belém, Brazil

**Why in News**: India is preparing to submit its updated **Nationally Determined Contributions (NDCs)**, called **NDC 3.0**, around **November 10, 2025**, at the start of **COP30 in Belém, Brazil**.

These updates are expected to include **stronger commitments**, especially for **improving energy efficiency** and **further reducing emissions intensity**.

This step comes when **global efforts are falling short** of the **Paris Agreement** goal: to limit warming to below **2°C**, preferably **1.5°C**, by the end of this century.

#### **Previous Commitments – NDC 2.0 (2022 Update):**

India updated its climate targets under the Paris Agreement in **August 2022**.

The key commitments were:

- **Emission intensity reduction:** India pledged to reduce the emissions intensity of its GDP by **45%** compared to **2005 levels** by **2030**. *Emission intensity* refers to the amount of carbon emitted per unit of GDP, meaning India committed to cleaner economic growth even if total emissions continue to rise.
- **Non-fossil fuel power capacity:** India committed to achieving **50% of total installed power generation capacity from non-fossil fuel sources** such as solar, wind, hydro, and nuclear.
- **Carbon sink creation:** India set a target to **create an additional carbon sink of 2.5 to 3 billion tonnes of CO<sub>2</sub> equivalent** through increased forest and tree cover.

#### **Progress So Far:**

India has reported significant progress to the UN:

- By **2019**, India had already **reduced emissions intensity by 33%** compared to 2005 levels, showing steady movement toward the 2030 goal.
- By **June 2025**, India achieved **50% of total power generation capacity from non-fossil fuel sources**, meeting the target **five years ahead of schedule**.

#### **What to Expect from NDC 3.0:**

The upcoming NDC 3.0 is expected to:

- **Extend climate targets up to 2035**, setting new and more ambitious goals.
- **Focus on energy efficiency** and **sector-specific emission reduction strategies**.
- Roll out the **India Carbon Market in 2026**, which will cover **13 major sectors** like power, steel, cement, and transport.

#### **Under this market mechanism:**

- Each sector will have **mandatory emission intensity reduction goals**.
- Companies achieving extra reductions will **earn emission reduction certificates**, which can be sold to other companies that fail to meet their targets.
- This will create a **market-driven approach** to incentivize cleaner technologies and innovations.

#### **Global Context:**

Only **30 out of 190+ countries** have submitted their updated NDCs ahead of COP30.

Key global developments:

- **European Union (EU):**
  - It has a long-term goal of **net zero emissions by 2050**.
  - It is debating its **2035 target**, expected to be between **66.25% and 72.5% emissions reduction compared to 1990 levels**.
  - Finalization is delayed due to disagreements among major member states like **France and Germany**.
- **Australia:**
  - Announced a **62% to 70% emissions cut below 2005 levels by 2035**.
- **Global temperature outlook:**
  - Even if all existing commitments are fully achieved, global temperatures are projected to **rise by around 3°C by 2100**, far exceeding the **Paris Agreement** target.

**India Carbon Market (ICM):**

The **India Carbon Market**, to be launched in **2026**, will play a vital role in achieving NDC 3.0 targets.

**Key features:**

- Companies will be **assigned emission reduction targets** based on their sector.
- **Overachievers** will receive **tradable credits**, which can be sold.
- **Underperformers** will be required to **purchase credits** to meet their compliance obligations.
- This will **encourage industries to adopt cleaner practices** while ensuring economic growth.

## 71st National Film Awards

**Why in News:** The **71st National Film Awards** ceremony was held recently, where **President Droupadi Murmu** presented the prestigious **Dadasaheb Phalke Award (2023)** to veteran actor **Mohanlal** for his outstanding contribution to Indian cinema. The ceremony celebrated films and performances that not only entertained but also highlighted **social and national values**.

**Key Highlights:**

**Dadasaheb Phalke Award 2023:**

- Awarded to: **Mohanlal**

- Significance: Recognizes lifetime contribution to Indian cinema.
- Mohanlal's statement: "*Cinema is the heartbeat of my soul. Jai Hind.*"

#### President's Address:

- Praised **Mohanlal's versatile acting**, from gentle to intense roles.
- Appreciated films focusing on **women's struggles and empowerment**.
- Stressed on:
  - Adequate **representation of women** in central and regional jury panels.
  - Cinema's role in **spreading awareness of social issues**, especially among youth.
  - Encouraging **films focused on children**, particularly girls.
- Highlight: **Six child actors** won awards this year.

#### Major Awards:

##### Best Actor Awards:

- **Best Male Actor (shared):**
  - **Shah Rukh Khan** for *Jawan (Hindi)*
  - **Vikrant Massey** for *12th Fail (Hindi)*
- **Best Female Actor:**
  - **Rani Mukerji** for *Mrs. Chatterjee vs Norway (Hindi)*

##### Best Film Categories:

- **Best Feature Film:** *12th Fail (Hindi)*
- **Best Popular Film Providing Wholesome Entertainment:** *Rocky Aur Rani Kii Prem Kahaani (Hindi)* – Directed by **Karan Johar**
- **Best Feature Film Promoting National, Social, and Environmental Values:** *Sam Bahadur (Hindi)* – Directed by **Meghna Gulzar**
- **Best Children's Film:** *Naal 2 (Marathi)* – Directed by **Sudhakar Reddy Yakkanti**
- **Best Film in Animation, Visual Effects, Gaming & Comic Category:** *Hanu-Man (Telugu)*

##### Best Direction and Cinematography:

- **Best Director:** **Sudipto Sen** for *The Kerala Story (Hindi)*
- **Best Cinematography:** **Prasantanu Mohapatra** for *The Kerala Story (Hindi)*

##### About Dadasaheb Phalke Award:

- The Dadasaheb Phalke Award is **India's highest honor in cinema**, given annually for **outstanding lifetime contribution to Indian cinema**.
- It is presented by the **Government of India**, under the **Ministry of Information and Broadcasting**.



- The award is named after **Dhundiraj Govind Phalke**, popularly known as **Dadasaheb Phalke**, who is considered the “*Father of Indian Cinema*” for directing India's first full-length feature film **Raja Harishchandra (1913)**.

#### History:

- **Established:** 1969, to commemorate the birth centenary of Dadasaheb Phalke.
- **First recipient:** **Devika Rani**, the first lady of Indian cinema, in 1969.

## World Food India 2025

**Why in News:** Prime Minister Narendra Modi **inaugurated the** fourth edition of World Food India 2025 at ***Bharat Mandapam*, New Delhi**.

- The event highlights **India's emergence as a global hub** for food processing, innovation, and investment.
- The Prime Minister emphasized India's “**triple strength**” in the global food sector – diversity of production, innovation, and investment opportunities.
- The event also aligns with the vision of **Viksit Bharat 2047**, aiming to make India a **developed, inclusive, and competitive nation**.

#### Key Highlights:

##### PM's Address:

- India's diverse food production is **changing global hunger trends**, attracting investors to Indian agriculture and cuisine.
- **25 crore people** have overcome poverty in the past decade, creating an **energetic, aspirational consumer base**.
- India is now the **world's third-largest start-up ecosystem**, with strong growth in **food and agri-tech start-ups**.
- **PLI Scheme expansion** and development of **Mega Food Parks** have driven a **20-fold increase** in food processing capacity over the last 10 years.
- **Processed food exports have doubled**, boosting India's global presence.
- **GST reforms** in the food sector have promoted innovation and investment.

#### Government Initiatives Announced:

- **Credit-linked support** of over **Rs 770 crore** to be provided to around **26,000 beneficiaries** in food processing micro-enterprises.
- Total project worth: **Rs 2,510 crore** under **Pradhan Mantri Micro Food Processing Enterprises (PMFME) Scheme**.

- Focus on **climate-smart technologies** and **market integration** to make India globally competitive.

#### **Bilateral Engagements:**

- PM Modi met **Russia's Deputy Prime Minister Dmitry Patrushev** during the event.
  - Discussions focused on **agriculture, fertilizers, and food processing cooperation** between India and Russia.
  - PM highlighted “win-win cooperation” for both nations.

#### **Significance:**

- Positions **India as a global leader** in food processing and agricultural innovation.
- Boosts **foreign investments**, start-ups, and export-oriented production.
- Strengthens **India's food security and farmer incomes** through value addition.
- Supports **Viksit Bharat 2047** goals by making food systems **sustainable, inclusive, and globally competitive**.

#### **About World Food India:**

- **Launched:** 2017 as a flagship event by the **Ministry of Food Processing Industries (MoFPI)**.

**Objective:** Promote **investment, innovation, and partnerships** in India's food processing sector.

- Connect **farmers, entrepreneurs, and global leaders**.

#### **2025 Edition:**

- Largest ever with **90+ countries** and **2,000 exhibitors**.
- Acts as a platform for **policy dialogue, technology exchange, and trade collaborations**.

## **Provincial Citizenship**

**Why in News:** Alok Ranjan's research on “*Provincial Citizenship*” has been recently published online in *Studies in Indian Politics* (September 2025).

- The study focuses on **Jharkhand's domicile policies** and how they are reshaping the **politics of migration, identity, and citizenship** in India.

#### **Key Points:**

#### **Provincial Citizenship – Concept:**

- Coined by **Alok Ranjan (JNU)**.
- Refers to the **informal, state-level notion of citizenship** shaped by **nativist politics** and **regional belonging** rather than national identity.
- Driven by **domicile-based policies** that prioritize “locals” or “sons of the soil” for jobs, welfare benefits, and political representation.

- Creates a **parallel identity** that competes with the constitutional idea of Indian citizenship.

### Jharkhand Case Study:

- Jharkhand, created in **2000**, used domicile policies to **assert majority identity politics** against a perceived dominance of minority elites.
- Unlike **Sixth Schedule tribal areas**, these policies apply to the **entire state**, directly challenging **Article 16(2)** of the Constitution, which prohibits discrimination based on place of birth or residence.
- This has led to **conflicts between state interests and national citizenship rights**, often requiring **Supreme Court intervention**.

### Comparison with Other States:

- **Jammu & Kashmir:** After the **2019 abrogation of Article 370**, new domicile laws were introduced to **include minorities** like Valmiki, Gorkha, and West Pakistan refugees.
- **Assam:** NRC and anti-immigrant politics have shaped domicile policies, particularly around definitions of who qualifies as a citizen.
- **Maharashtra:** The “Marathi Manos” campaign historically demanded jobs for locals in the state.

### Constitutional Concerns:

- The **States Reorganisation Commission (SRC) Report 1955** had warned about the dangers of domicile-based rules:
  - They violate **Articles 15, 16, and 19** related to equality, non-discrimination, and freedom of movement.
  - They undermine the **concept of a common Indian citizenship**.
- The SRC recommended that domicile rules should be **replaced by uniform Parliamentary legislation**, cautioning that failure to do so would make “common Indian citizenship meaningless.”

### Implications of Provincial Citizenship:

- Creates **tensions between internal migrants and local populations**.
- Encourages **nativist politics** and exclusionary policies.
- Challenges the constitutional vision of **Akhanda Bharat (Undivided India)**.
- Leads to disputes requiring **judicial interventions** by the Supreme Court.
- Promotes **political mobilisation based on local identity** rather than national unity.

### About Provincial Citizenship:

#### Definition:

Provincial citizenship is an **informal, state-level identity** granted to those considered “locals”

or “natives,” based on cultural, emotional, and political belonging to a state rather than India as a whole.

#### Key Features:

- Rooted in **domicile policies** like residence-based quotas and reservations.
- Operates **outside the constitutional framework** yet wields significant political and economic influence.
- Prioritizes locals for **government jobs, welfare schemes, and political representation**.
- Often emerges from **historical grievances or sub-nationalist movements**.

#### Examples:

- **Jharkhand** – Domicile policies focused on tribal and regional identity.
- **Assam** – NRC debates over citizenship and exclusion.
- **Maharashtra** – Jobs reserved for locals under *sons of the soil* politics.
- **Jammu & Kashmir** – Post-2019 domicile reforms to integrate historically excluded groups

## K Visa

**Why in News?** US President Donald Trump’s proposed **H-1B visa cuts** aim to protect American jobs, which could reduce the number of foreign tech professionals entering the US, particularly from countries like India. Experts suggest that **China could benefit** through its new **K visa**, designed to attract international talent in science and technology sectors.

#### Introduction of K Visa :

- The **State Council of the People’s Republic of China** released the **Regulations on the Administration of the Entry and Exit of Foreigners**, introducing the **K visa** effective **October 1, 2025**.
- The K visa is intended to **attract young foreign talent**, particularly in **science, technology, and research**.
- It is an **extension of the R visa**, which China introduced in 2013 to bring in high-level international talent.

#### Purpose & Focus :

- Focus on **next-generation scientists and researchers**.
- Targets **young professionals in science and technology**.
- Specific details like **age range, validity period, duration of stay, and follow-up residency policies** are yet to be fully clarified.

### Significance & Strategic Objective:

- Aligns with China's goal of becoming a **science and technology superpower**, emphasized by **President Xi Jinping** and other leaders.
- Provides an **opportunity to attract talent affected by US H-1B visa restrictions**.
- Expected to be **more selective than H-1B visas**, focusing on high-potential candidates.
- Could help mitigate **economic challenges like youth unemployment and the real estate crisis**.

### Expert Opinion :

- According to **Yin Zhengzhi**, Associate Professor at **Tsinghua University**, the K visa could **strengthen China's talent pool and accelerate technological innovation**.
- Could enhance China's **global competitiveness** in research by attracting top scientists and young professionals.

### About K Visa – China:

- The **K visa** is a new Chinese visa category introduced by the **State Council of the People's Republic of China** effective **October 1, 2025**, aimed at attracting **international talent**.
- It is an **extension of the R visa** (introduced in 2013 for high-level talent), with a focus on **young professionals in science, technology, and research**.

### Purpose & Objective:

- To **bring global scientific and technological talent** to China.
- Focuses on **next-generation scientists and researchers**.
- Aims to **strengthen China's innovation ecosystem** and reduce reliance on foreign talent lost to US H-1B restrictions.

### Key Features :

**Target group:** Young foreign professionals in science and technology.

**Validity & residency:** Exact duration, age limits, and follow-up residency policies **not fully clarified**.

**Selectivity:** Expected to be **more selective than US H-1B visas**, prioritizing high-potential candidates.

### Significance :

- Supports China's goal of becoming a **science and technology superpower**.
- Leverages **US H-1B visa cuts** as an opportunity to attract global talent.
- Could help address **youth unemployment** and strengthen China's **research and innovation capacity**.

## Viksit Uttar Pradesh: Vision 2047 Conclave

**Why in News?** The Uttar Pradesh government, under its Vision 2047 plan, has laid out strategies to transform the state into a major economic and social hub of India. Principal Secretary (Planning) Alok Kumar, at the *Viksit Uttar Pradesh: Vision 2047 Conclave* organized by *The Times of India*, highlighted the state's roadmap to achieve a USD 6 trillion economy and contribute 20% of India's GDP by 2047.

### Key Highlights:

**Vision to contribute 20% to India's GDP by 2047:**

- Target to make UP a USD 6 trillion economy.
- Focus on inclusive, sustainable development and high quality of life.
- Bring back people who migrated from UP for jobs or education.

### Citizen Participation & Feedback:

- Massive campaign to collect public suggestions – over 9 lakh received so far.
- AI-based analysis of feedback for better planning.
- Top 3 suggestions from each district and 5 from the state to be rewarded.

### Planning & Collaboration:

- Vision plan co-developed with NITI Aayog.
- Inputs from sector experts, private stakeholders, and Vidhan Sabha presentation before finalization.
- Divided into 12 sectors under three themes:
  1. Economic growth
  2. Supporting sectors
  3. Human development angle

### Priority Sectors Identified:

- Industries & manufacturing hubs
- Textile parks & toy parks
- New leather policy
- IT industry & semiconductor sector
- Emerging technologies

### Youth-Centric Development:

- Focus on demographic dividend for the next 22 years.
- Goal to make youth job providers, not job seekers.
- Improving quality of education and industry collaboration.
- Plans for curriculum redesign and internships.

### Agriculture & Food Processing (UP-AGRI Project):



- Partnership with **World Bank** to **increase crop productivity by 35%**.
- Aim to move UP from top producer to **top in food processing**.

#### **Women Empowerment & Workforce Participation:**

- Female workforce participation **increased from 15% to 35%** in seven years.
- Still **7-8% below national average**.
- Plans for **working women's hostels** in industrial townships and smaller cities.

#### **Urbanization & Sustainability:**

- Goal to **scale up urbanization to 60% by 2047**.
- Focus on **climate-resilient, sustainable growth**.
- **Clean Air Project** with World Bank in progress.
- Plan to meet **50% power needs through solar energy**.
- Large-scale **afforestation** drive.

#### **Tourism Development:**

- Target to make UP a **global tourism hub**.
- Diversification of tourism:
  - **Village tourism**
  - **Wellness tourism**
  - **Eco-tourism**
  - **Cultural & heritage tourism**

#### **Significance:**

- Strengthens UP's role in **Viksit Bharat 2047** vision.
- Promotes **economic growth, sustainability, and social inclusion**.
- Encourages **reverse migration**, keeping talent and capital within the state.
- Positions UP as a **key driver of India's future development**.

## **CAG: States' Macro-Fiscal Health**

**Why in News?** The Comptroller and Auditor General (CAG) released a decadal analysis of **States' macro-fiscal health**, which revealed important trends in borrowing, revenue generation, and expenditure patterns.

#### **Key Highlights**

##### **Revenue Surplus and its Implications:**

- UP recorded a **Rs 37,000 crore revenue surplus**, the highest among states, and more than double Gujarat's surplus.
- However, **42% of UP's revenues were self-generated**, with **58% dependent on central transfers**, indicating **vertical fiscal imbalance**.

- Some states like **Maharashtra** generated **70%** of their revenue internally, while states like **Arunachal Pradesh** generated only **9%**, showing deep regional disparities.

#### Uneven Sources of Revenue:

- States are relying on **volatile revenue streams**:
  - **Kerala**: 12,000 crore from lotteries.
  - **Odisha**: 90% of non-tax revenue from mining royalties.
  - **Telangana**: 9,800 crore from land sales.
- Such sources are **unsustainable**:
  - Lotteries depend on ticket sales.
  - Mining revenues fluctuate with global commodity prices.
  - Land cannot be sold repeatedly.

#### Borrowings and Debt Trends (2016-17 to 2022-23):

CAG data highlights diverse borrowing patterns across states.

#### Heavy Borrowers and Rising Debt:

- **Andhra Pradesh**: Borrowings tripled to ₹1.86 lakh crore, pushing debt to **35% of GSDP**.
- **Bihar**: Borrowings doubled, debt hovering around **39% of GSDP**.
- **Rajasthan**: Borrowings quadrupled to ₹1.60 lakh crore, debt at **40% of GSDP**.
- **Tamil Nadu**: Steady rise to ₹1.01 lakh crore, debt at **33% of GSDP**.
- **Punjab**: Persistent high borrowings, debt at **45% of GSDP**.

#### Moderate Borrowers with Controlled Debt:

- **Gujarat**: Gradual increase, debt steady at **19-20% of GSDP**.
- **Maharashtra**: Sharp pandemic spike to ₹1.18 lakh crore, later reduced, debt stable at **20% of GSDP**.
- **Karnataka**: Borrowings spiked in 2020-21, later cut back, liabilities around **28% of GSDP**.
- **Uttar Pradesh**: Borrowings **slightly reduced** from ₹67,685 crore (2016-17) to ₹66,847 crore (2022-23), liabilities steady at **31% of GSDP**.
- **Odisha**: Cut borrowings drastically to ₹5,347 crore, debt fell to **15% of GSDP** (lowest in India).

#### Small Northeastern States with High Debt Burden:

- Borrowings are low in absolute terms but **very high relative to GSDP**:
  - **Manipur, Mizoram, Meghalaya, Nagaland**: Liabilities between **40-60% of GSDP**, indicating high fiscal stress and dependency.

#### Pandemic Impact on State Finances:

- **Borrowings spiked during COVID-19** due to emergency health and welfare spending.

- Post-pandemic recovery showed **three distinct trends**:
  1. **Continued increase in borrowings**: Andhra Pradesh, Rajasthan, Telangana.
  2. **Controlled borrowing with reduction**: Karnataka, Kerala, Maharashtra.
  3. **Aggressive debt reduction**: Odisha, Uttar Pradesh, Tripura.

#### The Welfare Paradox:

- Many states show **surpluses on paper**, but:
  - They rely heavily on **central transfers, off-budget loans, and delayed GST compensation**.
  - Welfare expenditure is often **underfunded**, creating a **gap between accounting gains and real developmental outcomes**.

#### Examples of Structural Issues:

- **Punjab**: Persistent high debt with limited revenue growth.
- **Kerala**: Over-dependence on lottery revenues.
- **Andhra Pradesh & UP**: Deferred costs through **free power schemes, farm loan waivers, and opaque financing vehicles** like guarantees and SPVs.

#### Central Schemes vs. Fiscal Capacity:

- Welfare schemes like **PM-KISAN, Ujjwala, and Ayushman Bharat** create a **spectacle of care**, but states have limited fiscal room to sustain welfare spending independently.
- India has **one of the largest welfare states globally**, but among **middle-income nations**, it has **one of the thinnest fiscal bases**, making it heavily reliant on **borrowings**.

#### Significance of the CAG Report:

- Highlights the **divergence in state fiscal health** and borrowing practices.
- Shows that **headline surpluses may mask deeper fiscal vulnerabilities**.
- Stresses the need for:
  - **Stable revenue sources** for states.
  - **Prudent borrowing and debt management**.
  - **Sustainable welfare financing** without excessive reliance on central transfers.

## World's first entirely AI-designed genome

**Why in News?** Scientists at **Stanford University** and the **Arc Institute** have successfully created the **world's first entirely AI-designed genome**, specifically **bacteriophages**—viruses that infect and kill bacteria.

- This is a major step beyond AI's previous applications in biology, which were limited to **protein design or small gene systems**. Designing a **whole genome** is far more complex, as it involves coordinating **multiple interacting genes and regulatory switches** to ensure proper replication, host specificity, and evolutionary fitness.

#### How it was done?

- The team used a **genomic language model named Evo**, trained on thousands of viral genomes, to **generate thousands of candidate bacteriophage designs**.
- These candidates were tested in the lab on **E. coli bacteria**, including antibiotic-resistant strains. Out of **302 AI-designed bacteriophages**, **16 successfully infected the bacteria**.
- Some of the functional viruses carried **dozens to hundreds of mutations never seen before**, including innovative features like **borrowing a DNA-packaging protein from a distant relative**—a feat human scientists had not achieved.

#### Test case virus:

- The AI work focused on **bacteriophage ΦX174 (phi-X-174)**, a virus with **5,386 DNA letters and 11 overlapping genes**, first sequenced in 1977 and synthesized in 2003.
- This virus has now become the **first virus fully designed by AI**.

#### What are Bacteriophages ?

##### Definition:

Bacteriophages are **viruses that specifically infect and replicate within bacteria**. The term “bacteriophage” literally means “**bacteria eater**.”

##### Structure:

- They can have **varied shapes**, including icosahedral (spherical), filamentous, or complex structures with a head and tail.
- Their genome can be **DNA or RNA**, single-stranded or double-stranded.
- Some have specialized proteins to **attach to bacterial surfaces** and inject their genetic material.

##### Life Cycle:

1. **Attachment:** Phage binds to specific receptors on the bacterial surface.
2. **Penetration:** Injects its genetic material into the host bacterium.
3. **Replication:** Uses the bacterial machinery to produce phage components.
4. **Assembly:** New phage particles are assembled inside the bacterium.
5. **Release:** The bacterium often **lyses (breaks open)**, releasing new phages.

##### Types:

- **Lytic phages:** Kill the host bacterium immediately after replication.

- **Lysogenic (temperate) phages:** Integrate their genome into the host DNA and can remain dormant before activating lytic cycles.

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# Facts for Prelims

## The Integrated Food Security Phase Classification (IPC)

**Why in news ?** A global hunger monitor has declared that famine is taking place in Gaza, nearly two years after Israel launched its military campaign in the region .

This was confirmed from the Integrated Food Security Phase Classification (IPC), that is an internationally recognized body that assesses and classifies the severity of food insecurity and hunger crises.

### About IPC :

- The Integrated Food Security Phase Classification (IPC), also known as IPC scale, is a tool for improving food security analysis and decision-making. It is a standardised scale that integrates food security, nutrition and livelihood information into a statement about the nature and severity of a crisis and implications for strategic response.
- The IPC was originally developed in 2004 for use in Somalia by the United Nations Food and Agriculture Organization's Food Security Analysis Unit (FSAU).
- Several national governments and international agencies, including CARE International, European Commission Joint Research Centre (EC JRC), Food and Agricultural Organization of the United Nations (FAO), USAID/FEWS NET, Oxfam GB, Save the Children UK/US, and United Nations World Food Programme (WFP), have been working together to adapt it to other food security contexts.

## The India Habitat Centre (IHC)

**Why in News:** The India Habitat Centre (IHC) has launched “Utsav”, a new series aimed at celebrating various cultural and culinary festivals of India.

- The initiative was kickstarted with Onam celebrations, where a traditional Sadhya meal is being served at the Ann restaurant from September 3-5.
- Throughout the year, the restaurant will feature regional cuisines connected with festivals like Baisakhi, Bihu, Ugadi, and others, promoting India's diverse cultural heritage through food.

### About India Habitat Centre (IHC):

- India Habitat Centre (IHC) is a multi-functional cultural and convention centre located in New Delhi.



- It was **established in 1993** to bring together professionals from various organizations engaged in **habitat and sustainable development issues**.
- IHC serves as a hub for **conferences, art exhibitions, theatre performances, cultural festivals, and workshops**.
- It houses several restaurants and spaces that **promote regional cuisines and local traditions**.
- The centre plays a key role in **promoting cultural exchange, sustainability, and public engagement** in urban development issues.

## UNSC Resolution 1172

The article reviews Atal Bihari Vajpayee's pivotal role in India-China relations, highlighting his 1979 visit as External Affairs Minister—the first by a senior **Indian leader** post-1962 war—and tracing ties from post-1998 nuclear test tensions to peace-building efforts. It underscores the relevance of these milestones amid ongoing LAC tensions and disputes, including **UNSC Resolution 1172**.

**About UN Security Council Resolution 1172 (1998):**

- **Date adopted:** 6 June 1998.
- **Context:** In May 1998, **India and Pakistan conducted nuclear tests** (Pokhran-II by India and Chagai-I by Pakistan).
- The international community was alarmed, fearing a **nuclear arms race in South Asia**.
- **Resolution 1172** was co-sponsored by **China and the United States** and passed unanimously.

**Key Provisions:**

- **Condemnation** of the nuclear tests by both India and Pakistan.
- Called for **India and Pakistan to stop further testing and not to weaponize their nuclear capabilities**.
- Urged both nations to **sign the Comprehensive Nuclear-Test-Ban Treaty (CTBT)** and **join the Nuclear Non-Proliferation Treaty (NPT)** as non-nuclear-weapon states.
- Demanded **restraint and dialogue** to reduce regional tensions.
- Asked all states **not to assist India or Pakistan** in their nuclear weapons programs.

## Tiwa Langkhun Festival

**Why in News?** The **Tiwa Langkhun Festival** was recently celebrated with great enthusiasm in Umsowai village, Karbi Anglong district, Assam, on Tuesday. This traditional festival involves

Tiwa tribesmen performing rituals and cultural dances to pray for a good harvest and prosperity. It highlights the rich cultural heritage of the Tiwa community and promotes communal harmony.

#### About the Tiwa Tribe:

- **Location:** Primarily inhabits the central Assam hills, especially in Karbi Anglong, Morigaon, and Nagaon districts, with some populations in Meghalaya.
- **Ethnic Group:** Recognized as a Scheduled Tribe (ST) in Assam.
- **Language:** Speak the Tiwa language, part of the Tibeto-Burman language family, along with Assamese.

#### Economy:

- Mainly agrarian, practicing both shifting (jhum) cultivation and wet rice cultivation.
- Traditionally depend on agriculture, forest produce, and weaving.

#### Social System:

- Known for their clan-based organization.
- They have a dual social structure — hill Tiwas and plain Tiwas, with slight cultural differences.
- **Famous Festivals:**
  1. **Langkhun Festival** – Marks the initiation of young boys into adulthood and prayers for a good harvest.
  2. **Sogra Misawa Festival** – Related to fertility and agricultural prosperity.
  3. **Jonbeel Mela** – Known for barter trade, where hill and plain tribes exchange goods.

#### Significance of Langkhun Festival:

- Celebrates the transition of young boys into community responsibilities.
- Involves folk dances, traditional music, and rituals.
- Strengthens community bonding and cultural preservation.
- Prayers are offered for timely rains, good harvest, and well-being of the village.

### Bandung Conference 1955

- The Bandung Conference is often remembered as the foundation of the Non-Aligned Movement (NAM).

- It is frequently discussed in the context of **India's foreign policy**, especially regarding **South-South cooperation**, **Asian-African solidarity**, and **India's role as a leader among newly independent nations**.
- Recently, during diplomatic meetings, leaders from Asia and Africa invoked the **spirit of Bandung** to promote **global peace and cooperation** amidst rising geopolitical tensions.

**Official Name:** Asian-African Conference

- **Held at:** Bandung, **Indonesia**
- **Date:** 18th – 24th April, 1955
- **Hosted by:** Indonesia, Burma (now Myanmar), Ceylon (now Sri Lanka), India, and Pakistan.
- **Participating Countries:** 29 Asian and African nations, mostly newly independent states after World War II.
- **Representing Population:** Over 1.5 billion people, nearly 55% of the world population at that time.

#### **Background:**

- After World War II, many countries in Asia and Africa gained independence from colonial rule.
- There was a **growing Cold War rivalry** between the USA (**capitalist bloc**) and USSR (**communist bloc**).
- Newly independent nations did **not want to align** with either superpower.
- Need for a **collective platform** to address common challenges like **colonialism**, **racism**, **economic backwardness**, and **peaceful coexistence**.
- India's Prime Minister **Jawaharlal Nehru**, along with leaders like **Sukarno (Indonesia)**, **U Nu (Burma)**, **Mohammed Ali (Pakistan)**, and **Sir John Kotelawala (Ceylon)** played a key role in organizing the conference.

## **International Day of Democracy 2025**

**Why in News ?** The International Day of Democracy 2025 is observed on 15 September to reinforce the importance of democratic values, human rights, and citizen participation in governance.

In 2025, the theme highlights a powerful call to action: **"Achieving Gender Equality, Action by Action"**.

The theme for 2025 is Set by the **Inter-Parliamentary Union (IPU)**.

### History and Origin of the Day:

The International Day of Democracy was **established through a UNGA resolution in 2007**, with the first celebration held on **15 September 2008**. The date was chosen to align with the Universal Declaration on Democracy, adopted by the **Inter-Parliamentary Union (IPU) in 1997**.

**This declaration outlines key principles of democracy,**

- Right to participate in public life
- Respect for human rights
- Transparent governance
- Independent judiciary and press

### About Inter-Parliamentary Union (IPU):

The **Inter-Parliamentary Union (IPU)** is the **global organization of national parliaments**.

- It works to **promote democracy, peace, cooperation, and dialogue among parliamentarians** worldwide.
- IPU provides a platform for **international parliamentary diplomacy**, helping lawmakers collaborate on global issues such as human rights, sustainable development, and conflict resolution.

### Establishment:

- **Founded on: 30 June 1889**
- **Founders:**
  - **Frédéric Passy** (France) – Nobel Peace Prize Laureate
  - **William Randal Cremer** (United Kingdom) – Nobel Peace Prize Laureate
- **Initial Name:** *Inter-Parliamentary Congress*
- **Renamed:** Inter-Parliamentary Union in 1899
- **Headquarters:** Geneva, Switzerland
- IPU is the **oldest multilateral political organization** in the world, predating even the United Nations.

### Membership

- **Total Members (2025): 180 national parliaments**
- **Associate Members: 14 regional parliamentary assemblies**
- Represents **over 46,000 parliamentarians** worldwide.

Membership is open to any **sovereign state with a functioning national parliament**.

**Swasth Nari, Sashakt Parivar Abhiyaan**

**Why in News?** The Government of India is set to launch the 'Swasth Nari, Sashakt Parivar Abhiyaan' (Healthy Woman, Strong Family Campaign) on **September 17, 2025**, along with the eighth 'Poshan Maah' (Nutrition Month).

The initiative will be launched by **Prime Minister Narendra Modi** and is jointly led by the **Ministry of Health and Family Welfare (MoHFW)** and the **Ministry of Women and Child Development (MoWCD)**.

**About 'Swasth Nari, Sashakt Parivar Abhiyaan'**

**Objective:**

To improve **women's health and nutrition** as a means to strengthen families and communities.

**Focus Areas:**

1. Early detection and prevention of **non-communicable diseases (NCDs)** such as:
  - Anemia
  - Diabetes
  - Hypertension
  - Breast and cervical cancers
2. Promoting **maternal and child health**.
3. Ensuring **nutrition awareness and behavior change** at the community level.

**Key Features:**

- **Screening Camps:** Conducted at **Anganwadi centers** and **primary health centers**.
- **Digital Health Records:** Integration with **Ayushman Bharat Digital Mission** for tracking women's health.
- **Community Participation:** Engagement of **ASHA workers, Anganwadi workers, and local women groups**.
- **Convergence with Poshan Abhiyaan:** Aligning with nutrition month activities for a holistic approach.
- **Tagline:**  
*"Healthy Woman, Strong Family"* — highlighting that women's health is crucial for the well-being of the entire family and society.

## Polymetallic Sulphides (PMS)

**Polymetallic Sulphides (PMS)** are rich mineral deposits found on the **ocean floor**, primarily around **hydrothermal vent systems**. These deposits are considered a potential future source of various metals critical for industrial and technological applications.

**Key Characteristics:**

### Formation:

- PMS deposits form when **hot, metal-rich fluids** from beneath the Earth's crust are expelled through hydrothermal vents.
- When these fluids mix with cold seawater, **metal sulphides** precipitate and accumulate on the ocean floor.

### Composition:

PMS typically contain a mixture of metals, including:

- **Copper (Cu)**
- **Lead (Pb)**
- **Zinc (Zn)**
- **Iron (Fe)**
- **Silver (Ag)**
- **Gold (Au)**
- **Cobalt (Co)**
- **Nickel (Ni)**
  - The **sulphur content** combines with these metals to form sulphide minerals like **chalcopyrite, sphalerite, and galena**.

### Appearance:

They often appear as **black smokers** or chimneys, with dark plumes of mineral-rich water emitted from hydrothermal vents.

## Sant Kabir Textile Parks Scheme

**Why in News ?** Uttar Pradesh chief minister Yogi Adityanath, has recently announced that textile and apparel parks will be established in the name of Sant Kabir with the primary objective of skill development and generating employment for the youth in Uttar Pradesh.

### Key Details

- **Announcement:** The plan was unveiled during a review meeting with officials, with the chief minister announcing a proposal to develop textile parks across Uttar Pradesh.
- **Inspiration:** Kabir's ideals of labour, simplicity, and self-reliance will guide the initiative, fostering a tradition of modernity while creating new opportunities for investment and employment.
- **Textile Parks:** The scheme proposes establishing textile parks with modern facilities, particularly in areas like Sant Kabir Nagar, to support the state's top textile and apparel exporters.



### Economic Impact

- **Export Contribution:** Uttar Pradesh currently accounts for 15% of India's total textile exports, with the state exporting goods worth USD 3.5 billion.
- **Employment:** The initiative is expected to create jobs for 50,000 people and involve 24 exporters in the next two years.
- **Investment:** The statement mentions an investment amount of Rs 15,431 crore to strengthen and expand the textile industry.

### Infrastructure and Support

- **Facilities:** The scheme includes modern effluent treatment plants, ancillary industries, and warehouses to support the textile sector.
- **Skill Development:** A large-scale employment generation program is in progress, focusing on skill development for the textile industry.
- **Energy:** The scheme proposes providing subsidized electricity to weavers and exploring solar energy integration to enhance sustainability.

### Additional Benefits

- The scheme will implement a minimum wage for workers and encourage the use of local resources, supporting the state's economy.
- The Chief Minister highlighted the potential to improve global trade and infrastructure, including roads, electricity, and water supply.

## JUPITER / AIRAWAT-PSAI

**Why in News? September 5, 2025** – JUPITER, Europe's first exascale supercomputer, was launched in Germany, making it one of the most powerful supercomputers in the world.

- It is powered entirely by renewable energy, making it a landmark in sustainable high-performance computing (HPC).
- In India, the National Supercomputing Mission (NSM) continues to progress steadily.
- AIRAWAT-PSAI, India's advanced AI-focused supercomputer, ranked among the top 100 supercomputers globally, showcasing India's growing capability in cutting-edge computational technology.

### About JUPITER (Europe's First Exascale Supercomputer)

- **Location:** Forschungszentrum Jülich, Germany.
- **Performance:**
  - **Exascale capacity** – Capable of one exaflop, i.e., 1 quintillion ( $10^{18}$ ) calculations per second.

- **Significance:**
  1. Enables **real-time climate modeling** and disaster prediction.
  2. Powers **medical and pharmaceutical research**, such as drug discovery.
  3. Supports **AI-driven innovations** across industries.
  4. Entirely **powered by renewable energy**, setting a benchmark for green computing.
- **Strategic Impact:**
  - Strengthens **European technological sovereignty**, reducing reliance on foreign computing infrastructure.

#### About AIRAWAT-PSAI (India):

- **Full Form:** AI Research, Analytics, and Knowledge Assimilation Platform for Powering Sustainable AI.
- **Purpose:**
  - Developed under **National Supercomputing Mission (NSM)** to advance AI research and development.
  - Supports **India's AI strategy** and innovation ecosystem.
- **Ranking:** Among **Top 100 Supercomputers Globally (2025)**.
- **Key Features:**
  - Specialized for **AI workloads and big data analytics**.
  - Supports **healthcare, agriculture, education, space, defense, and climate research**.
  - Built with **Make in India components** in collaboration with C-DAC (Centre for Development of Advanced Computing).

## 2025 PN7

**2025 PN7** is a newly spotted **asteroid** with an orbit similar to Earth's around the Sun.

- It is considered a **tiny quasi-moon**, potentially the smallest of its kind, measuring perhaps no longer than 52 feet.
- Astronomers are studying it to understand **asteroids that temporarily orbit Earth**, also known as mini-moons or quasi-moons.
- The asteroid was detected using telescopic observations by the **University of Madrid and Complutense University astronomers** and published in the *Research Notes of the American Astronomical Society*.

- 2025 PN7 is part of research on small, transient space objects that **briefly linger around Earth**, which helps scientists understand near-Earth objects and potential future visitors from space.

## Antifa

**Why in News ?** Antifa has been in the news due to President Donald Trump's response to the September 10, 2025, assassination of conservative activist Charlie Kirk.

Trump signed an executive order on September 22, 2025, labeling antifa a "domestic terrorist organization," directing federal agencies to investigate its activities and funding.

- **Antifa** (short for "anti-fascist") is a decentralized, left-wing movement focused on opposing fascism, racism, and far-right extremism through direct action.
- Originating in Europe in the early **20th century**—particularly among anti-Nazi activists in the **1920s and 1930s**—it spread to the U.S. in the 1980s, gaining prominence during the 2017 Charlottesville "**Unite the Right**" rally and the **2020 George Floyd protests**.

### Core Characteristics:

- **Ideology:** Rooted in anarchism, communism, and socialism, antifa rejects hierarchical authority and seeks to confront far-right groups physically or through protests.
- **Structure:** Lacks formal leaders, membership, or organization, operating as a network of autonomous activists.
- **Tactics:** Includes nonviolent actions (e.g., education, community organizing) and confrontational methods (e.g., disrupting neo-Nazi rallies, occasional property damage), though violence is debated as a strategy.

## Super Typhoon Ragasa

**Why in News?** Super Typhoon Ragasa hit Hong Kong and northern Philippines with **sustained winds of 280 kmph**, making it the **most intense tropical cyclone recorded in 2025**.

- The typhoon caused **heavy rain, significant storm surge**, and coastal waters rising more than **1.5 meters** in some areas.

### Formation of Tropical Cyclones:

Tropical cyclones (hurricanes in the Atlantic) form in **tropical oceans** where **warm air rises from the ocean surface**, creating **low-pressure zones**, clouds, and thunderstorms.

Cyclones **rotate cyclonically**:

- **Counterclockwise** in the Northern Hemisphere
- **Clockwise** in the Southern Hemisphere

**"Dirty Side" and Intensity:**

- Typhoons have a “clean” side and a “dirty” side:
- **Dirty side:** Experiences **strongest winds and storm surge** in the Northern Hemisphere.
- **Clean side:** Less destructive.

Ragasa’s **maximum sustained winds** reached **280 kmph**, categorizing it as a **Category 5 Super Typhoon** on the **Saffir-Simpson Hurricane Wind Scale**.

**Sustained wind measurement:**

- **WMO:** 10-minute average
- **NOAA:** 1-minute average

**Factors Behind Ragasa’s Intensity:**

- **Ocean Surface Temperature:** The waters where Ragasa formed were about **1°C above the long-term average**, providing **extra energy for intensification**.
- **Climate Change:** Warmer oceans lead to **stronger, longer-lasting tropical cyclones**.
- **Regional Variation:** Cyclone intensification varies regionally due to **temperature, atmospheric conditions, and ocean currents**.

## AstroSat

**Why in news?** India’s first dedicated space astronomy observatory, AstroSat, completed a decade of operations recently

**About AstroSat:**

- **AstroSat** is India’s **first dedicated multi-wavelength space astronomy observatory**.
- Developed by the **Indian Space Research Organisation (ISRO)**.
- **Launch Date:** 28 September 2015 via **PSLV-C30 (XL)** rocket from **Satish Dhawan Space Centre, Sriharikota**.
- **Designed Mission Life:** 5 years, but it has been **operational for over 10 years**.

**Objectives:**

- To study the **universe across multiple wavelengths**, including:
  - **Black holes, neutron stars, galaxies, and the nearest star Proxima Centauri.**
  - Observations across the **electromagnetic spectrum from ultraviolet/visible to high-energy X-rays.**
- Detect **new celestial sources** and monitor **cosmic phenomena**.

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