ARK Reflections IAS

# ONE-PAGER CURRENT AFFAIRS NOVEMBER -2025

ARK Reflections IAS

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## INTERNATIONAL AFFAIRS & DIPLOMACY (GS-2)



## MISCELLANEOUS

# DEFENCE TECHNOLOGY (GS-3)

## 1. ASW-SWC Program

- **Purpose**: These are specialized, compact naval vessels for **Anti-Submarine Warfare (ASW)** in shallow and coastal waters (littoral zones). They detect, track, and neutralize enemy submarines that operate near shorelines, where larger warships like destroyers can't maneuver effectively.
- **Key Features**:
  - ⇨ **Length:** ~77-78 meters.
  - ⇨ **Displacement:** ~900-1,500 tonnes (varies slightly by ship).
  - ⇨ **Speed:** Up to 25 knots.
  - ⇨ **Armament:** Torpedoes, depth charges, ASW rockets, light guns, close-in weapon systems.
  - ⇨ **Sensors:** Hull-mounted sonar, radar, electronic warfare systems for submarine detection.
  - ⇨ **Other Capabilities:** High maneuverability, stealth features ("Silent Hunters"), mine-laying, search-and-rescue, coastal patrols, and escort duties.
  - ⇨ **Indigenous Content:** 80-90% (built with Indian steel, sensors, and technology).

- **Project Details**: Approved in 2019 to replace older Abhay-class corvettes. Total of 16 ASW-SWCs planned (8 by Garden Reach Shipbuilders & Engineers - GRSE, Kolkata; 8 by Cochin Shipyard Limited - CSL, Kochi). They support India's maritime security in the Indian Ocean Region (IOR), countering threats from China and Pakistan's submarine expansions.
- **Naming Pattern**: Ships are named after islands or coastal features, often from Lakshadweep (e.g., Androth, Kiltan, Mahe) or other regions (e.g., Arnala, an island off Mumbai).

**The program is split into two sub-classes for clarity:**

- **Arnala-Class** (GRSE-built): Focuses on the Eastern and Western Naval Commands.
- **Mahe-Class** (CSL-built): Similar design, with some tailored for specific operations.

**2. Specific Ships: INS Mahe, Androth, Arnala, and Kiltan**

**INS Mahe**

- **Class**: Lead ship of the Mahe-class ASW-SWC (CSL-built series).
- **Commissioned**: November 24, 2025, at Naval Dockyard, Mumbai.
- **Presided By**: Army Chief General Upendra Dwivedi (historic first—symbolizing tri-service integration).
- **Builder**: Cochin Shipyard Limited (CSL), Kochi.
- **Key Details**:
  - ➢ Named after Mahe Island (part of Puducherry, near Kerala coast).
  - ➢ Role: "Silent Hunter" for shallow-water ASW, coastal patrols, and integrated operations with larger naval assets.
  - ➢ Significance: Boosts India's self-reliance (80% indigenous); enhances littoral warfare against submarine threats in the Arabian Sea. It supports multi-domain operations (land, sea, air) and aligns with reforms like Chief of Defence Staff (CDS) and theatre commands.
- **Technical Highlights**: Advanced sensors for detection, integrated combat suite, high endurance for prolonged missions.
- **Strategic Context**: Addresses China's IOR presence and Pakistan's subs; part of 8 CSL-built vessels.

## INS Androth (or Androtт)

- **Class:** Second ship in the Arnala-class ASW-SWC (GRSE-built series).
- **Commissioned:** October 6, 2025 (per some reports; ceremonies vary), at Naval Dockyard, Visakhapatnam.
- **Presided By:** Vice-Admiral Rajesh Pendharkar, Flag Officer Commanding-in-Chief, Eastern Naval Command.
- **Builder:** Garden Reach Shipbuilders & Engineers (GRSE), Kolkata.
- **Key Details:**
  - ⇨ Named after Androth Island in Lakshadweep.
  - ⇨ Role: Coastal ASW operations, submarine hunting in shallow waters, escorting high-value ships, mine-laying, and island defense (e.g., Andaman & Nicobar).
  - ⇨ Significance: Strengthens Eastern Naval Command; counters undersea threats from adversaries. It's a "force multiplier" for India's 7,500+ km coastline, built under 'Make in India'.
- **Technical Highlights:** ~77m length, ~1,500 tonnes displacement, torpedoes/depth charges, sonar/radar systems, ~1,800 nautical miles range.
- **Strategic Context:** Replaces older Abhay-class; supports Maritime India Vision 2030 amid China's "anti-piracy" submarine missions.

## INS Arnala

**Class:** Lead ship of the Arnala-class ASW-SWC (GRSE-built series; sometimes the entire GRSE series is called Arnala-class).

**Commissioned:** June 2024 (first in the overall series).

**Builder:** Garden Reach Shipbuilders & Engineers (GRSE), Kolkata.

**Key Details:**

- ✓ Named after Arnala Island (off Mumbai, Maharashtra).
- ✓ **Role:** Similar to others—ASW in littoral zones, patrol, and multi-role coastal defense.
- ✓ **Significance:** Sets the benchmark for the 8 GRSE-built ships. It was the inaugural vessel in the ASW-SWC project, marking a milestone in indigenous shipbuilding.

**Technical Highlights:** Comparable specs to INS Androth (e.g., 25 knots speed, advanced propulsion, sensors for stealthy operations).

**Strategic Context:** Enhances near-sea dominance; part of India's response to regional submarine expansions (e.g., Pakistan's Chinese-built subs).

## 2. Trishul 2025

A massive joint military drill called **Tri-Services Exercise "Trishul 2025"** (TSE-2025). Army + Navy + Air Force practise fighting together as one team.

**When?**

Starts **today** (3 Nov 2025) → runs till mid-November.

**Where?**

- Desert & creek areas of **Rajasthan + Gujarat**
- Off-shore in **northern Arabian Sea**

**Who leads?**

**Indian Navy** (Western Naval Command HQ). Key teams: Army Southern Command, Air Force South-Western Command + Coast Guard & BSF.

**What happens?**

- Beach landings from ships (INS Jalashwa + landing craft)
- Fighter jets + warships team up for strikes
- Spy drones, cyber attacks & electronic jamming drills
- All Indian-made weapons & tech (Aatmanirbhar Bharat)

**Significance?**

1. Make the three forces work smoothly together.
2. Practise real-war moves in land + sea + air + cyber.
3. Show India is ready for any threat (especially near Pakistan border).

## 3. Chemical Weapons Convention (CWC) – Schedule I Chemicals

The **CWC** is a global disarmament treaty that seeks to eliminate an entire category of **weapons of mass destruction** by prohibiting the **development, production, stockpiling, transfer, or use** of chemical weapons.
States Parties must destroy existing stockpiles, production facilities, and abandoned chemical weapons, and ensure no individuals or industries violate the Convention.

**Chemical Schedules under CWC**
The CWC classifies chemicals into **Schedules I, II, and III** based on toxicity, potential for weaponisation, and civilian industrial use.

**Schedule I Chemicals: Characteristics**
**Schedule I chemicals are:**
1. **Highly potent chemical warfare agents**,
2. With **little to no legitimate civilian use**,
3. Subject to the **strictest controls**, with severe limits on production, stockpiling, and transfer.

**Examples**
- **Nerve agents:** Sarin, VX
- **Blister agent:** Sulfur mustard
- **Toxins:** Ricin, Saxitoxin

**Implementation Mechanism**
- **Organisation for the Prohibition of Chemical Weapons (OPCW)**, established in 1997, implements the Convention.
- OPCW has **193 member states** and received the **2013 Nobel Peace Prize** for eliminating chemical weapons.
- **India** is an **original signatory**.

**National Implementation – India**
- **National Authority for Chemical Weapons Convention (NACWC)** under the Cabinet Secretariat enforces compliance.
- Works with industry bodies such as the **Indian Chemical Council (ICC)**.
- In **2024**, NACWC mentored Kenya's CWC authority under the OPCW Partnership Programme.
- Non-members: **Egypt, North Korea, South Sudan**

**Ricin: A Schedule I Chemical**
**What is Ricin?**
- Ricin is a **highly toxic glycoprotein** derived from castor bean residues after oil extraction.
- First isolated in **1888** by German scientist *Peter Hermann Stillmark*.
- Classified under **Schedule I** due to its extreme toxicity and negligible legitimate use.

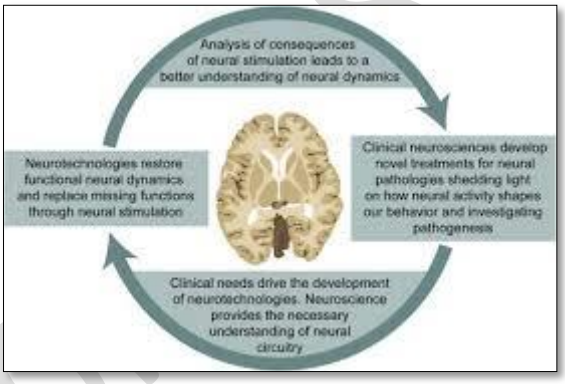
**Why is Ricin Deadly?**
- Ricin **blocks protein synthesis** in cells → leads to rapid **cell death**.
- Exposure can occur via **inhalation, ingestion, or injection**.
- Powdered or aerosolised ricin can be used as a **biological/chemical weapon**.

## 4. UNESCO's New Global Rules on Neurotechnology

**Simple Summary**

**What is Neurotechnology?**

- Devices + AI that **read, record, or change brain activity** (e.g., Neuralink implants, brain scans).
- Can help: Detect tumours, treat depression, control prosthetics, or boost memory.
- But risk: Someone could read your thoughts, emotions, or manipulate decisions.




**Why UNESCO Made Rules (First-Ever Global Framework)**

- Launched **5 Nov 2025**, effective **12 Nov 2025**.
- Goal: Let innovation grow **without harming human rights or privacy**.
- Stops misuse like:
  - ⇨ Reading brain data for targeted ads or political brainwashing
  - ⇨ Employers forcing brain scans to check "loyalty" or stress levels
  - ⇨ Insurance using brain data to charge higher premiums

**Key Principles (10 Big Rules)**

1. **Human dignity first**
2. **No harm** to brain or mind
3. **Privacy of brain data** (as private as your thoughts)
4. **Free will & autonomy** – no one can control your mind
5. **Informed consent** – you must fully understand and agree
6. **No discrimination** (race, gender, disability)
7. **Fair access** – poor countries shouldn't be left behind
8. **Transparency & accountability** – companies must explain how it works
9. **Protect kids & elderly** (extra safeguards)
10. **Think of future generations**

**What is Banned?**

- Using brain data to **manipulate** people (ads, politics, dating apps)
- Selling or sharing brain data without clear permission
- Forcing anyone to take brain tests (job, school, insurance)

**Good Side (Encouraged Uses)**

- Medical help: Parkinson's, paralysis, mental health
- Education tools for kids with learning disabilities
- Assistive tech (e.g., control wheelchair with thoughts)

**How to Innovate Safely**

- Follow **Responsible Research & Innovation (RRI)**: Think early about risks + involve public
- Prefer **open science** (share knowledge freely) instead of locking everything behind patents
- Companies should have **internal ethics boards** and "ethics-by-design" from day one

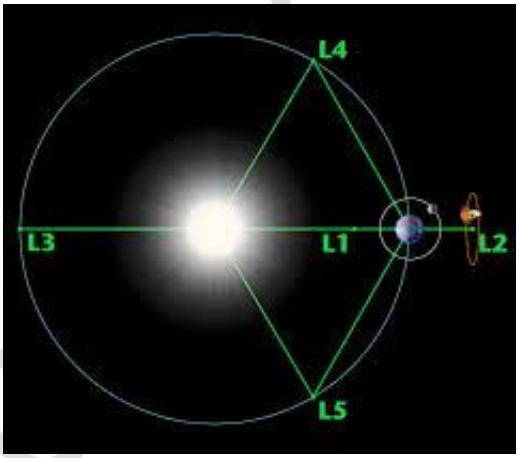
## 5. Lagrange points

**What are Lagrange Points?**

Lagrange points are positions in space where the gravitational forces of a two-body system (e.g., Sun–Earth) balance the centripetal force needed for a small object (satellite) to move with them.
Spacecraft placed at these points require minimal fuel to maintain position.

**The Five Lagrange Points:** There are **five** Lagrange points in any two-body system:

**Unstable Points (L1, L2, L3)**




- Lie **along the line** connecting the two large bodies.
- Slight disturbances push objects away → require frequent station-keeping.
- **Unstable on a ~23-day timescale**.

**Stable Points (L4, L5)**

- Form **equilateral triangles** with the two bodies.
- L4 **leads** the orbit; L5 **follows**.
- Naturally stable due to gravitational equilibrium → dust and asteroids can accumulate here (e.g., Trojan asteroids in Jupiter's L4/L5).

**Important Lagrange Points and Space Missions**

**L1 (Sun–Earth System):** Gives **continuous, uninterrupted view of the Sun**.

- **Missions:**
  - **SOHO (Solar and Heliospheric Observatory)**
  - Also used by other solar observatories.

**L2 (Sun–Earth System)**

- Ideal for **deep-space astronomy**:
  - Constant thermal environment
  - Earth, Moon, and Sun remain behind spacecraft (easy shielding)
  - Stable line-of-sight communication with Earth
- **Missions:**
  - **WMAP** (cosmic microwave background)
  - **Planck** (ESA)
  - **James Webb Space Telescope (JWST)** – current landmark mission

**L3**

- Located opposite the Earth on the far side of the Sun.
- Not used due to communication difficulties.

**Why Lagrange Points Matter**

- Enable **low-fuel, long-duration** scientific missions.
- Provide stable platforms for:
  - Solar observation
  - Deep-space telescopes
  - Cosmic background studies
- Crucial for future **space weather monitoring**, **planetary defense**, and **interplanetary missions**

## 6. GSAT-7R Launch

**What Happened?**

India successfully launched **GSAT-7R**, its heaviest indigenous military communication satellite.

It is built fully in India for the **Indian Navy** and weighs **4,410 kg**.

**Launch Details**

- **Date:** 2 November 2025
- **Time:** 5:26 PM
- **Place:** Sriharikota, Andhra Pradesh
- **Result:** Perfect launch; satellite placed in its intended orbit
- **Launch Vehicle: LVM3-M5** (India's most powerful rocket)

**Why GSAT-7R Matters?**

**1. Heaviest Indian Communication Satellite**

- At **4,410 kg**, GSAT-7R is the **heaviest communication satellite ever launched from Indian soil**.

**2. 100% Indigenous**

- Designed and developed entirely by ISRO.
- Strengthens **Aatmanirbhar Bharat**, ending dependence on foreign launch services.

**3. Transformational Capability for the Navy**

- Provides secure **voice, video, and data** links.
- Connects **ships, submarines, aircraft, coastal command centres**, and island territories.
- Coverage across the **entire Indian Ocean Region (IOR)**.
- **Four times more powerful** than the older GSAT-7 (Rukmini).
- Enhances **real-time maritime domain awareness** and anti-submarine operations.

**4. Strengthens Naval Security Architecture**

- Better encryption.
- Resistant to jamming and cyberattacks.
- Supports multi-fleet coordination.
- Essential for protecting sea lanes, especially in the IOR where China's presence is growing.

**What is LVM3?**

- India's **strongest rocket** (nicknamed **Bahubali**).
- Uses **solid + liquid + cryogenic** engines.
- Renamed from GSLV-Mk3 after proving it can do more than just GEO launches.

**Current Capacity**

| Orbit Type | Payload Weight | Altitude |
|---|---|---|
| Low Earth Orbit (LEO) | Up to **8,000 kg** | Up to 2,000 km |
| Geosynchronous Transfer Orbit (GTO) | Up to **4,000 kg** | ~36,000 km |

**Record so far**:

- **5,860 kg** to LEO (OneWeb, 2022)
- **4,410 kg** to GTO (GSAT-7R / CMS-03, Nov 2025) – **heaviest Indian comms satellite ever launched from India**

**Why It Matters**

- Before LVM3, India sent **heavy satellites (>4,000 kg)** using **foreign rockets**:
  - ✓ GSAT-11 (5,854 kg) → **Ariane 5** (Europe)
  - ✓ GSAT-20 (4,700 kg) → **SpaceX**
  - ✓ GSAT-24 (4,181 kg) → **Ariane**
- **Now**: India can launch **4-ton+ satellites from home → self-reliance (Aatmanirbhar Bharat)**.

**Key Missions Launched**

- **Chandrayaan-2** (2019)
- **Chandrayaan-3** (2023) – Moon landing success
- **GSAT-19, GSAT-29** (comms)
- **72 OneWeb satellites** (2 launches in 2022)
- **GSAT-7R (CMS-03)** (Nov 2025)
- **Crew module test** (2014) – first step for human spaceflight

**Success Rate**: **100%** – All **7 flights** perfect. (Compare: GSLV – 4/18 failed; PSLV – 3/63 failed)

**Why the Name Changed (GSLV Mk-III → LVM3)**

Originally, GSLV Mk-III was meant only for placing satellites in **Geosynchronous Transfer Orbit**.
However, during the Russia-Ukraine war, ISRO used it to successfully launch **72 OneWeb satellites into Low Earth Orbit**.

**This proved that the rocket:**

- Can handle **multiple types of missions**
- Is not limited to "GSLV" roles
- Deserved a broader name

Hence, it became **LVM3** (Launch Vehicle Mark-3).

**Future Upgrades**

ISRO is upgrading LVM3 with a **semi-cryogenic engine**, replacing the current liquid stage with:

- **Refined kerosene (RP-1)**
- **Liquid oxygen**

**This will:**

- Increase payload capacity
- Reduce launch cost
- Boost efficiency
- Prepare LVM3 for future deep-space and crewed missions

## 7. Vikram-I: India's First Private Orbital Launch Vehicle

Vikram-I is Skyroot Aerospace's maiden orbital-class rocket, named after space pioneer Vikram Sarabhai. Launched by PM Narendra Modi on Nov 27, 2025, via video conference, it's designed for small-satellite missions with rapid, cost-effective deployments. Debut flight targeted for early 2026 from Sriharikota.

### Key Features

- **Size & Structure**: 20 meters tall, 1.7 meters diameter; all-carbon composite body for lightweight strength.
- **Stages**: 4-stage rocket – first 3 solid-fueled for initial thrust; upper stage uses hypergolic liquid propellant for precise orbit insertion.
- **Thrust & Payload**: 1,200 kN thrust; deploys up to 350 kg to Low Earth Orbit (LEO) or 260 kg to Sun-Synchronous Orbit (SSO). Specifics: 290 kg for 500 km SSO, 480 kg for 500 km LEO at 45° inclination.
- **Innovations**: 3D-printed engines (50% lighter, 80% faster production); ultra-low-shock pneumatic separation; advanced avionics for real-time navigation.
- **Launch Capability**: Assemble and launch in 24 hours from any site; supports dedicated or rideshare missions.

### Development Milestones

- Built by Hyderabad-based Skyroot Aerospace (founded 2018 by IIT alumni Pawan Chandana & Naga Bharat Daka, ex-ISRO scientists).
- Preceded by Vikram-S (sub-orbital, launched Nov 2022 – India's first private rocket).
- Tests completed: Kalam-1200 proof-pressure, payload-fairing separation; Raman engine qualified (2023).

### Infinity Campus: Skyroot's Manufacturing Hub

Infinity Campus is Skyroot Aerospace's new integrated facility in Hyderabad, inaugurated by PM Modi on Nov 27, 2025. It marks a milestone in India's private space sector, enabling end-to-end rocket production.

### Key Features

- **Location & Size**: Near Rajiv Gandhi International Airport, Hyderabad; spans ~200,000 square feet (20,000 sq ft workspace).
- **Capabilities**: Designs, develops, integrates, and tests multiple launch vehicles; produces **one orbital rocket per month**.
- **Investment**: ₹1,000 crore planned for expansion in rapid production and launch tech.
- **Role**: Supports Vikram series; boosts India's $77 billion space economy by 2030; eases ISRO load for small-sat launches.

### Significance

- Founded by ex-ISRO alumni; raised $95M+ funding.
- Aligns with space reforms (2023 onward); positions India as global satellite launch hub.

## 8. Stable Coins

Stablecoins are digital currencies that are backed by a fiat currency such as the US dollar, thus giving it an intrinsic value. From an investor point of view, stablecoins become easier to understand considering the underlying reserve asset


**What Are Stablecoins?**

- Digital tokens on blockchain (crypto assets) designed to hold a **steady value**, unlike volatile cryptocurrencies like Bitcoin.
- Pegged to something stable, like **$1 USD** or a basket of assets.
- Part of **Virtual Digital Assets (VDAs)** in India, but focused on stability.

**Three Main Types**

- **Fiat-Backed**: Supported by real money (e.g., USD in a bank). Examples: USDT (Tether), USDC (Circle). Most common and trusted.
- **Crypto-Backed**: Backed by other cryptocurrencies (e.g., Ethereum). Example: DAI. More decentralized but riskier if crypto prices drop.
- **Algorithmic**: Use computer code to adjust supply/demand automatically. No reserves. Example: TerraUSD (failed in 2022). Experimental and high-risk.

**Key Features of the US GENIUS Act**

- Applies to **US dollar–pegged stablecoins.**
- Requires **1:1 backing** with **US dollars** or **short-term US Treasury bills.**
- Mandates **monthly disclosure** of reserve assets.
- Imposes **strict Anti-Money Laundering (AML)** and **consumer protection rules.**
- Issuers must obtain a **federal license** and come under the supervision of US regulators.

Objective: Ensure **transparency**, **financial stability**, and **prevent misuse** like money laundering or terror financing.

**Significance of Stablecoins**

- **Fix Traditional Finance Problems**:
  - Cross-border payments: Fast (seconds) and cheap ($0.01 vs. $44 via banks). Over $220 billion in circulation (Visa 2025 report).
  - Bypasses slow systems like SWIFT; enables real-time global transfers.
- **New "Financial Plumbing"**:
  - Like internet protocols for money: Programmable, auditable, and borderless.
  - "Agentic payments": AI can auto-pay bills, subscriptions, or investments.
  - In emerging markets: Helps unbanked people send remittances or save safely.
- **Global Maturation**:
  - Institutions joining: BlackRock, Visa, Mastercard issuing/supporting them.
  - Regulations growing: EU's MiCA (2024) and U.S. GENIUS Act (2025) set rules for reserves and safety.
  - Not replacing cash, but modernizing it: Three layers – blockchain base, regulated reserves, user-friendly apps.
- **Big Promise**: In AI-driven world, money moves at "machine speed." Fills gaps in banking, cuts costs, boosts efficiency.

**India's Stand on Stablecoins (as of Nov 2025)**

- **Cautious but Evolving**: Crypto is legal to hold/trade (as VDAs), but **banned for payments**. High taxes: 30% on gains, 1% TDS on transfers, 18% GST.

**What Is a Cryptocurrency?**

A cryptocurrency is a **digital medium of exchange** secured using **cryptographic techniques**.
It eliminates the need for trusted intermediaries (banks, central banks).

**How it works:**

- Transactions are verified by a network of private computers.
- These computers solve cryptographic puzzles ("mining").
- Successful miners are rewarded with cryptocurrency.

**Examples**: Bitcoin, Ethereum, Solana, Litecoin.

**Trading in India:**

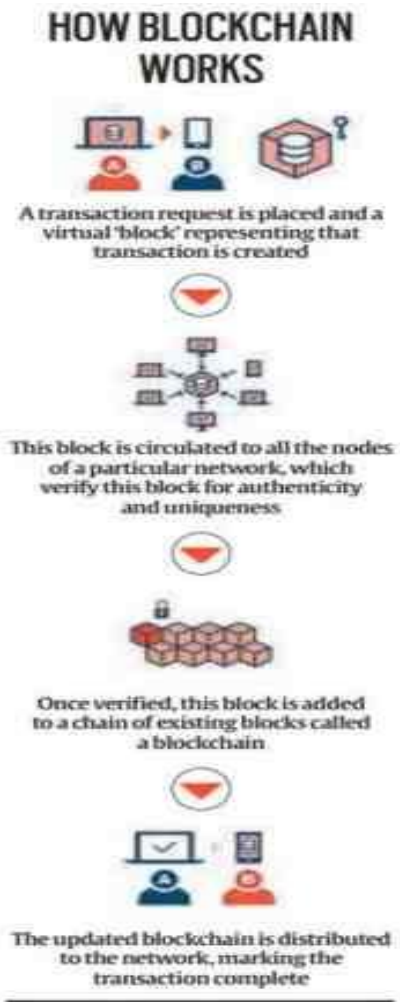
Platforms such as **WazirX, CoinDCX, CoinSwitch Kuber, ZebPay, Bitbns, Giottus** enable buy/sell

**What Is Blockchain?**

Blockchain is a **public digital ledger** where all transactions are recorded permanently, transparently, and anonymously.

**Key characteristics:**

- Distributed (no single authority)
- Immutable (cannot be altered)
- Transparent
- Secure




It was conceptualized by **Satoshi Nakamoto** after the 2008 global financial crisis to create a money system **free of central banks**.
Cryptocurrencies and stablecoins are simply **codes stored and updated on this blockchain ledger**.

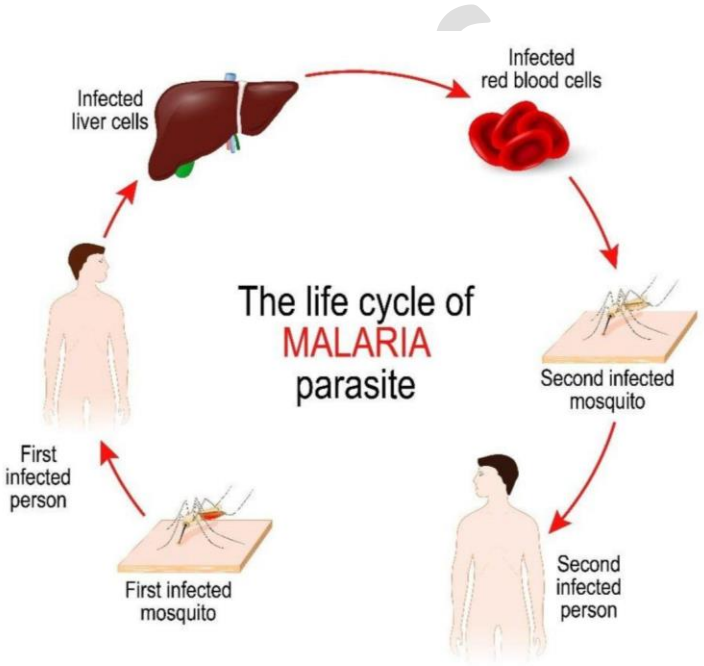
## 9. Malaria and Vaccines

**Context**

Gavi, UNICEF announce new agreement to make R21/Matrix-M malaria vaccines more accessible

**Malaria Life Cycle: Simple Step-by-Step**

Malaria has two main phases: in humans (causes illness) and in mosquitoes (spreads it). Here's the easy break-down:




1. **Mosquito Bites Human**: Female Anopheles mosquito injects **sporozoites** (parasite form) into bloodstream while feeding.
2. **Liver Stage**: Sporozoites go to liver, multiply into thousands of **merozoites** (7–10 days, no symptoms).
3. **Blood Stage**: Merozoites burst into red blood cells, multiply rapidly (every 48 hours), causing fever/chills. Some become **gametocytes** (infectious to mosquitoes).
4. **Mosquito Takes It Back**: Mosquito bites infected human, sucks up gametocytes with blood.
5. **Mosquito Stage**: Gametocytes turn into male/female forms, fertilize into zygotes → ookinetes → oocysts in mosquito gut → sporozoites in salivary glands (9–18 days).
6. **Cycle Repeats**: Infected mosquito bites new human – sporozoites enter, starting over.

**Malaria: Parasite, Mosquito, and Vaccines**

**Parasite that causes malaria** Plasmodium (5 species infect humans)

- P. falciparum – most dangerous, causes 95%+ deaths in India/Africa
- P. vivax – common in India, can hide in liver & relapse
- Others: P. malariae, P. ovale, P. knowlesi (rare)

**Mosquito that spreads malaria** Only female Anopheles mosquitoes (30+ species in India) Main ones in India:

- Anopheles culicifacies (rural)
- Anopheles stephensi (urban cities)

**WHO-Approved Vaccines** Two vaccines recommended by WHO (Oct 2025)

1. **RTS, S/AS01 (Mosquirix)**
   - First malaria vaccine (2021)
   - Made by GSK
   - 4 doses (6–18 months + booster)
   - Reduces severe malaria by ~30–40%
   - Used in 20+ African countries + pilot in India

2. **R21/Matrix-M**
   - Newer, cheaper, more effective
   - Made by Oxford University + Serum Institute of India
   - 3 doses + booster
   - Reduces severe malaria by ~75%
   - WHO approved Oct 2023, prequalified 2024
   - Already rolled out in 10+ African countries

**Key Strategies & Initiatives**

- **National Framework for Malaria Elimination (NFME, 2016–2030)**: Roadmap with 5 pillars – early diagnosis, prompt treatment, surveillance, vector control, community engagement.
- **National Strategic Plan (2023–2027)**: Focuses on "testing, treating, tracking" – real-time data via Integrated Health Information Platform (IHIP); district-specific plans for high-burden areas like Odisha, MP.
- **Vector Control**: Indoor Residual Spraying (IRS) in hotspots; 80%+ homes with Long-Lasting Insecticidal Nets (LLINs); targeted action against urban mosquito Anopheles stephensi.
- **Surveillance & Diagnosis**: Malaria as notifiable disease (mandatory reporting); Annual Blood Examination Rate up to 11.62% (2023); digital tools like Malaria Dashboard & FeverTracker app for tracking.
- **Treatment & Access**: Free Rapid Diagnostic Tests (RDTs) & Artemisinin-based Combination Therapy (ACT) at all centers; pilots for RTS,S/R21 vaccines in high-risk states.
- **Community & Capacity Building**: ASHA workers for awareness; Ayushman Bharat integrates malaria services; 850+ health pros trained yearly; Intensified Malaria Elimination Project (IMEP-3) in 159 districts across 12 states.
- **Research & Partnerships**: ICMR studies on resistance; collaborations with WHO/USAID; ₹1,500 crore budget (2025) for LLINs, entomology, surveillance.

**India's Indigenous Vaccine AdFalciVax (in development)**

- India's first home-grown malaria vaccine
- Developed by ICMR + Department of Biotechnology (DBT) under the Malaria Vaccine Initiative with 100% indigenous technology and intellectual property owned by India
- Based on P. falciparum antigen
- Phase 2 trials completed 2025
- Expected approval 2027–28
- Will be low-cost & made in India

**Chikungunya**

- Chikungunya (chik'-en-GUN-yah), also called chikungunya virus disease or chikungunya fever, is a viral illness that is spread by the bite of infected mosquitoes.
- The disease resembles dengue fever, and is characterized by severe, sometimes persistent, joint pain (arthritis), as well as fever and rash. It is rarely life-threatening.
- Chikungunya occurs in Africa, India and Southeast Asia. It is primarily found in urban / peri-urban areas.
- There is no specific treatment for chikungunya.
- Prevention centers on avoiding mosquito bites in areas where chikungunya virus may be present, and by eliminating mosquito breeding sites.
- No Vaccine

## 10. Universal Immunisation Programme (UIP)

India's UIP, launched in 1985 and now part of NHM, is one of the world's largest vaccination programmes. It covers 12 vaccine-preventable diseases and has helped eliminate polio, control measles-rubella, and reduce child mortality. But rising AMR, shifting disease patterns, and India's epidemiological transition have created a strong need to add Typhoid Conjugate Vaccine (TCV) and Hepatitis A vaccine

### 2. Case for Including Typhoid Conjugate Vaccine (TCV)

#### 2.1 High Disease Burden

- India accounts for **~40% of global typhoid cases**.
- Children aged **5–15 years** are most affected.
- Urban crowding, poor sanitation, and contaminated water sustain endemicity.

#### 2.2 Antimicrobial Resistance Concern

- Rise of **multi-drug resistant (MDR)** *Salmonella typhi*.
- TCV inclusion supports India's **National Action Plan on AMR**.

#### 2.3 WHO Recommendations

- WHO's SAGE (2018) recommends **TCV** as the preferred vaccine in endemic countries.
- Offers **longer protection**, effective in **children ≥6 months**.

#### 2.4 Equity & Cost-effectiveness

- Reduces hospitalisation and out-of-pocket expenditure.
- Protects vulnerable populations in **urban slums and water-stressed habitations**.

### 3. Case for Including Hepatitis A Vaccine

#### 3.1 Changing Epidemiology

- Earlier: widespread early-childhood exposure → natural immunity.
- Now: improved sanitation → infection shifts to **adolescents/adults**, where disease is **more severe**.

#### 3.2 Increasing Outbreaks

- Frequent outbreaks in **Kerala, Maharashtra, Telangana, Karnataka**.
- Linked to contaminated water and unsafe food chains.

#### 3.3 WHO Guidelines

- WHO recommends Hepatitis A vaccination in **intermediate endemicity** settings—many Indian states now fall in this category.

#### 3.4 UIP Coverage Gap

- UIP covers **Hepatitis B**, but **not Hepatitis A**, despite its growing burden.
- Outbreaks cause high morbidity and significant economic losses.

**4. Types of Hepatitis**

| Type | Transmission | Course | Key Attributes | Prevention |
|---|---|---|---|---|
| **Hepatitis A (HAV)** | Feco-oral (contaminated food/water) | Acute | Severe in adults; frequent outbreaks | Vaccination; WASH improvements |
| **Hepatitis B (HBV)** | Blood-borne, sexual, perinatal | Acute/Chronic | Causes cirrhosis, liver cancer | Birth dose + 3 doses (in UIP) |
| **Hepatitis C (HCV)** | Blood-borne | Mostly Chronic | Major cause of chronic liver disease; no vaccine | Screening + antivirals |
| **Hepatitis D (HDV)** | Requires HBV co-infection | Chronic/severe | Co-infection worsens outcomes | HBV vaccination |
| **Hepatitis E (HEV)** | Feco-oral | Acute | Severe in pregnancy; waterborne epidemics | WASH; vaccine available only in China |

**5. Why UIP Expansion is Needed**

**5.1 Public Health Rationale**

- Enteric infections create a **high preventable disease burden**.
- Vaccines offer immediate protection even as sanitation systems improve slowly.

**5.2 AMR Containment**

- Typhoid heavily treated with antibiotics → drives AMR.
- TCV reduces antibiotic use and antimicrobial pressure.

**5.3 Economic Efficiency**

- Hospitalisation for typhoid and hepatitis A is costly.
- Vaccination is cost-effective with large **societal ROI**.

**5.4 Equity and UHC**

- Protects **urban poor**, migrants, and slum populations.
- Supports **Universal Health Coverage** and reduces catastrophic health costs.

**6. Way Forward**

**6.1 Phased Introduction**

- Prioritise high-burden states and urban clusters.
- Integrate with **Mission Indradhanush** and **Intensified MI**.

**6.2 Strengthen Surveillance**

- Expand **IDSP**, genomic sequencing, and wastewater monitoring.
- Conduct periodic sero-surveys to map immunity.

**6.3 Improve Water, Sanitation & Food Safety**

- Converge with **Jal Jeevan Mission**, **Swachh Bharat Mission**, and **FSSAI norms**.

**6.4 Public Awareness**

- Address misinformation; promote hygiene + vaccination synergy.

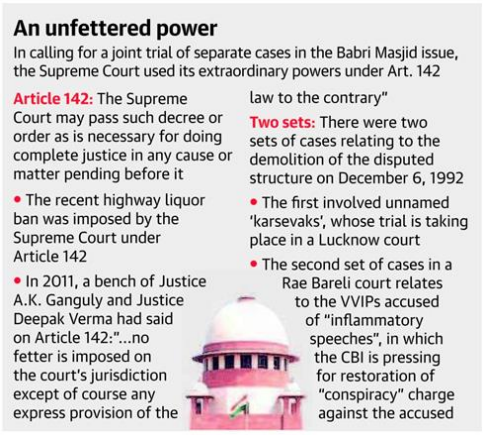
**Conclusion**

The Universal Immunisation Programme has been central to India's public-health gains. With rising **typhoid burden**, **increasing AMR**, and **changing hepatitis epidemiology**, the inclusion of **Typhoid Conjugate Vaccine** and **Hepatitis A vaccine** is timely and essential. Expanding UIP will strengthen disease prevention, enhance health equity, and support India's march towards **resilient, universal, and preventive healthcare**.

## 11. Article 142

**What is Article 142?**

Article 142 empowers the Supreme Court to pass **any order necessary to ensure "complete justice"** in cases before it.




**This includes:**

- Enforcing court judgments
- Issuing directions
- Calling for documents
- Acting against contempt
- Filling gaps where law is silent or inadequate
- **Criticism:** Because of its breadth, Article 142 can trigger concerns of **judicial overreach**.

**Key Constitutional Issues Raised**

The 2025 Tamil Nadu Bills case triggered three big constitutional questions:

1. **Can Article 142 override other constitutional authorities** (Governor/President)?
2. **Can the Court impose timelines** or create "deemed assent" where the Constitution provides none?
3. **Does such use violate separation of powers?**

**Main Problems Highlighted with Article 142 (Debate)**

- **Judicial Overreach:** SC acting like a "super-executive" or "super-legislature."
- **Bypassing Constitutional Process:** Using 142 to circumvent Articles 200/201 (Governor/President assent).
- **No Defined Limits:** The Constitution offers no explicit boundaries.
- **Precedent Risk:** Sets a template where future constitutional delays may be "fixed" judicially.
- **Accountability Gap:** No check or appeal against the SC's use of 142.

**The 2025–26 Presidential Reference (Articles 143, 200, 201)**

**What Triggered It?**

- **April 2025:** A 2-judge SC bench held that:
  - Governors/President must decide Bills **within 3 months**
  - In extreme delay, SC can grant **"deemed assent"** using Article 142
- **Union Government objected** → Filed a **Presidential Reference (Art. 143)** raising 14 constitutional questions.

**SC Constitution Bench's Opinion (5-Judge Bench) – Key Findings**

**1. Governor's Powers (Article 200):** Governor has **three options**:

i. Give assent
ii. Withhold assent & return for reconsideration
iii. Reserve Bill for President

**2. Governor's Discretion:** Article 200 decisions are **personal discretion**, *not bound by Cabinet advice*.

**3. Judicial Review Limit:** Court **cannot review** Governor/President decisions **before** a Bill becomes law.

**4. No Timelines:** SC **cannot impose a 3-month limit**, because Constitution does not specify any.

**5. No Deemed Assent**

- Article 142 **cannot be used** to declare that a Bill has "deemed assent."
- SC cannot substitute the Governor/President's constitutional role.

**6. Limited Mandamus:** SC can only direct Governor to **act**, not dictate **how** they act. (i.e., perform duty, not outcome)

**Why the Judgment is Controversial**

**1. Reverses Long-Standing Precedent**

| Case | Old Position | New Position (2025 Opinion) |
|---|---|---|
| **Shamsher Singh (1974)** | Governor bound by Cabinet aid & advice | Article 200 decisions = **personal discretion** |
| **Nabam Rebia (2016)** | Same | Same |

**2. Ignores Commission Recommendations**

- **Sarkaria Commission:** Reserve Bills only in extraordinary cases.
- **Punchhi Commission:** Governor should decide within **6 months**.

**3. Opens Door to Indefinite Delays**

- With no timelines, Governors can potentially sit on Bills for long periods.
- This can weaken **federalism** and elected state governments.

**Governor's Role under Article 200**

| Step | Governor's Choice | Outcome |
|---|---|---|
| 1 | Assent | Bill becomes law |
| 2 | Withhold and Return | Assembly may reconsider; if passed again → Governor **must assent** |
| 3 | Reserve for President | Goes to Article 201 procedure |

**President's Role under Article 201**

| Option | Result |
|---|---|
| **Assent** | Bill becomes law |
| **Withhold Assent** | Bill dies (no further reconsideration) |

**Way Forward**

- Governors must not behave as political actors; constitutional morality required.
- Central government must avoid using Governors to obstruct State governments.
- A clear framework or constitutional amendment may be needed to:
  - ✓ Define timelines/ Reduce ambiguity/ Strengthen federalis

## 12. Contempt of the Court

**What is Contempt of Court?**

- **Basic Meaning**: Any act that **disrespects the court** or **lowers its authority**.
- No fixed definition – **courts decide** case by case.
- **Contempt of Courts Act 1971** first classified it (but no full definition).


**Two Types of Contempt**

**1. Civil Contempt**

- **Definition**: **Willful disobedience** of court order or breaking promise given to court.
- **Examples**:
  - Ignoring court injunction
  - Not following divorce settlement
  - Breaking undertaking to court
- **Purpose**: Force person to **obey** + punish disobedience.
- **Key Requirement**: Must be **intentional** (willful).

**2. Criminal Contempt**

- **Definition**: Any act/publication that:
  - **Scandalizes/lowers court authority** (insulting judge)
  - **Prejudices trial** (media trial, influencing witnesses)
  - **Obstructs justice** (threatening lawyers/parties)
- **Examples**:
  - Newspaper calling judge "corrupt"
  - Social media prejudging case
  - Threatening witness
- **Purpose**: Protect **court's dignity** and fair trials.

**Constitutional Sources** (Primary and Inherent):

- **Article 129**: Empowers the Supreme Court (SC) to punish for contempt of itself, making it a "court of record" with inherent powers to protect its dignity.
- **Article 215**: Similarly empowers High Courts (HCs) as courts of record to punish for their own contempt.
- The Law Commission notes these are **inherent constitutional powers** of superior courts (SC and HCs), independent of any statute. The 1971 Act merely outlines procedures for investigation and punishment, not the power itself. Even if the Act were amended or repealed, courts could still punish contempt under the Constitution.

**Statutory Sources**:

- **Contempt of Courts Act, 1971**: Codifies contempt into civil and criminal categories. It extends HC powers to punish contempt of subordinate courts (e.g., district courts), which the Constitution doesn't directly cover. The Act defines criminal contempt as acts that "scandalise" the court (undermine public confidence), prejudice proceedings, or interfere with justice.
- **Other Laws**: Indirectly, contempt can overlap with laws like the Indian Penal Code (e.g., Sections 228 for obstructing court proceedings) or specific statutes, but the 1971 Act is the primary framework.

**Criticisms**

- **Vagueness and Overbreadth**: Terms like "scandalising the court" are ambiguous, potentially covering legitimate criticism and leading to inconsistent application by judges.
- **Suppression of Free Speech**: It restricts public discourse on judicial matters, chilling criticism and violating Article 19(1)(a), as seen in cases against journalists and activists.
- **Misuse and Arbitrary Enforcement**: Often used to protect judicial ego rather than justice, with low conviction rates but high chilling effects on dissenters.
- **Colonial Relic**: Inherited from British law, it's seen as outdated and undemocratic, suppressing accountability in a modern republic.
- **Burden on Judicial System**: High pending cases (e.g., 96,993 civil contempt) indicate inefficiency and overuse, straining courts without addressing real threats.
- **Lack of Equity**: Disproportionately affects marginalized voices, journalists, or lawyers, creating power imbalances in favor of the judiciary.
- **Conflict with Global Standards**: Contradicts international norms (e.g., UN critiques) by not aligning with free expression protections in democracies like the UK.

**Solutions**

- **Incorporate Truth as Defense**: Amend laws to strengthen truth and public interest as defenses, allowing fair criticism without fear of contempt charges.
- **Apply Proportionality Test**: Courts should assess if speech poses a real threat to justice, imposing punishments only when necessary and proportionate.
- **Promote Judicial Restraint**: Judges must tolerate temperate criticism, using contempt sparingly to avoid chilling effects on free expression.
- **Narrow Definition of Contempt**: Limit criminal contempt to actual interference, abolishing vague terms like "scandalising" to protect legitimate discourse.
- **Require Oversight Mechanisms**: Introduce panels or consent requirements (e.g., from Attorney General) to prevent arbitrary initiation of contempt proceedings.
- **Enhance Procedural Safeguards**: Ensure quick hearings, appeals, and exemptions for innocent publications to balance judicial authority with speech rights.
- **Adopt International Standards**: Align with global practices like the UK's abolition of scandalising, incorporating "clear and present danger" tests for contempt.
- **Educate and Train Stakeholders**: Train judges and public on distinguishing criticism from contempt, fostering a culture of accountable judiciary.

**Q. Consider the following statements: (2022)**

1. Pursuant to the report of H.N. Sanyal Committee, the Contempt of Courts Act, 1971 was passed.
2. The Constitution of India empowers the Supreme Court and the High Courts to punish for contempt of themselves.
3. The Constitution of India defines Civil Contempt and Criminal Contempt.
4. In India, the Parliament is vested with the powers to make laws on Contempt of Court.

**Which of the statements given above is/are correct?**

(a) 1 and 2 only
(b) 1, 2 and 4
(c) 3 and 4 only
(d) 3 only

## 13. Consumer Protection Act, 2019

**Old Act**: 1986 (weak, slow courts) **New Act**: 2019 (modern, strong, came into force 2020) – replaced the 1986 Act

**Key New Powers & Rights for Consumers**

| Right / Rule | What It Means (Simple) |
|---|---|
| 6 Consumer Rights | Safety, Information, Choice, Redressal, Hearing, Education |
| E-commerce Rules | Online shopping has same rights as offline |
| Product Liability | If product harms you → company pays compensation |
| Misleading Ads | Celebrities + companies fined heavily |
| Unfair Contracts | One-sided terms banned |
| Central Authority (CCPA) | National watchdog (explained above) |
| Faster Courts | Consumer commissions at district, state, national level |
| Mediation | Quick out-of-court settlement option |
| Penalty | Up to ₹50 lakh fine + jail for false ads |

**CCPA (Central Consumer Protection Authority)**

**Central Consumer Protection Authority Started**: July 2020 **Under**: Department of Consumer Affairs, Ministry of Consumer Affairs, Food & Public Distribution (Govt of India)


**Simple Job**

- Acts like India's **national consumer police** for online & offline markets.
- Finds and stops **unfair, deceptive, or harmful practices** against consumers.
- Can investigate on its own, act on complaints, file cases, and impose heavy fines (up to ₹50 lakh) or jail.
- Handles **class-action lawsuits** (one case for thousands of affected consumers).

**Examples of What CCPA Does**

- Banned misleading ads (e.g., "100% safe" for pan masala).
- Stopped fake reviews, dark patterns, surge pricing tricks, hidden charges.
- Made companies refund money in big scams (e.g., coaching centre false promises).

## 14. What is PM Fasal Bima Yojana (PMFBY)

**Launched**: 2016 by PM Narendra Modi **Goal**: Protect farmers from crop loss due to drought, flood, pests, hailstorm, disease, etc.


To provide financial support to farmers suffering crop loss/damage arising out of unforeseen events, a new scheme namely, **Pradhan Mantri Fasal Bima Yojana (PMFBY) has been approved for implementation in all States and Union Territories from Kharif 2016 season in place of National Agricultural Insurance Scheme (NAIS) and Modified National Agricultural Insurance Scheme (MNAIS). PMFBY is a marked improvement over the earlier schemes on several counts and comprehensive risk coverage from pre-sowing to post-harvest losses** has been provided under it.

**How it Works**

- **Very cheap premium** for farmers:
  - Kharif crops (e.g., paddy, cotton): Only **2%** of sum insured
  - Rabi crops (e.g., wheat): Only **1.5%**
  - Horticulture/commercial: **5%** → Rest paid by Central + State Govt
- **Full coverage**: If crop fails, farmer gets full insured amount (no deduction).
- **Compulsory** for loanee farmers; voluntary for others.

**Example** Crop worth ₹50,000 per acre → farmer pays only ₹1,000 (Kharif) → if total loss, gets ₹50,000.

**Major Issues with PMFBY (2025)**

| Issue | What's Happening | Example (Rajasthan) |
|---|---|---|
| Huge Pending Claims | ₹948 crore still unpaid (2020–24 Kharif) | Jodhpur: ₹137 Cr pending, Nagaur: ₹127 Cr |
| No Crop Inspection | Companies reject claims without visiting fields | Farmer Bhagirath (Jhunjhunu): 50–70% loss for 3 years, no one came, no payout |
| Fraud & Fake Signatures | Companies + officials forge documents to deny claims | Minister accused ₹122 Cr embezzled; 1.7 lakh claims wrongly rejected (2023–24) |
| Slow Payment | Must pay in 2 months + 12% penalty if late → rule ignored | Even after harvest, farmers wait years |
| Budget Cut | Central funding down 23% in 2025–26 | ₹12,242 Cr vs ₹15,864 Cr last year |
| Farmers Losing Trust | Many stop buying insurance | "Insured in 2023–24, got nothing → never again" – common complaint |

**Recent Protest (Churu, Rajasthan)**

- Farmers started **Tractor March** to Jaipur demanding ₹500 Cr old claims.
- Police stopped rally, took tractors.
- Late-night meeting with Agriculture Minister → protest postponed after assurances.

## 15. India's Anti-Rape Laws: From 1979 Shame to 2025 Reforms

**Simple Timeline & Key Changes**

**1972–1979: Mathura Rape Case (Big Shock)**

- 14–16-year-old tribal girl raped by 2 policemen inside police station.
- Trial court called her a "liar" and "habituated to sex".
- Bombay High Court said it was rape (consent was only "passive submission").
- Supreme Court (1979) acquitted policemen: "No injury marks = consent".
- Nation angry → women's groups protested → CJI Gavai (2025) called it "institutional embarrassment".

**1983: First Major Change**

- Criminal Law Amendment Act
- Custodial rape made separate crime (Section 376 IPC).
- Burden of proof shifted: If sex proved → police must prove it was consensual.

**1997: Vishaka Guidelines**

- After Bhanwari Devi gang-rape (for stopping child marriage).
- Supreme Court made rules against sexual harassment at workplace.

**2012: Nirbhaya Gang-Rape → Huge Protests**

- 2013 Criminal Law Amendment
  - Rape definition widened (not just penetration).
  - Silence or weak "no" ≠ consent.
  - Age of consent raised from 16 to 18 years.
  - Death penalty for rape that causes death or vegetative state.
  - Police must register FIR, hospitals must give free treatment.

**2017–2018: Unnao & Kathua Cases**

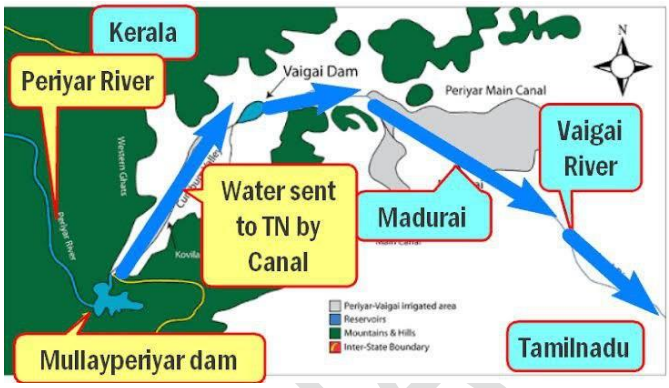
- 2018 Amendment
  - Death penalty if victim below 12 years.
  - Minimum 20 years jail if victim below 16.
  - Fast-track: Investigation in 2 months, trial + appeal in 6 months.

**2023: New Criminal Laws (BNS – Bharatiya Nyaya Sanhita)**

- Gender-neutral for both victim and accused.
- Death penalty or life for gang rape of girl below 18.
- New crimes: Sex by false promise of marriage, deceit, etc.
- Sexual harassment definition widened.

## 16. Mullaperiyar Dam

**Background and Location**




- **River:** Periyar River (Western Ghats, Kerala)
- **Location:** Thekkady, Idukki district, **Kerala**
- **Type:** Masonry Gravity Dam
- **Altitude:** 881 m above sea level
- **Built on:** Confluence of **Mullayar** and **Periyar** rivers
- **Construction:**
  - **Started:** 1887 **Completed:** 1895
  - **Engineer:** Col. **John Pennycuick**, British Corps of Royal Engineers
  - **Materials Used:** Limestone and *Surkhi* (burnt brick powder, sugar, lime)
- **Dimensions:** Height – 53.6 m; Length – 365.7 m
- **Reservoir Area:** 8.5 sq. km
- **Purpose:** Water diversion from **Periyar (Kerala)** to **Vaigai basin (Tamil Nadu)** for irrigation & power generation

**2. Strategic and Ecological Significance**


- **Transfers water** from Kerala's west-flowing Periyar to Tamil Nadu's east-flowing Vaigai — crucial for irrigation in **Madurai, Theni, Dindigul, Sivaganga districts**.
- Surrounded by **Periyar National Park**, a **biodiversity hotspot** home to elephants, tigers, and endemic species.
- **Oldest functional dam** in India — over 125 years old.

**3. Administrative & Legal Context**

- Though located in **Kerala**, the dam is **operated and maintained by Tamil Nadu**.
- **Based on:** a **999-year lease agreement (1886)** between the Maharaja of Travancore and the British government of Madras Presidency.
- This lease remains a **point of legal and political contention**.

**The Kerala–Tamil Nadu Dispute**

| Kerala's Concerns | Tamil Nadu's Stand |
|---|---|
| Dam is over 125 years old, made of weak materials (lime, surkhi). Potential **seismic and structural risk**. | Dam is safe per expert reports; necessary for **irrigation and drinking water** for southern Tamil Nadu. |
| Located in **seismic zone**, downstream settlements at risk. | Seeks **raising water level** from 136 ft to 142 ft to meet irrigation needs. |
| Proposes **new dam construction** citing safety. | Opposes new dam; argues Kerala's concerns are exaggerated. |

- **Supreme Court** has repeatedly intervened:
  - **2006 & 2014:** SC allowed Tamil Nadu to raise the water level to 142 ft after repairs.
  - **2025:** SC directed both states to resolve the issue with **expert committee assistance**.

## 17. Constitution (One Hundred and Thirtieth Amendment) Bill, 2025

**Need for the Bill**


- Addresses ethical concerns in governance by barring ministers with serious criminal allegations.
- Promotes constitutional morality amid 30% MPs/MLAs facing serious cases.
- Prevents governance paralysis by ensuring accused ministers do not hold office indefinitely.
- Aligns with public demand for cleaner politics and reduced criminal influence in policy.
- Strengthens accountability across Union, State, and Delhi executive branches.
- Deters frivolous continuation of tainted leaders, upholding democratic integrity.
- Responds to judicial concerns over criminalisation of politics in India.
- Sets uniform disqualification standard beyond existing anti-defection laws.

**Key Provisions**

- Amends **Articles 75, 164, and 239AA** for Union, State, and Delhi ministers.
- Applies to offences punishable with **5+ years imprisonment**.
- Removal triggered after **30 consecutive days in custody** (police + judicial).
- For **PM/CM**: Must resign by 31st day or **automatically cease** to hold office.
- For **other ministers**: Removed by President/Governor on PM/CM advice by 31st day.
- Automatic cessation if advice not tendered by the 31st day.
- Applies only to **cognisable offences**; excludes minor or bailable cases.
- No role for Parliament/Assembly—purely **executive decision**.

**Concerns**

- **Risk of political weaponization** via engineered arrests and delayed bail.
- Erodes democratic balance without **safeguards against misuse**.
- **Low 30-day threshold** irrational given default bail and remand norms.
- **No distinction** between malafide and genuine cases—blanket application.
- **Opposition united** over police and judicial discretion vulnerabilities.

Bill referred to **Joint Parliamentary Committee**—needs greater scrutiny.

**ADDITIONAL CONTENT**

**Discretionary Power of Arrest**

- **Arrest is discretionary** under BNSS Section 35 (pari materia CrPC 41).
- No mandatory arrest even for offences >7 years—police can choose.
- **Joginder Kumar v. State of U.P. (1994)**: Arrest must be justified; not just because power exists.
- **Arnesh Kumar v. State of Bihar (2014)**: Reasons for arrest must be recorded—often ignored.
- **60% arrests unnecessary** per National Police Commission (1977).
- Police amenable to **political pressure**—arrest as tool to unseat opposition.
- **Private arrest limited** to non-bailable cognisable acts in presence or proclaimed offenders.
- **Deenan v. Jayalalitha (Madras HC, 1989)**: Police not bound to arrest even in cognisable cases.

**Arbitrary Detention and Bail**

- **30-day threshold ignores default bail** under CrPC 167(2)/BNSS 187 (60-90 days).
- Remand extensions routinely granted cumulative custody exceeds 30 days easily.
- **Special laws (PMLA, UAPA, NDPS)** impose **twin bail conditions**: prove innocence + no reoffending.
- Bail under special laws **extremely delayed**. e.g., Manish Sisodia: 17 months in PMLA.
- **Gravity of offence** considered despite "bail is rule, jail exception" principle.
- **Minister's influence** used to deny bail creates **Hobson's choice**: office or liberty.

## 18. 20 Years of the RTI Act: The Slow Unravelling of India's Transparency Law

**Context & Background**

Twenty years after its enactment, the RTI Act once a symbol of India's democratic deepening is weakening. Originating from grassroots struggles (MKSS) and rooted in Article 19(1)(a), RTI aimed to shift India from a culture of secrecy to one of accountability by empowering ordinary citizens to question the state.

**Early Achievements of the RTI Regime**

**For the first 10 years, the RTI transformed India's governance culture:**

✓ Empowerment of Common Citizens

RTI became a tool for ration card corrections, pension delays, land disputes, NREGA payments, etc.

✓ Exposing Corruption

**Major scams such as:**

- Adarsh Housing Scam
- 2G Spectrum Case
- Coal block allocations

…were uncovered through RTI disclosures.

✓ Mandated Proactive Disclosure

Section 4 forced public authorities to publish routine information.

✓ Strong Information Commissions

CIC and SICs ensured quick redressal in early years, acting as quasi-judicial authorities.

Overall, RTI democratised accountability, reducing the distance between state and citizen.

**Emerging Trends of Erosion**

From 2015 onwards, multiple worrying patterns have converged:

**A. Higher Demand, Lower Responsiveness**

- RTI filings: 1.75 million in 2023–24
- Rejections: 67,000 highest ever

The gap between citizen demand and state willingness has widened.

**B. Delays & Backlogs**

Vacancies in CIC/SICs → appeals delayed for months or years → information loses relevance.

**C. Weakening Independence**

The RTI Amendment Act, 2019 allowed the central government to fix tenure/salaries of Commissioners, raising concerns of executive influence.

**D. Decline in Proactive Disclosure**

Websites do not update Section 4 information → forces citizens to file unnecessary RTIs.

**E. Rising Official Hostility**

RTI users increasingly report intimidation, especially in matters involving land, mining, local funds and policing.

**F. Declining Civil Society & Media Engagement**

The ecosystem that once educated citizens on RTI usage has weakened.

**Why Is RTI Losing Strength?**

- A combination of structural and cultural factors:
- Institutional Under-capacity
- Vacancies, low budgets, weak staffing in Information Commissions.
- Bureaucratic Culture of Secrecy
- Colonial-era mindset continues → "Why share information?"
- Weak Records Management
- Lack of digitisation → missing files → delays.
- Centralising Tendencies
- 2019 amendments + procedural rules concentrate power with the executive.
- Reduced Civil Society Pressure
- Decline in activism and awareness → less scrutiny.

**Implications for Democracy**

The gradual weakening of RTI has cascading effects:

- Reduced accountability, making corruption harder to detect
- Decline in trust between citizens and institutions
- Widening power imbalance between state and public
- Disproportionate impact on marginalised groups, who rely heavily on RTI to access entitlements

RTI was not only a law but a symbol of democratic dignity. Its dilution implies shrinking space for public oversight.

**Way Forward**

To restore RTI's strength, India must pursue systemic reforms:

✓ Fill vacancies in CIC/SICs; ensure time-bound disposal of appeals

✓ Restore autonomy by revisiting the 2019 amendments

✓ Enforce quarterly proactive disclosures under Section 4

✓ Fully digitise government records; create a unified RTI portal

✓ Protect RTI activists (Whistleblower safeguards)

✓ Renew mass awareness campaigns, especially rural

✓ Integrate RTI with social audits, grievances, and open data systems

**Conclusion**

After 20 years, the RTI Act stands at a turning point. Despite empowering millions and revealing cor-ruption, its weakening threatens democratic accountability. Strengthening RTI is essential for strengthening democracy protecting the public's right to know and ensuring citizens remain cen-tral to governance.

## 19. Supreme Court Ruling on Stray Dogs and Animals

The Supreme Court of India issued directives to address the growing problem of stray dog attacks and stray animals on highways. The focus is on public safety in key areas, mandating removal, sterilization, vaccination,


**Background**

India faces a **rising public safety challenge** from stray dogs and stray animals on highways. Recent data shows:

- **35 million stray dogs**
- **10 million pet dogs**
- **4,146 dog-bite deaths (2019, NCRB)**
- Dogs are **2nd major cause of urban road accidents** (study)
- Increase in dog-bites near institutions like schools, hospitals, railway stations
- Rising stray cattle accidents on highways

Given this, the Supreme Court issued strong directives to protect **public safety under Article 21**.

**Key Supreme Court Directives on Stray Dogs**

**1. Immediate Removal from Sensitive Areas**

Stray dogs must be cleared from:

- Schools
- Hospitals
- Railway stations
- Bus depots
- Sports complexes

**2. Capture–Sterilise–Vaccinate–Relocate**

Following Animal Birth Control Rules (2023):

- Catch dogs
- Sterilise and vaccinate
- Shift to shelters
- **Not to be released back** to the same location

This marks a shift from the earlier **CSVR (Capture–Sterilise–Vaccinate–Release)** model.

**3. Authorities Responsible**

Municipal bodies and local authorities must implement the directions and submit compliance reports within **8 weeks**. Next review hearing: **13 January 2026**.

**4. Nationwide Applicability:** The directives are uniform across states and UTs.

**Why This Matters (Court's Reasoning)**

- ✓ **Public Safety Under Article 21:** Stray dog attacks endanger children, patients, elderly, and the general public.
- ✓ **Public Health Crisis:** Despite having vaccines, India continues to record **high rabies deaths**.
- ✓ **Poor Implementation of Existing Rules:** CSVR model is often ineffective due to lack of shelters, corruption, and under-capacity.
- ✓ **Impact on Tourism and India's Global Image:** A recent case of a foreign runner bitten in Bengaluru highlighted international implications.
- ✓ **Real Data Trends:** Several states reported **year-on-year increase** in dog attacks near institutions.

**Safeguards Across Institutions**

**Vulnerability Mapping:** States/UTs must identify sensitive zones within **2 weeks**.

**Physical Barriers:** District magistrates must ensure:

- Fencing
- Gates
- Walling
- Sealing of garbage points

**Nodal Officer per Institution**

Each public institution must appoint a responsible officer for:

- Cleanliness
- Prevention of dog entry
- Coordination with municipalities

Names must be displayed on entrances.

**Quarterly Inspections:** Local bodies must inspect every 3 months; non-compliance invites strict action.

**Directives on Stray Cattle & Animals on Highways**

**Joint Action by Multiple Agencies:** Municipal bodies, Public Works Department, Transport Departments, State Govts, UTs, and NHAI must jointly remove cattle from national highways and expressways.

**Relocation to Shelters**

Animals must be shifted to:

- Gaushalas
- Animal pounds
- Shelters

…with proper food, water and veterinary care.

**Highway Patrol Teams**

- Dedicated patrol squads must respond quickly to stray animal sightings.
- Mechanisms and helplines must be included in the next compliance report.

**Note on animal rights**

- Article 51A(g) mandates that it is the fundamental duty of every Indian citizen to "have compassion for living creatures". Section 3 of the Prevention of Cruelty to Animals Act, 1960 requires "persons having charge of animals" to ensure their well-being and prevent causing them "unnecessary pain or suffering".
- "All living creatures have inherent dignity and a right to live peacefully and right to protect their well-being which encompasses protection from beating, kicking, over-driving, over-loading, tortures, pain and suffering, etc," the Supreme Court had observed in its 2014 judgment in *Animal Welfare Board versus A. Nagaraja* on the practice of Jallikattu.

## 20. Model code of conduct (mcc)

**What is the Model Code of Conduct (MCC)?**

The MCC is a set of guidelines issued by the Election Commission of India (ECI) to regulate the behaviour of political parties and candidates during elections. It ensures **free and fair elections**, maintains a **level playing field**, and prevents **misuse of government machinery**. It comes into force from the announcement of the election schedule until results are declared.

**Scope**

- **Lok Sabha:** Entire country
- **State Assembly:** Entire state
- **By-elections:** Specific constituency

**Evolution**

- **1960:** Origin in Kerala Assembly elections
- **1962:** Adopted nationally
- **1991:** Strengthened under T.N. Seshan
- **2013:** Manifesto guidelines added after *Subramaniam Balaji* judgment

**Key Provisions of MCC**

**General Conduct**

- No hate speech or caste/religion appeals
- No bribing or personal attacks

**Meetings & Processions**

- Prior notice to authorities

**Polling Day**

- No campaigning within 48 hours
- No liquor, posters, propaganda near booths

**Use of Official Machinery**

- No mixing of official duties with campaigning
- No government vehicles/funds for campaigns

**Party in Power**

- Cannot announce new schemes or projects
- Ongoing schemes allowed, but without publicity

**Manifesto Guidelines**

- Promises must be realistic, financially viable, and not unduly influence voters

**Exceptions under MCC**

- Routine government work and ongoing schemes may continue
- Emergency actions permitted with EC approval
- Regular administrative work unaffected

**Violation Example – Bihar Case Study (2025)**

- **Scheme:** Mukhyamantri Mahila Rojgar Yojana
- **Action:** ₹10,000 cash transfer to 75 lakh women just before elections
- **Issue:** Claimed as ongoing scheme but violated MCC spirit
- **Inference:** Highlights loopholes enabling misuse of "ongoing scheme" exemption

**Enforcement Mechanism**

- MCC is **not legally binding**; relies on ECI's moral authority under **Article 324** (*Mohinder Singh Gill*, 1978).
- Violations may invoke:
  - **RPA 1951** (corrupt practices, hate speech)
  - **IPC 1860** (bribery, enmity, undue influence)
- ECI actions: warnings, censure, temporary bans, criminal complaints

**Should MCC be Given Statutory Backing?**

**Arguments – YES**

- Stronger accountability & deterrence
- Prevent misuse of public funds
- Supported by Parliamentary Standing Committee (2013)
- Violations could attract penalties under RPA, 1951

**Arguments – NO**

- Legal process is slow; elections occur within ~45 days
- Statutory backing may reduce ECI's flexibility
- Moral authority + public pressure more effective
- Risk of excessive litigation

**Judicial Support**

- **Mohinder Singh Gill (1978):** EC's wide powers upheld
- **Subramaniam Balaji (2013):** Added manifesto guidelines
- **Electoral Bonds Case (2024):** Need for level playing field
- **Ashwini Upadhyay (2022):** Differentiated welfare from freebies

**Challenges**

- Voluntary nature → limited enforceability
- Weak penalties
- Digital misinformation & social media violations
- Ambiguity on freebies vs welfare
- Perception of political influence in EC appointments

**Way Forward**

1. Practical and enforceable MCC norms
2. AI-based digital monitoring of violations
3. Independent ECI appointment mechanism
4. Public vigilance & media oversight
5. Regulate government advertisements

6. Address online hate speech and digital campaigning abuses

**Conclusion**

The MCC's effectiveness depends not just on legal force but on political ethics and the Election Commission's institutional integrity. As Ambedkar warned, democracy requires moral conduct beyond legal provisions. The MCC remains vital for free and fair elections—but its success lies in responsible political behaviour and a strong, independent ECI.

## 21. Model Youth Gram Sabha (Launched 2025)

By The Ministry of Panchayati Raj, teamed up with Education, Tribal Welfare, and Aspirational Bharat Collaborative.

**How It Plays Out:**

1) Students step up as Sarpanch (village head), ward members, health workers, or engineers.
2) Debate real village budgets, vote on resolutions, and hammer out consensus on plans like roads or schools.
3) Win prizes, snag certificates, and learn from trained teachers.
4) Civics shifts from sleepy textbook pages to buzzing, real-world excitement—building debate skills, negotiation savvy, and leadership grit.

**Phase 1 (Live and Kicking Right Now)**

Massive Reach: Hitting over 1,000 schools across 28 States and 8 Union Territories.

**Phase 2 (On the Horizon)**

Scaling to every state-run school across India.

Endgame: Evolve from fun simulations into a pipeline of real-world local leaders.

## 22. Goa Government's U-Turn on Tiger Presence

### 1. What Happened? (Key News Highlights)

- Contradictory Positions: The Goa government has taken opposite stances on whether tigers have a permanent presence in the State.
  - **In Tiger Reserve Case (2025):** Goa told the Supreme Court and its committees that tigers are not resident, only *transient* animals moving between Karnataka and Maharashtra. No evidence of breeding or cubs.
  - **In Mahadayi River Dispute (2018):** Goa argued the exact opposite, claiming tigers are resident in areas like Chorla, Mann and Kankumbi forming a contiguous landscape with Karnataka's Bhimgad and Anshi-Dandeli Tiger Reserves.

- **Reason for Contradiction:**
  - In the water dispute, Goa used the "resident tiger" argument to block Karnataka's water diversion plans.
  - In the tiger reserve case, Goa downplayed tiger presence to avoid notifying a tiger reserve, citing social and administrative challenges.
- **Current Legal Status:**
  - The Supreme Court (Sept 2025) asked the *Central Empowered Committee* to examine the issue further; deadline extended.
  - SC has stayed approval of resort proposals in the proposed tiger reserve area.
  - This follows the Bombay HC's (2023) order directing Goa to notify Mhadei WLS and adjoining areas as a tiger reserve.

### 2. Background and Context

**Tiger Reserve Proposal**

- NTCA and the Centre have pushed since 2011 to declare Mhadei Wildlife Sanctuary a tiger reserve.
- Trigger: Poisoning of four tigers (2021) → petition by Goa Foundation → Bombay HC order (2023).
- NTCA guidelines require 800–1,000 sq km inviolate core area.
- Goa argues this is impossible: current protected areas total only 745 sq km, with nearly 1 lakh residents in proposed zones and no resettlement space.

**Tiger Population Evidence**

- **NTCA 2018:** Only 3 tigers camera-trapped, no cubs → transient population.
- **NTCA 2022:** Tiger numbers remain low but Mhadei has "significant potential" for Western Ghats tiger expansion.
- Ironically, Goa in 2018 told the Mahadayi Tribunal that tigers were *resident* and sensitive to hydrological changes.

**Mahadayi River Dispute**

- Goa opposed Karnataka's water diversion, citing risk to tiger habitat and prey base.
- Mahadayi/Mandovi is vital to Goa; environmental concerns triggered public protests.

### 3. Goa's Arguments Against Tiger Reserve

**Ecological Arguments**

- Tigers are *not residents* only passing through a corridor.
- Low prey density; limited ecological benefit from becoming a tiger reserve.

**Practical/Social Arguments**

- NTCA's inviolate area requirement cannot be met.
- Around 100,000 people would need relocation → "social unrest."
- No alternative resettlement sites available.

**Legal Arguments**

- Goa has filed an SLP in the Supreme Court challenging the Bombay HC directive.

## 23. International Big Cat Alliance (IBCA): A Global Initiative for Big Cat Conservation

### Introduction

The International Big Cat Alliance (IBCA) is a global initiative launched by India in 2023 to conserve seven major big cats—Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar, and Puma. It promotes cooperation among 95 range countries and builds on India's successful conservation models such as Project Tiger. The alliance was formally established in March 2024 under the National Tiger Conservation Authority (NTCA).

### Announcement and Background

- Announced: PM Modi, April 9, 2023, during 50 years of Project Tiger (Mysuru).
- Origins: First conceptualised on Global Tiger Day 2019.
- Why: To strengthen global coordination against habitat loss, poaching, and human-wildlife conflict.
- Inspired by India's success: Tiger population rose from ~1,800 (1970) → ~3,600 (2022).

### First Meeting and Timeline

- First Assembly held on June 16, 2025, New Delhi (after 2-year formalisation).
- HQ Agreement signed on April 17, 2025.
- Extends India's conservation legacy from Project Tiger (1973) to global big cat conservation.

### Key Features

- **Formalised:** 2024; HQ in New Delhi.
- **Mandate:** Habitat protection, research, climate adaptation, sustainable use, best-practice sharing.
- **Membership:** Open to all UN nations; as of July 2025, → 11 members (e.g., Armenia, Bhutan, Ethiopia, Liberia, India).
- **Funding:** India commits ₹150 crore (2023–2028).
- **Governance:**
  - Assembly of Members
  - Standing Committee
  - Secretariat (ISA model)
- **Scope:** Conservation of 7 big cats by supporting landscape-level ecological health.

### Rationale and Significance

- Big cats are apex predators—key for maintaining ecological balance, carbon storage, fire control, prey regulation.
- IBCA strengthens cross-border collaboration against poaching networks.
- Enhances India's global environmental leadership—India hosts 5 of the 7 big cat species.
- Tiger reserves expanded from 9 (1973) → 58 (2025).

### IUCN Status of the Seven Big Cats

| Species | IUCN Status | Key Threats | Primary Range |
|---|---|---|---|
| Tiger | Endangered | Habitat loss, poaching | India, Russia, SE Asia |
| Lion | Vulnerable | Conflict, habitat loss | Africa, India (Asiatic) |
| Leopard | Vulnerable | Poaching, habitat loss | Africa, Asia |
| Snow Leopard | Vulnerable | Poaching, habitat change | Central Asia, Himalayas |
| Cheetah | Vulnerable | Habitat loss, illegal trade | Africa, Iran |
| Jaguar | Near Threatened | Conflict, deforestation | Central/South America |
| Puma/Cougar | Least Concern | Habitat fragmentation | North/South America |

**Seven Big Cats and Their Presence in India**

**Found in India:**

- Tiger – most in Corbett, Kaziranga, Bandipur.
- Lion – Asiatic Lions in Gir.
- Leopard – widespread across India.
- Snow Leopard – Himalayas (Ladakh, HP, Uttarakhand).
- Cheetah – reintroduced in Kuno National Park.

**Absent in India:**

- Jaguar, Puma (Americas only).

**India's Conservation Efforts for Asiatic Lions**

- Project Lion (2020) – ₹2,927 crore for habitat expansion, monitoring, disease control.
- Community-linked conservation (Maldharis).
- GPS tracking, genetic studies to prevent inbreeding.
- Plans for second population outside Gujarat remain stalled.

**UPSC Previous Year Question (PYQ) and Analysis**

**Question: Consider the following statements:**

1. Asiatic lion is naturally found in India only.
2. Double-humped camel is naturally found in India only.
3. One-horned rhinoceros is naturally found in India only.

**Which of the statements given above is/are correct?**

(a) 1 only (b) 2 only (c) 1 and 3 only (d) 1, 2 and 3

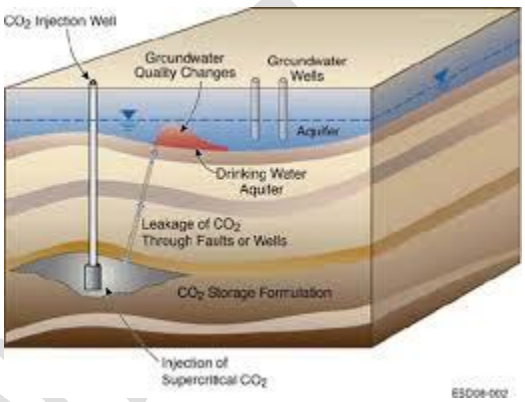
**Correct Answer: (a) 1 only.**

**Explanation:** Asiatic Lions are found only in India (Gir Forest, Gujarat). Double-humped camels are also in Central Asia (e.g., Mongolia, China). One-horned rhinoceros are in India, Nepal, and Bhutan.

## 24. Groundwater Quality

The latest Annual Groundwater Quality Report (2024) paints a grim picture. Nearly one-fifth of samples from over 440 districts exceed safe contamination limits. In Punjab, almost a third show uranium above permissible levels, with fluoride, nitrate, and arsenic also widespread. India's dependence on groundwater, with 600 million people relying on it for drinking and most irrigation, makes this a national crisis

**Key Problems of Groundwater in India**




1. **Widespread Chemical Contamination**
   - Nearly **one-fifth** of groundwater samples from over **440 districts** exceed safe limits.
   - **Punjab**: Almost **one-third** of samples have **uranium** above permissible levels.
   - **Fluoride, nitrate, arsenic**, and **heavy metals** are common across states.
2. **Severe Public Health Crisis**
   - **Skeletal fluorosis** (deformities, disability) in children and adults (e.g., Gujarat's Mehsana).
   - High incidence of **diarrhoeal diseases** – still killing **hundreds of thousands of children under five** every year.
   - **Cognitive impairments** from long-term exposure to arsenic and fluoride, affecting education and future earning potential.

3. **Massive Economic Losses**
   - Environmental degradation (mostly polluted water & soil) costs India **~$80 billion/year** (**~6% of GDP**).
   - Huge health expenditure + millions of **lost working days** due to waterborne illnesses.
   - Reduced labour productivity because of disability and chronic illness.

4. **Agricultural Productivity Hit**
   - Polluted irrigation water causes **soil degradation** (affects **one-third** of India's land).
   - Lower crop yields and income on farms using contaminated water.
   - Risk of **export rejections** (India's $50-billion agri-export sector under threat if staples like rice/vegetables are contaminated).

5. **Deepens Inequality**
   - Rich can afford bottled water/filters; poor families drink contaminated water → cycles of **ill health, medical debt, and poverty**.
   - Rural communities worst affected with no alternatives.

6. **Vicious Cycle from Over-Extraction**
   - In Punjab, extraction is **>1.5 times** the sustainable limit → farmers drill deeper → pull up more contaminated water → need even more fertiliser → further worsens quality and soil health.

7. **Contamination is Often Permanent**
   - Unlike scarcity (which can sometimes be reversed), chemical contamination (uranium, fluoride, arsenic) is **largely irreversible**, making it a long-term national threat.

**Solutions to India's Groundwater Contamination Crisis**

1. **Nationwide Real-Time Groundwater Monitoring**
   - Set up a country-wide system to continuously test and track contamination levels.
   - Make all data **open and public** so farmers and villagers instantly know if their water is safe for drinking or irrigation.
2. **Strict Enforcement Against Pollution Sources**
   - Crack down hard on **industrial effluents** and **untreated sewage** being dumped into rivers and groundwater.
   - End the current weak system that lets factories externalise costs onto society.
3. **Reform Agricultural Policies**
   - **Stop or reduce input subsidies** (free power, fertilisers, MSP) that push farmers into chemical overuse and water-guzzling crops like paddy.
   - **Shift incentives** towards:
     - Crop diversification (e.g., pulses, maize, oilseeds)
     - Organic farming practices
     - Micro-irrigation (drip, sprinklers) to cut water and chemical use.
4. **Decentralised, Low-Cost Water Treatment**
   - Install **community-level purification units** and affordable household filters in affected villages for immediate safe drinking water.
5. **Stricter Export Quality Controls & Farmer Training**
   - Tighten checks and traceability to prevent rejection of Indian crops abroad.
   - Train farmers on safe irrigation and reducing chemical runoff.

**Proven Success Stories Already Working (from the article)**

- **Nalgonda, Telangana** → Community purification plants dramatically reduced new fluorosis cases in children.
- **Punjab & Haryana pilots** → Switching from paddy to maize/pulses lowered groundwater extraction, reduced chemical use, and **kept farmer incomes stable or higher**.

## 25. Air Quality Monitoring in India

### Air Quality Monitoring in India

**Overview**


Air quality monitoring involves systematic measurement of atmospheric pollutants to assess pollution levels, identify sources, and support policymaking. Frequent smog episodes in cities like Delhi underscore the urgency of robust monitoring.

**National Air Quality Monitoring Programme (NAMP)**

- Implemented by **CPCB** with **SPCBs**.
- Large national grid of monitoring stations across urban and semi-urban areas.
- Tracks key pollutants: **$SO_2$, $NO_2$, PM10, PM2.5** along with meteorological factors.
- Helps assess long-term trends, compliance with standards, and identify **non-attainment cities**.

**National Ambient Air Quality Standards (NAAQS)**

- Notified under the **Air Act, 1981** for 12 pollutants including PM2.5, PM10, $NO_2$, $SO_2$, CO, $O_3$, Pb, Ni, As, benzene.
- Stricter limits for **ecologically sensitive areas**.
- Examples: PM2.5 annual limit **40 µg/m³**, $NO_2$ **40 µg/m³** (general), **30 µg/m³** (sensitive).

**Air Quality Index (AQI)**

- Launched in **2014** for simplified public communication.
- Based on 8 pollutants; categories from **Good → Severe**.
- Helps trigger advisories and emergency measures.

**SAFAR (System of Air Quality and Weather Forecasting and Research)**

- Developed by **IITM Pune** under MoES.
- Offers real-time AQI, short-term forecasts, and measures additional pollutants like **BTX** and **mercury**.
- Supports urban planning and early warning systems.

**Continuous Ambient Air Quality Monitoring Systems (CAAQMS)**

- Automated, high-frequency monitoring deployed by CPCB, SPCBs, municipalities, and defence establishments.
- Provides near real-time pollution data.
- Example: CAAQMS at **Eastern Command HQ, Kolkata**.

**WHO Air Quality Guidelines (2021)**

Updated to reflect health risks at low exposure levels.

**Stricter recommended limits:**

- PM2.5 annual: **5 µg/m³**
- PM10 annual: **15 µg/m³**
- $NO_2$ annual: **10 µg/m³**
- $SO_2$ 24-hr: **40 µg/m³**

Guidelines show India's NAAQS require further tightening.

**WHO Ambient Air Quality Database**

- Global repository since 2011 for ground-based PM10, PM2.5, and $NO_2$ data.
- 2022 update added systematic $NO_2$ monitoring; 2023 expanded dataset quality and geographical coverage.

**National Clean Air Programme (NCAP)**

- Launched **2019** to reduce PM2.5 and PM10 in **131 non-attainment cities**.
- Target: **40% reduction by 2025–26**.
- Tools: city action plans, airshed management, more monitoring stations, source apportionment.
- Supported by Clean Air Committees and Finance Commission-based incentives.

**Graded Response Action Plan (GRAP)**

- Framework for **Delhi–NCR airshed** under CAQM.
- Pre-emptive restrictions based on forecasted AQI (e.g., bans on construction, DG sets, vehicular controls).
- Escalating measures from **Poor** → **Severe+** categories.

## 26. Graded Response Action Plan (GRAP)

**Nature and Purpose**

- GRAP is a **severity-linked emergency framework** for Delhi–NCR.
- Origin: Supreme Court directions (2016); formalised under **CAQM Act (2021)**.
- Activated when AQI crosses predetermined thresholds.

**Stage-Wise Measures**

| Stage | AQI Category | Representative Actions |
|---|---|---|
| **Stage I – Poor (201–300)** | Moderate restrictions | Mechanical road cleaning, dust suppression |
| **Stage II – Very Poor (301–400)** | Heightened restrictions | Ban on diesel gensets; night construction limits |
| **Stage III – Severe (401–450)** | Strong restrictions | Ban on BS-III petrol, BS-IV diesel vehicles; halt construction |
| **Stage IV – Severe+ (>450)** | Emergency actions | Shutdown of brick kilns; suspension of non-essential activities; possible odd-even |

**Strengths**

- Clear, predictable, and AQI-triggered actions.
- Effective for short-term crisis management.
- Enhances inter-agency coordination under CAQM.

**Weaknesses**

- Limited to Delhi–NCR despite high pollution in other clusters.
- Enforcement varies by state agencies.
- Structural emission sources remain unaddressed.

## 27. Climate Risk Index (CRI) Report

**Context**

The Climate Risk Index (CRI) Report released during the COP-30 deliberations offers a global assessment of the human and economic costs of extreme weather events. India ranks **9th among the countries most affected** over the last three decades — making the index highly relevant for UPSC's themes on environment, disaster management, and climate governance.

**What is the Climate Risk Index (CRI)?**

The CRI, published annually by **Germanwatch**, evaluates the impact of extreme weather events such as floods, cyclones, droughts and heatwaves.

**It uses two indicators:**

- **Fatalities** (absolute and per 1 lakh population)
- **Economic losses** (absolute and as % of GDP)

This makes CRI a **quantitative vulnerability index** crucial for comparing adaptation capacities across countries.

**Key Findings (1995–2024)**

- Globally, extreme weather events caused **8.32 lakh deaths**, reflecting the deepening climate crisis.
- India accounted for nearly **80,000 fatalities**, about **9.6%** of global climate-related deaths.
- India experienced **430 major extreme weather events**, including cyclones, floods, heatwaves, and erratic monsoon spells.
- Total economic losses for India stand at **US$ 170 billion**, illustrating the scale of climate-induced development setbacks.
- The **Global South**, especially lower-middle-income economies, remains disproportionately affected due to limited resilience infrastructure and inadequate adaptive capacity.

**Why India's Ranking Matters**

**India's high vulnerability is shaped by:**

- Dense population in risk-prone zones
- Monsoon-dependent agriculture
- Rapid, unplanned urbanization
- Exposure to cyclones, floods and droughts across multiple climatic zones
- Limited climate-resilient infrastructure in many districts

The CRI ranking highlights that climate change is not a future threat; it is a **structural development challenge** already shaping India's growth trajectory.

**Scientific & Policy Linkages**

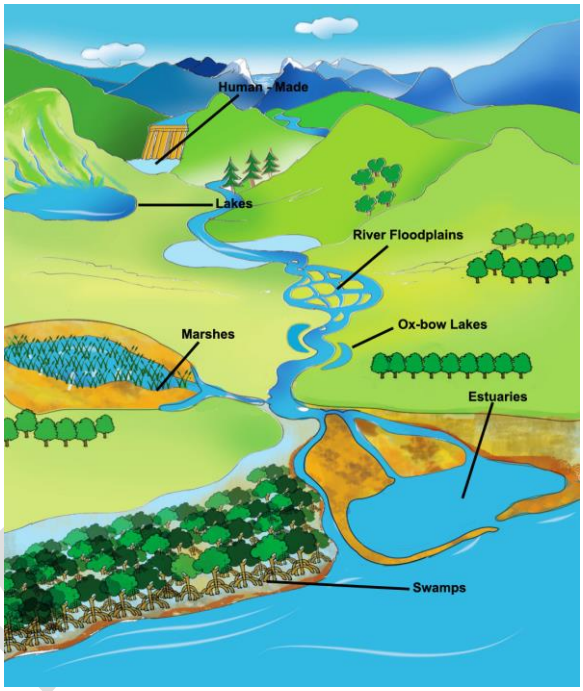
- CRI aligns with findings of the **IPCC** and **WMO**, which warn of rising intensity and frequency of extreme events.
- The report feeds into global climate negotiations at **COP30**, especially debates on:
  - ✓ Climate finance
  - ✓ Loss and damage mechanisms
  - ✓ Adaptation commitments
- It reinforces the need for science-driven planning, nature-based solutions, and climate-resilient infrastructure.

## 28. Brazil's Tropical Forests Forever Fund

- Brazil has launched the **Tropical Forests Forever Fund (TFFF)** to financially **reward countries for protecting and expanding forests**.
- The fund aims to mobilise **~USD 125 billion** from public and private sources; **returns from the investments** will be used to pay participating countries.
- Payments are linked to **verified forest conservation performance**, ensuring outcome-based climate finance.
- **India has joined as an Observer**, supporting the initiative but has stressed that climate finance must be **equitable, predictable, and affordable** for developing countries.
- The initiative aligns with the global push to **raise climate ambition** as the world marks **10 years of the Paris Climate Agreement**.

## 29. Wetlands

As per the Ramsar Convention, a wetland is defined as 'areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tides does not exceed six meters'.




**Additional Reference**
https://indianwetlands.in/wetlands-overview/wetland-types/

**Significance of Wetlands**
**Ecological**
- Support high biodiversity; essential habitats for migratory birds along international flyways.
- Serve as breeding and nursery grounds for fish and aquatic organisms.
- Maintain nutrient cycling and ecological productivity.

**Hydrological**
- Act as natural sponges: absorb excess rainfall → reduce floods.
- Recharge groundwater and maintain base flow in rivers.
- Filter pollutants → improve water quality.

**Climate Regulation**
- Peatlands and mangroves are major carbon sinks, aiding climate mitigation.
- Buffer coastal areas against cyclones and coastal erosion.

**Economic & Social**
- Sustain livelihoods through fisheries, tourism, reed collection, honey, etc.
- Hold cultural, spiritual and aesthetic significance for local communities.

**Threats to Wetlands in India**
- Major threats include urban encroachment, pollution from sewage and industry, hydrological disruptions due to dams and over-extraction, invasive species like water hyacinth, climate change impacts, and weak governance with poor mapping and fragmented responsibility.

**Measures for Conservation in India**
**Legal Framework**
- The **Wetlands Rules, 2017**, under the Environment Protection Act, mandate identification, notification and wise-use regulation through State Wetland Authorities. CRZ norms, the Forest Acts and Wildlife Protection Act also safeguard wetlands.

**Programme Initiatives**
- The **NPCA** restores lakes and wetlands; the **Wetlands Rejuvenation Programme (2020)** targets 500+ wetlands; **Amrit Dharohar** promotes sustainable use and eco-tourism.

**Scientific & Community Approaches**

- ISRO conducts wetland mapping; community-led models like Chilika Lake guide restoration involving hydrological corrections and invasive species removal

**Ramsar Convention and Ramsar Sites**

**Ramsar Convention (1971)**

An international treaty aimed at the **conservation and wise use of wetlands** through national action and international cooperation.

**Ramsar Site**

A wetland designated as being of international importance due to ecology, biodiversity or hydrology. Designation requires maintaining its ecological character and reporting changes.

**Ramsar Sites in India (Updated as per PIB, 2025)**

- **Total Ramsar Sites in India: 93**
  (Including the **recent addition of Gokul Jalashay and Udaipur Jheel in Bihar**.)
- **Total Area Covered: ~ 13.5 lakh hectares**
- **State with Maximum Ramsar Sites: Tamil Nadu (20 sites)**
  Followed by **Uttar Pradesh (10 sites)**.
- **First Ramsar Sites in Sikkim and Jharkhand** were designated in early 2025.
- **Global Comparison:**
  → **United Kingdom** has the highest number of Ramsar sites.
  → **Brazil** has the largest area under Ramsar protection.
  → **India** is among the **top countries globally in number of sites** and **highest in Asia**.

As of late 2025, the United Kingdom has 176 sites, and Mexico has 144. India has the highest number of Ramsar sites in Asia, with 93 sites, placing it third in the world

**What is wetland? Explain the Ramsar concept of 'wise use' in the context of wetland conservation. Cite two examples of Ramsar sites from India. (150 words, 10 marks, UPSC Mains-2018)**

## 30. Lichens

**Context** Researchers identified **four new species**, enriching biodiversity records of the **Kerala part of Western Ghats**.

**What are Lichens**

- A *symbiotic association* between a **fungus** (mycobiont) and an **alga or cyanobacterium** (photobiont).
- **Mutual Relationship:**
  - ✓ Algae/cyanobacteria: Perform *photosynthesis* → produce carbohydrates & vitamins.
  - ✓ Fungi: Provide *water, minerals, and protection* from light and desiccation.
- **Structure:**
  - Body called **thallus**, attached to substrate via **rhizines**.
- **Habitat:** Found globally on **tree bark, rocks, soil**, even in extreme climates.
- **Type of Association:** *Mutualism* (both benefit).

**New Lichen Species Discovered in the Western Ghats (2022–2024)**

Researchers identified **four new species**, enriching biodiversity records of the **Kerala part of Western Ghats**.

| Species Name | Location Found | Notable Feature |
|---|---|---|
| Parmotrema sahyadricum | Wayanad | Named after "Sahyadri" (Western Ghats). |
| Solenopsora rhizomorpha | Eravikulam & Mathikettanshola NPs | Unique root-like rhizomorph structure. |
| Buelloa ghattensis | Mathikettanshola NP | Endemic to the Ghats region. |
| Pyxine janakiae | Mathikettanshola NP | Named in honour of scientist Dr. Janaki Ammal. |

- Also: **50+ lichen species newly reported** to Kerala part of the Western Ghats.
- Discovery published in *international journals* (2024).
- Research began in **2022**, highlighting *Western Ghats' ecological richness*.

**3. Role of Lichens in the Environment**

**(A) Ecological Significance**

- **Pioneer species:** First colonizers of *bare rocks & soil* initiate **soil formation** by breaking down rocks (physical + chemical weathering).
- **Keystone species:** Support entire ecosystems by providing *food, nesting material, and shelter*.
- **Habitat creation:** Enable establishment of mosses and other plants → ecosystem succession.

**(B) Environmental Indicators**

- Sensitive to **air pollution**, especially $SO_2$ used as **bioindicators of air quality**.

**(C) Other Benefits**

- **Protective layer:** Reduce erosion on rocks and bark.
- **Nutrient cycling:** Fix nitrogen (especially cyanobacteria-associated types).
- **Human use:** Dyes, perfumes, medicines, and food (Reindeer moss) in cold regions.

**PYQs:**

**In nature, which of the following is / are mostly likely to be found surviving on a surface without soils ?**

1. Fern
2. Lichen
3. Moss
4. mushroom

**Select the correct answer using the code given below.**

A. 1 and 4 only
B. 2 only
C. 2 and 3 only
D. 1,2 and 4

**mosses can grow without soil**. Unlike most other plants, mosses do not have true roots and lack a vascular system to transport water and nutrients from the soil up through the plant.

## 31. Labour Codes


### India's Four Labour Codes

These codes consolidate 29 old laws (some from 1930s) into 4 modern ones, covering 64%+ of workforce (up from 19% in 2015). They simplify compliance (single registration/return), expand protections, and align with global standards for gig workers, migrants, women, and youth. Goal: Pro-worker, pro-business reforms for Aatmanirbhar Bharat.

### 1. Code on Wages, 2019

**Features**:

- Universal minimum wage for all workers (floor wage set by Centre).

### What is the Model Code of Conduct (MCC)?

**Overview**

From **21 November 2025**, the four Labour Codes—

1. **Code on Wages (2019)**
2. **Industrial Relations Code (2020)**
3. **Code on Social Security (2020)**
4. **Occupational Safety, Health and Working Conditions Code (2020)**

**came into force, replacing 29 fragmented labour laws.**

**Aim: modernise labour governance**, protect workers, simplify compliance, and support Aatmanirbhar Bharat.


### Key Reforms Introduced

- **National Floor Wage** ensuring no worker is paid below living standard.
- **Gender-neutral employment & equal pay**, including protections for transgender workers.
- **Inspector-cum-Facilitator** promoting compliance through guidance.
- **Two-member Industrial Tribunals** for quick dispute resolution.
- **Single licence, single registration, single return** across codes.
- **National OSH Board** for unified safety norms.
- **Mandatory safety committees** in 500+ worker establishments.
- Higher thresholds for factory applicability to ease MSME burden.

**Need for Labour Codes (Old vs New System)**

| Problem (Old System) | How New Labour Codes Fix It |
|---|---|
| **29 outdated, complex laws** | Reduced to **4 clear modern codes** |
| **Gig/contract workers lacked protection** | **Universal coverage**, including gig/platform |
| **No universal minimum wage** | **National floor wage** for all |
| **No appointment letters** | **Mandatory job letters** |
| **Women restricted from several jobs/night shifts** | **Freedom to work in all jobs/shifts** with safety |
| **Multiple registrations/returns** | **One registration + one return** |
| **Easy layoffs** | **Stricter rules**, benefits for fixed-term workers |
| **Poor safety/accidents** | **Safety committees, health checks, modern OSH** |
| **Migrants lost benefits when moving** | **Portable UAN** linked benefits |
| **Justice delayed for decades** | **Faster tribunals & conciliation** |

**India's Four Labour Codes**

| Labour Code | Key Features | Benefits |
|---|---|---|
| 1. Code on Wages, 2019 | • Universal minimum wage + national floor wage<br>• Timely wage payments<br>• Equal pay for equal work<br>• Gratuity for fixed-term employees<br>• Aggregator contribution for gig/platform workers | • Protects **50 crore+ workers**<br>• Reduces wage inequality<br>• Boosts labour formalisation |
| 2. Industrial Relations Code, 2020 | • Fixed-term employment with full benefits<br>• Layoff threshold raised to 300 workers<br>• Mandatory consent for overtime<br>• Inspector-cum-Facilitator system<br>• Direct tribunal access after conciliation | • Lowers compliance burden<br>• Encourages direct hiring over contract labour<br>• Faster dispute resolution |
| 3. Code on Social Security, 2020 | • Universal ESIC/PF coverage<br>• Gig/platform workers included for first time<br>• Aadhaar-linked **portable UAN**<br>• Free annual health check-ups<br>• Special provisions for mine, beedi, plantation workers | • Extends social security to unorganised sector<br>• Protects migrants & gig workers<br>• Reduces poverty & health vulnerabilities |
| Occupational Safety, Health & Working Conditions Code, 2020 | • National OSH Board for uniform safety rules<br>• Women allowed night shifts with safeguards<br>• Work-hour caps: 8–12 hrs/day, 48 hrs/week<br>• Mandatory canteens, rest areas<br>• Covers IT/ITES, docks, textiles, mines | • Improves workplace safety<br>• Boosts women labour force participation<br>• Balanced regulation for MSMEs |

## 32. CCPA Cracks Down on 'Dark Patterns' in E-Commerce

**What Are Dark Patterns?**


- Sneaky online tricks that trick shoppers into buying more or sharing data – e.g., "Limited time! Buy now!" (false urgency) or auto-adding items to your cart (basket sneaking).
- Banned under CCPA's 2023 Guidelines (under Consumer Protection Act) to protect users from unfair practices.

**Big News: Self-Audit Results**

- CCPA ordered e-commerce apps to self-check for dark patterns by Sep 2025 (advisory on Jun 5, 2025).
- **26 platforms declared compliant**: They audited (internal or via firms like Deloitte) and fixed any issues – or said they never had them.
- **Examples**: Flipkart, Meesho, Blinkit, Zomato, BigBasket, Reliance Retail, Swiggy, 1mg, Zepto, Myntra, Cleartrip, JioMart.
- Most say: "We're clean now" with disclaimers like "not admitting fault" or "best-effort compliance."
- **Missing big names**: Amazon India, Airbnb, Apple, Ola, Samsung, Indigo, Mastercard, Meta, Uber, WhatsApp, Google, Paytm – their reports not public yet.

**Doubts Raised**

- LocalCircles pollster Sachin Taparia: Some claims misleading – e.g., Flipkart/BigBasket hide limited-stock discounts or add hidden fees (like appliance installation) as of Sep 2025.
- CCPA watching closely; plans action on violators via National Consumer Helpline (NCH) complaints, videos, and campaigns.

## 33. Logistics

The National Council of Applied Economic Research (NCAER) and Department for Promotion of Industry and Internal Trade (DPIIT), released the first credible, data-driven estimate of logistics cost at 7.97 per cent of GDP for 2023-24 (FY24).

| Old Belief (for decades) | New Official Number (2023–24) |
|---|---|
| 13–14% of GDP | **7.97% of GDP** |
| Made India uncompetitive | Now comparable to USA (8.8%), Germany (8%), Australia (8.6%) |

→ First ever **scientific study** (NCAER + DPIIT, 3,500+ surveys) proved the old number was wrong. → Logistics cost = ₹24 lakh crore (9.09% of non-services output).

### Where Costs Are Still High

- **Road dominates** (71% share) → ₹3.78 per tonne-km**Rail** only 27% → ₹1.96 per tonne-km (cheaper)
- Small firms (<₹5 Cr turnover) pay **17%** of revenue on logistics vs **7.6%** for big firms
- Cold storage & hazardous warehousing: ₹60/sqft/month
- Ports: High terminal + documentation charges


### Major Steps India Has Taken

| Initiative | What It Does | Progress |
|---|---|---|
| National Logistics Policy (2022) | Target: Logistics cost < 10% of GDP by 2030; rail share → 45% | On track |
| PM Gati Shakti | Single digital map for all infrastructure projects | 156 gaps fixed; 8,891 km roads + 27,000 km rail planned |
| 35 MMLPs | Multi-modal logistics parks (road + rail + warehouse) | Approved |
| Dedicated Freight Corridors | Faster and cheaper rail freight | Eastern & Western corridors almost ready |
| Sagarmala + Bharatmala | Modern ports and expressways | 100+ port projects |
| ULIP | One digital platform for all logistics data | Live |
| 41 Logistics Parks | Handling ~3.2 lakh tonnes of cargo monthly | Running |

### What Still Needs to Be Done

- Shift more freight from road → rail & waterways
- Build cold-chain & shared warehouses for SMEs
- Cut port paperwork & corruption (e.g., recent Chennai port issues)
- Create **GTPRO** – one national body to plan all transport
- Help small businesses with cheaper shared logistics

## 34. Electronics Component Manufacturing Scheme (ECMS)

**About the Scheme**

- ECMS notified in April 2025 under the Ministry of Electronics and IT.
- ECMS is India's first dedicated Production-Linked Incentive (PLI) scheme focused specifically on boosting **electronics components manufacturing**.
- Objective: The scheme aims to develop a robust component ecosystem by attracting large investments (global/domestic) in electronics component manufacturing ecosystem, by developing capacity and capabilities, and integrating Indian companies with Global Value Chains (GVCs).
- Total outlay: **₹22,919 crore**.

**Recent Approvals**

- **7 projects approved** with investment of **₹5,532 crore**.
- Expected outcomes:
  - **Production**: ₹44,406 crore.
  - **Direct employment**: ~5,200 jobs.

**Overall Progress (as of Sept 2025)**

- Total investment committed under ECMS: **₹1.15 lakh crore** (almost **2×** original estimate).
- Incentive outflow likely: **₹41,468 crore**.

**Growth in Electronics Sector**

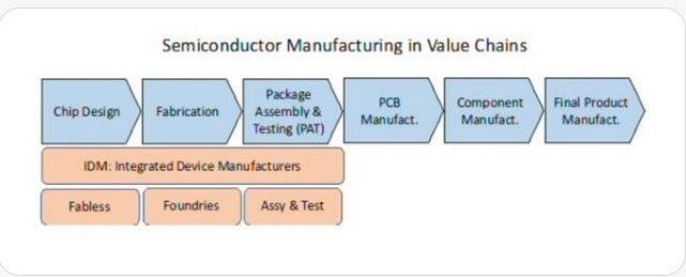
- Electronics production increased from **₹1.9 lakh crore (2014-15)** to **₹11.3 lakh crore (2024-25)**.
- Electronics exports increased from **₹38,000 crore** to **₹3.27 lakh crore** in the same period.
- India is now the **world's 2nd largest mobile phone manufacturer** with **300+ units** (only 2 units in 2014).
- Electronics became **India's 3rd largest export category** in 2024-25.

## 35. Semiconductors

Semiconductors are materials (mainly silicon) that partially conduct electricity and function as switches using billions of tiny transistors embedded on a chip. They form the "brain" of devices like smartphones, EVs, satellites, and defence systems. Indian-designed semiconductor technology helped Chandrayaan-3's Vikram lander autonomously select a safe landing site using onboard AI.

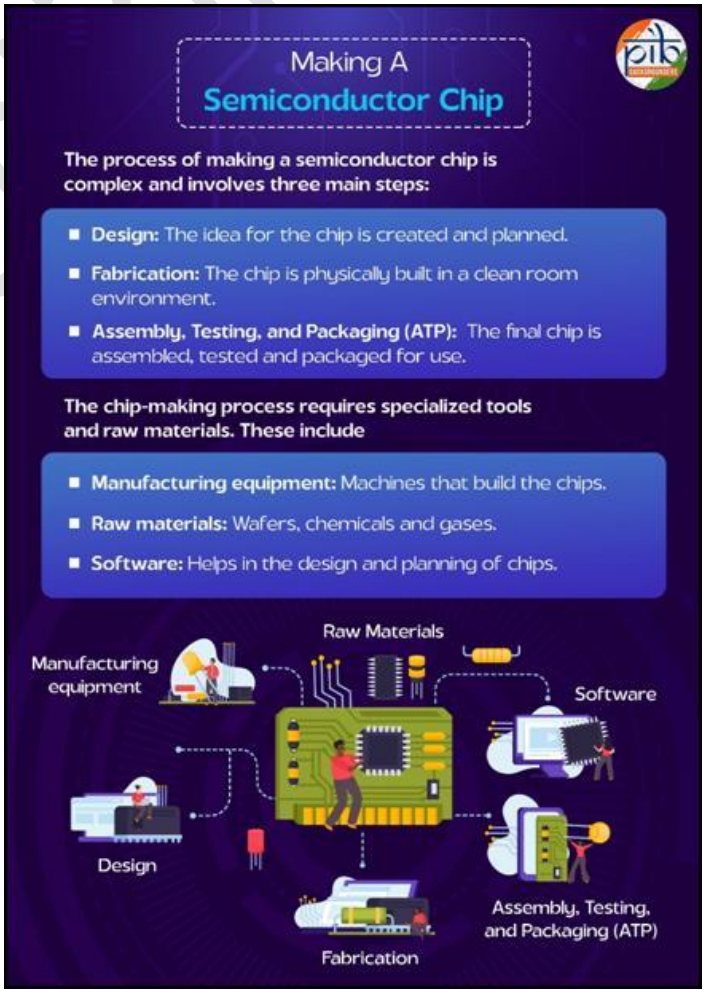
Semiconductors underpin digital, strategic, and economic systems worldwide. Global shortages during Covid-19 and the Ukraine war highlighted their role in national security. The industry is dominated by Taiwan, South Korea, Japan, China, and the US—especially Taiwan, which produces 60% of global chips and 90% of the most advanced nodes.

### Semiconductors




**Semiconductor Industry Steps:**

1. **Design**: Creating the blueprint for the semiconductor devices.
2. **Fabrication**: Manufacturing the semiconductor wafers and circuits.
3. **Assembly**: Placing the silicon die into a protective package.
4. **Testing**: Ensuring the chip functions correctly.
5. **Marking**: Labeling the chip with identifying information.
6. **Packaging**: Preparing the chip for shipment to customers.




**India's Semiconductor Expansion (Current Developments)**

India is strengthening capabilities across the value chain through major investments:

1. **Fabrication Fab – Dholera, Gujarat:** 50,000 wfsm, 28 nm chips for power & high-performance needs.
2. **ATMP Unit – Morigaon, Assam:** Assembly, testing, marking, packaging.
3. **Specialized ATMP Unit – Sanand, Gujarat:** Automotive & industrial chip packaging.

**Steps in the Semiconductor Industry**

1. **Design** → creating chip architecture
2. **Fabrication** → wafer manufacturing
3. **Assembly** → die placement
4. **Testing** → functionality check
5. **Marking** → identification
6. **Packaging** → shipment-ready chip

**India's Strengths & Investments**

- **Design Leadership:** 20% of global chip designers are Indian; Intel, Qualcomm, Nvidia have major design centres in India.

- **Manufacturing Start:** New fabs and ATMP facilities using mature nodes (28 nm), a strategic entry point before moving to advanced nodes (e.g., 3 nm).

Node size matters: smaller nodes fit more transistors → higher efficiency & performance.

**Need for Semiconductor Manufacturing in India**

1. **Strategic Autonomy:** India imports 90% of chips (industry size $27B in 2022).
2. **Economic Growth:** Drives manufacturing & GDP.
3. **Technology Leadership:** Builds global competitiveness.
4. **Job Creation:** Potential for 2.5 lakh high-skill jobs.
5. **Supply Chain Resilience:** Reduces exposure to global disruptions ("Chip War").
6. **Digital Transformation:** Supports 5G, EVs, AI, IoT, smart devices.

**Challenges**

1. **High Capital Costs** → fabs need billions of dollars.
2. **Skill Shortage** → requires decades of specialised expertise.
3. **Infrastructure Gaps** → power, water, cleanrooms, logistics.
4. **Global Competition** → TSMC, Samsung dominate.
5. **Weak Supply Chain Integration** → materials/gases/equipment mostly imported.
6. **Limited Government Incentives** → compared to EU/US Chips Acts.
7. **Incomplete Value Chain** → raw materials to finished product missing.
8. **Low R&D & IP Creation** → India spends less than global leaders.

**Why Semiconductors Matter**

- **Power digital systems** → smartphones, EVs, drones, medical tech.
- **National security** → radars, missiles, encrypted networks.
- **Economic engine** → global revenue projected at $1 trillion by 2030.
- **AI future** → needs ultra-fast, compact chips.
- **Global Risk** → Taiwan dependence = major vulnerability.

**India in Semiconductors (2025 Status)**

**Design:**

- India leads globally—20% of chip designers are Indian.

**Manufacturing (3 fabs under construction):**

- **Micron, Gujarat** → memory chips ($2.75B)
- **Tata-PSMC, Gujarat** → 28 nm logic chips ($11B)
- **Tata-Renesas, Assam** → power chips ($9B)

**Government Support:**

- **India Semiconductor Mission (ISM)** – ₹76,000 crore
- **PLI Scheme** – ₹22,000 crore
- **Semicon India 2025** – global partnership forum
- **Make in India** – electronics manufacturing push

**India's Goals:**

- Capture **10% of global $1T market**
- Build **full ecosystem: design → fab → ATMP**
- Cut **$25B+ imports**
- Achieve self-reliance in **defence, EVs, 5G, space**

## 36. India Semiconductor Mission (ISM)

India Semiconductor Mission (ISM) has been setup as an Independent Business Division within Digital India Corporation having administrative and financial autonomy to formulate and drive India's long-term strategies for developing semiconductors and display manufacturing facilities and semiconductor design ecosystem. Envisioned to be led by global experts in the Semiconductor and Display industry, ISM is serving as the nodal agency for efficient, coherent and smooth implementation of the programme for development of semiconductor and manufacturing ecosystem in India.

**Key Objectives (8 Main Focus Areas)**

- Create **long-term strategy** for sustainable fabs, displays, and design ecosystem.
- Build **secure supply chains** for raw materials, chemicals, gases, and equipment.
- Boost **design industry** with tools (EDA), foundry access, and startup support.
- Promote **indigenous IP** (intellectual property) creation.
- Encourage **technology transfer** from global players.
- Achieve **economies of scale** for cost-effective production.
- Fund **cutting-edge R&D** via grants, collaborations, and Centres of Excellence (CoEs).
- Foster **partnerships** for research, commercialization, and skill-building.

**The following four schemes have been introduced under the aforesaid programme:**

- Scheme for setting up of Semiconductor Fabs in India.
- Scheme for setting up of Display Fabs in India.
- Scheme for setting up of Compound Semiconductors/Silicon Photonics/ Sensors Fab and Semiconductor Assembly, Testing, Marking and Packaging (ATMP)/OSAT facilities in India.

**India aims to become a semiconductor manufacturing hub. What are the challenges faced by the semiconductor industry in India? Mention the salient features of the India Semiconductor Mission. 2025 UPSC MAINS**

## 37. The Long-Pending UN Security Council Reform: A Quest for Equity in Global Governance

**Why in News?**

At the recent IBSA Foreign Ministers' Meeting, India, Brazil, and South Africa reaffirmed their commitment to comprehensive UNSC reform. PM Modi also reiterated the Global South's demand for a more representative, democratic, legitimate and effective Security Council that reflects 21st-century realities, not the 1945 world order.

**What is the UNSC and Why Does it Need Reform?**

**Structure of the UNSC**

| Category | Members | Powers |
|---|---|---|
| **Permanent (P5)** | US, Russia, China, UK, France | **Veto power** |
| **Non-Permanent (E10)** | 10 members (2-year term) | No veto |

**Why Reform is Needed**

1. **Outdated Geopolitical Structure**
   Reflects 1945 power equations, not today's multipolar world.

2. **Lack of Geographical Equity**
   - Over-representation: Europe
   - Under-representation: **Africa, Latin America, South Asia**

3. **Missing Key Global Players**
   India, Japan, Germany, Brazil not represented despite economic and geopolitical weight.

4. **Veto Power Misuse**
   Blocks action on global crises like **Syria** and **Ukraine**, creating paralysis.

5. **Credibility and Legitimacy Crisis**
   An unrepresentative Council cannot inspire global trust or enforce its mandate.

**Reform Process and Major Proposals**

**1. Intergovernmental Negotiations (IGN)**

Key debates focus on:

- **Categories of Membership:** Permanent + non-permanent expansion
- **Veto Power:** Whether new permanent members get a veto
- **Regional Representation:** Ensuring fairness for Africa, G-77, LAC, Asia-Pacific IGN has *no single text*, causing repeated delays.

**2. Major Models for Reform**

**A. G4 Model (India, Brazil, Germany, Japan)**

- Expand UNSC from 15 → **25–26 seats**
- Add **6 permanent members**: G4 + 2 African states

- Add **4–5 non-permanent seats**
- **No veto initially**; review later

Most widely supported comprehensive reform plan.

**B. Uniting for Consensus (UfC) / "Coffee Club"**

Led by Pakistan, Italy, Mexico, South Korea, Argentina Opposes **any new permanent seats**.

**Proposal:**

- Only add **non-permanent seats** or
- Introduce **long-term elected seats**

Argument: More permanent members = more inequality.

**C. African Union (AU) Model**

Africa demands:

- **Two permanent seats with full veto powers**
- **Five non-permanent seats**

Justification: Africa is the **most underrepresented** continent despite a large membership.

**D. L.69 Group**

**A cross-regional developing-country bloc, including India.**

**Supports:**

- Expansion in **both permanent and non-permanent categories**
- Early, time-bound reform

**Challenges and Roadblocks to Reform**

**1. Amendment Difficulty**

UN Charter amendment needs:

- **2/3 majority in UNGA (129/193)**
- Ratification by **2/3 of member states**, including **ALL P5**
  → **Each P5 member has a de facto veto** on reforms.

**2. P5 Reluctance**

- P5 members do not want to dilute their **exclusive geopolitical privilege**.
- China opposes **India**.
- US, Russia, UK, France support reform in principle but avoid concrete steps.

**3. Lack of Consensus Among Member States**

- G4 vs UfC conflict
- Regional rivalries: Pakistan vs India / Italy vs Germany / Argentina vs Brazil

**4. Procedural Challenges in IGN**

- No single negotiating text
- No fixed timeline
- Circular debates → **zero progress**

**India's Stand and Justification**

**Why India Deserves a Permanent Seat**

1. **Largest Democracy** — represents 1/6th of humanity

2. **Major Economic Power** — fastest-growing large economy
3. **Nuclear Power with Responsible Track Record**
4. **Leading Peacekeeper** — among largest contributors to UN missions
5. **Voice of the Global South** — trusted moral and political leadership

**The Way Forward for India**

**1. Building Coalitions**

Strengthen:

- **G4**, L.69, **IBS,** African Group cooperation

**2. Leverage Global South Solidarity**

Link UNSC reform with:

- **Multipolarity**
- **Global governance democratization**
- **Fair representation**

**3. Keep Global Pressure On**

Use:

- G20, BRICS, Global South Summits, SCO, Quad (indirectly)

**4. Pursue Incremental Gains**

Push for:

- Longer-term non-permanent seats
- More representation for Africa
- Veto-use restraint agreements

**Conclusion**

The UNSC's paralysis exposed starkly during the **Ukraine war** and the **Syrian conflict** has intensified global pressure for reform. Although structural reform faces enormous hurdles due to P5 resistance and lack of member-state consensus, the **status quo is increasingly untenable**.

The question is no longer **whether** reform will happen, but **when** and **how**. India, with its growing geopolitical weight and leadership of the Global South, is positioned to play a decisive role in shaping this new global governance architecture.

## 38. The IBSA Dialogue Forum

**Why in News?**

At the recent **IBSA Foreign Ministers' Meeting**, a letter from the Prime Minister of India reaffirmed IBSA's commitment to:

- A **multipolar world order**
- **UNSC reform**
- **Combating terrorism**

The meeting, chaired by **Brazil**, reflects renewed efforts to strengthen IBSA, whose visibility has declined due to the rise of BRICS.

**What is the IBSA Dialogue Forum?**

IBSA is a **trilateral initiative** of **India, Brazil, and South Africa**—three major democracies and large developing economies from **Asia, South America, and Africa**.

- **Formalized:** June 6, 2003 (Brasilia Declaration)
- **Shared Features:**
  - Large democracies
  - Multi-ethnic, multi-religious, multi-lingual societies
  - Major economies of the Global South
  - Common developmental challenges (inequality, governance, growth)

**Key Objectives and Pillars of Cooperation**

IBSA cooperation rests on **three main pillars**:

**1. Political Coordination**

Regular consultations on global and regional issues such as:

- **UN reforms**, especially **expansion of UNSC** to include IBSA as permanent members (all are part of G4).
- **Counter-terrorism**
- **WTO and trade negotiations**, incl. the Doha Development Agenda
- **Climate change negotiations** to protect Global South interests

**2. Trilateral Cooperation**

Practical, sectoral cooperation through:

- **14 Working Groups** (Agriculture, Health, S&T, Defence, Transport, Energy, etc.)
- **6 People-to-People Forums** (Parliamentarians, academics, business forums, women's forum, etc.)

Purpose: Deepen developmental cooperation and strengthen societal bonds.

**3. The IBSA Fund (Facility for Poverty and Hunger Alleviation)**

Flagship success of IBSA.

- **Unique Model:** Funds **projects not in IBSA countries**, but in other developing nations, especially **Least Developed Countries (LDCs)**.
- **Equal contribution** from all three countries.
- Implemented with **UNDP**.
- Symbol of authentic **South–South cooperation**.

**Timeline of IBSA's Evolution**

- **2003:** Brasilia Declaration — formal inception
- **2004:** Launch of the IBSA Fund
- **2006–2011:** *Golden Period* — five Leadership Summits
- **2011–present:** Long pause in Leaders' Summits; only ministerial-level engagements
- **2021:** India's chairmanship — theme: *"Democracy for Demography and Development"*
- **2023:** Brazil's rotating presidency & 20th anniversary of IBSA

**Challenges and the Road Ahead**

1. **Summitry Slowdown:** No Leaders' Summit since 2011 → loss of political momentum.
2. **Overlap with BRICS:** BRICS (with China and Russia) often overshadows IBSA's visibility, as many issues shift to BRICS for discussion.
3. **Divergent National Priorities:** Differences in geopolitical alignments and individual foreign policy priorities sometimes dilute collective IBSA action.

**The Enduring Relevance of IBSA**

Despite challenges, IBSA remains significant due to its **distinct identity**:

1. **Democratic Identity:** IBSA is the only major Global South grouping built exclusively by *three democracies*.
2. **Authentic South–South Cooperation:** IBSA Fund is a model of South-led development assistance without Northern influence.
3. **Voice for Global Governance Reform**

**IBSA consistently advocates:**

- UNSC reform
- Fair global trading system
- Equity in climate action

**4. Strategic Value for India**

**For India, IBSA remains vital for:**

- Leadership in the Global South
- Strengthening the G4 campaign for UNSC reforms
- Coordinated positions on terrorism, trade, and development

## 39. The Senkaku Islands dispute

The Senkaku Islands dispute is a territorial conflict primarily between Japan, China, and Taiwan over a group of uninhabited islands in the East China Sea. Japan currently administers the islands, but both China (which calls them the Diaoyu) and Taiwan (which calls them Diaoyutai) claim sovereignty over them.

- Japan's claim: Japan administers the islands and considers them part of its territory, particularly because they were included in the Nansei Shoto islands returned to Japan from the United States' trusteeship in 1971.
- China's claim: China claims the islands have belonged to them for centuries and asserts sovereignty over them, particularly after oil reserves were discovered in the vicinity in the 1970s.
- Taiwan's claim: Taiwan also claims sovereignty over the islands, which it refers to as the Diaoyutai Islands.


Comprising five small islands and some rocks, they are uninhabited. The biggest of the islands, Uotsuri, covers only 1.4 square miles, according to the US Energy Information Administration (EIA).

Their importance lies in that they are believed to be sitting atop hydrocarbon resources, although they have yet to be extracted. Some attempts by the countries to engage in resource extraction around the region have sparked protests from the others, because, beyond the issue of resources, the claims are seen as a way of asserting sovereignty.

## 40. India–Africa Relations: Progress & Future

**Where We Stand Today**

- Trade crossed **$100 billion** (from $46 billion in 2015)
- India is Africa's **3rd/4th largest trade partner**
- Indian investments in Africa: **$75–80 billion** (top 5 investor)
- 17 new Indian embassies opened in Africa since 2015
- India helped African Union get **full G20 membership**
- First joint naval exercise (2025) with 9 African countries; first Africa-India Key Maritime Engagement (AIKEYME), initiating a security partnership rooted in shared oceanic geography
- 40,000+ Africans trained in India (ITEC + scholarships)
- IIT Madras campus opened in Zanzibar

**What India Gives Africa**

- Cheap medicines, vehicles, rice, machines
- Lines of credit for roads, power plants, irrigation
- Digital tools (UPI, tele-medicine, e-education)
- Peacekeeping troops + maritime security help

**What Africa Gives India**

- Crude oil, diamonds, gold, minerals
- Growing market for Indian goods & services
- Strategic partner in Indian Ocean security

**Limitations in India-Africa Relations**

**Trade & Investment Gaps**

- Trade reached $100B+ but still far behind China (India <10% share vs China >20%).
- Indian companies small-scale, slow with red tape, stuck in low-value exports (pharma, rice) while missing high-tech chances (green energy, EVs).

**Project Execution Delays**

- Many Indian-funded projects (roads, power, solar) stuck due to funding delays and poor logistics.
- $12B+ credit lines promised but disbursed slowly → African partners lose trust.

**Geopolitical & Focus Challenges**

- India busy with Indo-Pacific (Quad, US) → less high-level attention on Africa.
- Fierce competition: China, US, EU, Russia, Turkey offer bigger, faster deals → India often second choice.

**Capacity & Delivery Issues**

- Not enough diplomats and mid-level officers to follow up fast, even after adding 17 new missions.
- Strong people ties (40K trained), but health/digital projects slow due to African red tape and weak systems.

**Sector-Specific Hurdles**

- India heavily imports African oil/minerals but little joint manufacturing or tech transfer.

- Security cooperation just starting; instability in countries like Ethiopia, Sudan, Sahel makes deeper defence ties risky.

**Future Roadmap (Next 5–10 Years)**

1. **Double trade** to **$200 billion by 2030**
2. **Digital partnership**: Connect UPI + India Stack with African payment systems
3. **Green & tech co-building**: Joint projects in solar, EVs, green hydrogen
4. **More education links**: 50,000+ African students in India by 2030
5. **Regular summits**: Bring back India–Africa Forum Summit (stopped after 2015)
6. **Support AfCFTA** (Africa's single market) with Indian tech & expertise

**three-step logic:** evoking shared historical solidarities, engaging in present-day pragmatic cooperation, and investing in long-term, future-oriented ties

## 41. Coalition for Disaster Resilient Infrastructure (CDRI)

The **CDRI**, launched by India at the UN Climate Action Summit (2019), is a global partnership involving 39 countries and major multilateral institutions.

**It aims to:**

- Promote **resilient infrastructure**, especially in climate-vulnerable regions
- Develop **risk-informed governance and standards**
- Support countries with capacity building and post-disaster recovery frameworks
- Bridge the gap between *climate science* and *infrastructure planning*

CDRI complements CRI insights by focusing on **preventive resilience**, reducing economic losses from extreme weather events.

**Universal Immunisation Programme (UIP):** Need for Expansion to Include Typhoid Conjugate Vaccine and Hepatitis A

## 42. ANGOLA

**Angola's Key Resources & Why They Matter for India**

| Resource | Angola's Strength | Importance for India |
|---|---|---|
| Petroleum (Oil) | Africa's 2nd largest producer (after Nigeria). Oil accounts for ~90% of exports and is a major GDP driver. | India imports crude oil from Angola. ONGC Videsh has stakes in Angolan oil fields → strengthens energy security. |
| Diamonds | Among the top 5 global producers; major mining in Lunda region (northeast). | India, the world's diamond polishing hub, imports rough diamonds, supporting the gems & jewellery industry (exports > $40B). |
| Other Minerals | Rich deposits of iron ore, copper, gold, uranium, bauxite, phosphates. | Future supply for steel, electronics, and nuclear energy (supports India's uranium needs). |
| Agriculture | Fertile land suitable for coffee, cotton, sugarcane, sisal, but underdeveloped due to post–civil war impacts. | Scope for Indian agri-tech (drip irrigation, seeds) and food processing investments. |

**India–Angola Ties: Strategic Partnership**

- **Since**: Diplomatic relations from **1975** (Angola's independence).
- **Trade**: **$4–5 billion** yearly.
  - India **exports**: Medicines, machines, vehicles, rice.
  - India **imports**: Oil, diamonds.
- **Energy**: ONGC Videsh invests in **oil exploration** → reduces India's Middle East dependence.
- **Education**:
  - **ITEC programs**: Training for Angolan officials.
  - **Scholarships**: For Angolan students in Indian universities.
- **Global Forums**: Work together in **UN, NAM, BRICS, India–Africa Summit**.

## 43. PM Narendra Modi's July 2025 whirlwind tour—Ghana, Trinidad & Tobago, Argentina, Brazil, Namibia—

| Country | Key Resources | Why Crucial for India? | Trade & Investment Highlights |
|---|---|---|---|
| **Ghana** | • Lithium (10th globally, 3rd in Africa)<br>• Manganese, Bauxite (top-10 reserves)<br>• Gold, Oil | • Lithium reduces 100% import dependence for EVs (5M+ EV target).<br>• Manganese boosts steel/infra.<br>• Strategic minerals partnership upgraded to *Comprehensive Partnership*. | • $2B bilateral trade.<br>• India exports pharma/machinery.<br>• $450M LoC for mining; Indian firms eye $2B in 820+ projects.<br>• Ghana supplies 5% of India's bauxite—target 10x through JVs. |
| **Trinidad & Tobago** | • Natural gas, crude oil (Caribbean's #1 gas producer)<br>• Ammonia (world #1 exporter)<br>• Methanol (#2 globally)<br>• Asphalt Lake deposits | • Diversifies LNG imports (India relies 50% on spot markets).<br>• Ammonia critical for green hydrogen & fertilisers.<br>• Lower urea import bill ($3B/year). | • $500M+ bilateral trade.<br>• India exports vehicles/pharma; imports gas & petrochemicals.<br>• MoUs on energy, renewables, FinTech, disaster resilience.<br>• 40% population Indian-origin—strong diaspora link. |
| **Argentina** | • Lithium reserves (22M tonnes; 20% of global)<br>• Shale gas/oil (Vaca Muerta: #2 gas, #4 oil reserves)<br>• Copper, Gold | • Lithium for 30M EV battery cells/yr—reduces China's 80% processing monopoly.<br>• Shale exports reduce India's oil import bill ($200B/yr).<br>• Strategic energy & defence partnership. | • $5.2B trade (2024).<br>• $1.2B Indian FDI in IT & manufacturing.<br>• KABIL–CAMYEN JV for lithium blocks.<br>• OVL–YPF cooperation in shale. |
| **Brazil** | • Niobium (95% of global supply)<br>• Rare earths, graphite, manganese<br>• Lithium, nickel, copper, bauxite<br>• Soybeans, iron ore | • Niobium for super-alloys in defence & EV magnet tech.<br>• Rare earths strengthen supply chains beyond China.<br>• Nickel for battery targets (50 GWh).<br>• Agri imports stabilise food security. | • $15B trade.<br>• India exports pharma/tech; imports soy & iron ore.<br>• India joins Brazil MSP project through Altmin.<br>• BRICS Summit deepens space, health, defence cooperation. |
| **Namibia** | • Uranium (Africa's #1, world's #3; 11% global)<br>• Rare earths (Nd, Dy), cobalt<br>• Diamonds (80M+ carat marine reserves)<br>• Copper | • Uranium crucial for India's growing nuclear capacity (22GW → +10GW by 2030).<br>• Rare earths & cobalt reduce dependence on China (90% global processing).<br>• Direct diamond trade lowers costs (bypass Antwerp/London). | • $814M trade (2023–24).<br>• India exports 60%; imports minerals/diamonds.<br>• $800M Indian FDI in mining.<br>• MoUs on uranium supply, fintech interoperability. |

## 44. Paris Agreement

**What is Paris Agreement**

- **Adopted**: 2015 at COP21 (Paris).
- **Goal**: Limit warming to **well below 2°C**, pursue **1.5°C**.
- **Key Feature**: **Nationally Determined Contributions (NDCs)** – countries set own targets, updated every 5 years.

**Progress in 10 Years**


- **Before Paris**: World headed to **4–5°C** warming.
- **After Paris**: Path bent to **2–3°C** (still high, but progress).
- **Renewables Boom**: Solar/wind now **cheapest energy** globally; create jobs, boost energy security.
- **Electric Vehicles**: From dream to **20% of new car sales** (2025); cuts transport emissions.
- **India's Role**:
  - **50% non-fossil power** by 2025 (5 years early).
  - **Net-zero by 2070**; **Viksit Bharat** via low-carbon path.
  - **International Solar Alliance (ISA)**: Launched by India-France; 120+ countries; promotes solar access.

**5 Priorities for COP30 (Belém, 2025)**

1. **Raise Ambition**: Faster emission cuts.
2. **Just Transition**: Protect vulnerable (e.g., Loss & Damage Fund).
3. **Save Nature**: Forests, mangroves, oceans as carbon sinks.
4. **Non-State Actors**: Cities, businesses, citizens drive action.
5. **Defend Science**: Support IPCC, fight fake news.

**Why Unstoppable?**

- **Adaptation is must**, not choice.
- **Industries invested** in green tech.
- **Local govts** building sustainability.
- **Multilateralism works** when nations commit.

## 45. Cyprus

### Introduction

- India's Prime Minister's recent visit to **Cyprus** (first in **23 years**) marks a **renewed push in bi-lateral relations**, focusing on **energy security, counterterrorism cooperation**, and **India–EU strategic alignment**.
- During the visit, the Indian Prime Minister was **awarded the Grand Cross of the Order of Makarios III** — *Cyprus's highest civilian honour*, named after its **first President**, **Archbishop Makarios III**.


### About Cyprus

| Parameter | Details |
|---|---|
| Location | Eurasian island nation in the **northeastern Mediterranean Sea**, at the **crossroads of Europe, Asia, and Africa** |
| Area | ~9,250 sq km |
| Significance | **3rd largest island** in the Mediterranean after Sicily and Sardinia |
| Capital | **Nicosia** — the only **divided capital** in Europe |
| Climate | **Mediterranean** — hot, dry summers and mild, wet winters |
| Topography | Two mountain ranges — **Troodos (southwest)** and **Kyrenia (north)** — separated by the **Mesaoria Plain** |
| Highest Peak | **Mount Olympus (1,952 m)** in the Troodos range |
| Major Crops | Citrus fruits, olives, grapes, and cereals (rainfall crucial for agriculture) |

### Historical Background

- **British Colony:** Cyprus was under British rule from 1878 until **independence in 1960**.
- **Post-Independence Tensions:**
  - Between **Greek Cypriots (Orthodox Christians)** and **Turkish Cypriots (Muslims)**.
- **1974 Turkish Invasion:**
  - Following a **Greek-backed coup** aimed at union (*Enosis*) with Greece, **Turkey invaded northern Cyprus**, citing protection of Turkish Cypriots.
  - This led to the **permanent partition** of the island.

### Political Division

| Region | Control | Status |
|---|---|---|
| **Republic of Cyprus (South)** | Greek Cypriot Government | **Internationally recognized**, member of **UN & EU** |
| **Turkish Republic of Northern Cyprus (TRNC)** | Turkish Cypriot Administration | **Recognized only by Turkey** |
| **UN Buffer Zone ("Green Line")** | United Nations Peacekeeping Force (UNFICYP) | Maintains peace and separation between the two regions |

- **Nicosia**, the capital, is divided by this **Green Line**, making it **the only divided capital city in Europe**.

**Cyprus and the European Union**

- **Joined the EU: 1 May 2004**
- **Eurozone Member:** Uses the **Euro (€)** as currency.
- **EU Law:** Applicable **only in the Republic of Cyprus**, **suspended in the Turkish-controlled north**.
- **Strategic Role:** Serves as the EU's **easternmost outpost**, crucial for **energy transport, migration control**, and **security** in the Eastern Mediterranean.


**Strategic and Geopolitical Importance**

- **Geostrategic location** near the **Suez Canal**, **Middle East**, and **Europe** makes Cyprus a key player in:
  - **Eastern Mediterranean gas fields exploration**,
  - **Regional maritime security**,
  - **Counterterrorism coordination**.
- Hosts **UK's sovereign military bases** (*Akrotiri* and *Dhekelia*) — key NATO outposts for Middle East monitoring.
- Increasingly central to **EU energy diversification** efforts amid tensions with **Russia**.

**India–Cyprus Relations**

| Aspect | Details |
|---|---|
| **Diplomatic Relations** | Established in **1962** |
| **Shared Movements** | Both nations were active members of the **Non-Aligned Movement (NAM)** — *Archbishop Makarios III* and *Jawaharlal Nehru* were early advocates |
| **UN & International Law** | India supports a **bi-zonal, bi-communal federation** for Cyprus, in line with **UNSC resolutions** |
| **Support from Cyprus** | Cyprus consistently backs **India's positions** on:<br>- **Kashmir** (recognizes it as internal matter)<br>- **Counterterrorism** efforts<br>- **India's bid for permanent UNSC seat**<br>- **India's entry into the Nuclear Suppliers Group (NSG)** |
| **Economic Ties** | Investment & Double Taxation Avoidance Agreement (DTAA) strengthened; potential in **shipping, fintech, and renewable energy** |
| **Recent Focus Areas** | - **Energy security and gas exploration** cooperation<br>- **Counterterrorism** collaboration<br>- **Digital economy and startup linkages**<br>- **India–EU connectivity initiatives**<br>Cyprus wants participation in IMEC |

**Contemporary Context**

- India's **outreach to Cyprus** acts as a **strategic counterbalance** to:
  - The **Turkey–Pakistan military and diplomatic alignment**.
  - Turkey's **anti-India stance** on Kashmir at international forums.
- Enhanced engagement with Cyprus (and Greece) forms part of **India's "Extended Mediterranean Strategy"** — linking **West Asia, Europe, and Indo-Pacific policies**.
- The award of **Cyprus's highest civilian honour** symbolizes **deep mutual respect** and **long-term partnership**.

**India–Cyprus: Converging Interests**

| Sector | Mutual Interest |
|---|---|
| **Energy Security** | Exploration in Eastern Mediterranean & diversification of India's energy sources |
| **Maritime Cooperation** | Stable sea lanes in the Suez–Mediterranean route |
| **Terrorism & Security** | Shared concerns on cross-border terrorism and radicalization |
| **Trade & Investment** | Cyprus as a gateway for Indian companies to EU markets |
| **Diaspora & Cultural Links** | Shared ancient civilizational connections through trade routes |

**Conclusion**

Cyprus, at the intersection of Europe and Asia, is both **geographically strategic** and **politically symbolic** for India. The Prime Minister's visit after over two decades — reinforces India's **multi-aligned foreign policy**, deepens ties with the **European Union**, and acts as a **balancing engagement** amid shifting Mediterranean geopolitics and Turkey's assertiveness.

## 46. Nigeria Security Crisis

**Trump's Recent Statement**

- On November 1, 2025, U.S. President Donald Trump accused Nigeria of allowing "Islamic terrorists" to commit "Christian genocide."
- He ordered the Pentagon to plan military action, threatened to cut all U.S. aid, and said U.S. forces might enter "guns-a-blazing" to stop attacks on Christians.
- This followed U.S. designating Nigeria a "Country of Particular Concern" for religious freedom issues.

**Nigeria's Response**

- President Bola Tinubu and Foreign Ministry rejected the claims as false.
- They said Nigeria is secular, protects all faiths, and attacks by groups like Boko Haram target everyone not just Christians.
- Insurgents kill more Muslims than Christians; violence is about land, resources, and crime, not religion.


**Nature of Nigeria's Security Crisis**

- Nigeria faces multiple overlapping problems in different regions:
  - **Northeast**: Boko Haram and ISWAP jihadist insurgency since 2009. Targets schools, markets, and civilians. Over 40,000 killed, 2 million displaced.
  - **Central (Middle Belt)**: Herder-farmer clashes over land and water. Often has ethnic/religious tones. In Benue State, 6,896 deaths (May 2023–May 2025); over 2,000 killed and 300,000 displaced since 2023.
  - **Northwest**: Bandit groups do kidnappings, extortion, and raids. Not ideological—mostly for profit. Hits Zamfara, Katsina, Kaduna. Slow progress due to rough terrain.
  - **Southeast**: Separatist unrest (e.g., IPOB). Attacks up 125% in Q1 2025.
- Overall: 10,200+ civilian deaths in six states (May 2023–May 2025). First half of 2025: 2,266 killed by bandits/insurgents already more than all of 2024.

**How Experts View the Conflict**

- Not a "genocide" against Christians: Reuters (2024) reviewed 1,923 attacks—only 50 were purely religious. Most are terrorism, land fights, or banditry.
- Victims include Muslims and Christians. Amnesty International and UN say violence is indiscriminate.
- African Union: Conflicts are "complex and multidimensional"—need local solutions, not generalizations.

**Government Actions on the Ground**

- President Tinubu: More troops (30,000+ deployed), rural task forces, 50 billion naira ($62 million) for displaced people.
- Recruiting 10,000 for security corps. Community dialogues in hotspots like Plateau.
- Military ops with air force and vigilantes, but challenges persist.

**Humanitarian Impact**

- 7.8 million need aid. Food shortages from disrupted farming; schools/clinics closed.
- Worst malnutrition crisis fueled by conflict, poverty, climate change.
- Worst cost-of-living crisis in 30 years due to economic reforms.

**Way Forward**

- Nigeria seeks U.S. help but insists on respecting sovereignty—no foreign troops.
- EU gave €48 million aid in 2025; UN/AU support displaced and monitor violence.
- Experts urge: Address root causes like poverty, jobs, and inequality—not just military. Local peace talks and development key to lasting calm.

# MISCELLANEOUS

## 47. QS Asia University Rankings 2025

**Who Releases It**

- Published annually by **Quacquarelli Symonds (QS)**, a UK-based higher education analytics and ranking organisation.
- The **QS Asia Rankings** are the regional edition of the QS World University Rankings.

**Ranking Criteria (Asia Methodology)**

The ranking evaluates institutions based on:

- **Academic Reputation**
- **Employer Reputation**
- **Faculty–Student Ratio**
- **Citations per Paper** (research impact)
- **Papers per Faculty** (research productivity)
- **International Research Network**
- **Proportion of Staff with PhD**
- **International Student and International Faculty Ratio**

These indicators collectively assess teaching quality, research performance and global engagement.

**Top Performers (Asia 2025)**

- **1st:** Peking University (China)
- **2nd:** University of Hong Kong
- **3rd:** National University of Singapore
- Other positions dominated by China, Singapore, Japan and South Korea.

**India's Performance**

- **137 Indian universities** are listed, making India one of the most represented countries.
- **However, none are in the Asia top 50.**
- Among Indian institutions, **IIT Delhi** ranks the highest at **59th**, followed by other IITs and IISc, though many have recorded **their lowest ranks since 2021**.

**China's Performance**

- China has 394 universities in the list (259 new additions).
- It now has the highest representation and also dominates the top ranks.

**Why India's Rank Slipped**

- **Stiff regional competition:** East and Southeast Asian universities have made faster progress in research output, funding and global collaborations.
- **Low internationalisation:** Fewer foreign students and faculty reduce global exposure scores.
- **Research impact gap:** Citation and publication quality remain uneven across institutions.
- **Resource constraints:** Faculty shortages and infrastructure disparities continue across public universities.

**Broader Implications**

- India is producing more institutions, but **quality and global visibility are not improving at the same pace**.
- The **rise in student migration abroad** reflects growing preference for global academic environments.
- To position India as an education hub, **greater investment in research, faculty development, international partnerships and campus globalisation** is essential.

## 48. Hongkong fire

**Why Do Buildings Burn?** A fire sustains itself when the **fire triangle** is complete:

**(a) Heat:** Ignition sources include:

- Electrical short circuits
- Welding sparks
- Kitchen flames
- Fireworks (a common trigger in dense areas)

Heat raises temperature of surrounding materials → they **decompose** → release **flammable gases**.

**(b) Fuel:** Buildings contain abundant combustibles:

- Plastics, synthetic foams, furniture
- Curtains, carpets, paper
- Wooden elements

These fuels continuously supply energy to the fire.

**(c) Oxygen:** Airflow from windows, stairwells, and ventilation ducts accelerates the burn.

**Flashover – The Turning Point**

When a room's surfaces all heat past a critical point, **almost everything ignites within seconds**.

After flashover:

- Fire becomes uncontrollable
- Survival is almost impossible
- Fire spreads vertically and horizontally across building

**2. Styrofoam: Why It Makes Fires Deadlier**

**Styrofoam = Expanded polystyrene (EPS)**

A petroleum-based plastic used in construction, insulation, packaging.

**Key Hazards**

- **Ignites at low temperatures**
- **Burns very rapidly**, dripping flaming material
- Produces **dense black smoke** + **toxic gases** (carbon monoxide, styrene fumes)
- Lightweight → aids **flame travel through gaps** behind façades

*Styrofoam is banned in food packaging in many countries (EU, parts of US).*

Use of Styrofoam in external cladding or window insulation can turn façades into **vertical fire highways**, similar to the **Grenfell Tower tragedy (UK, 2017)**.

**3. Bamboo Scaffolding – Why It's Used & Its Limitations**

Bamboo is widely used in Asia for scaffolding.

**Why It Is Popular**

- High **strength-to-weight ratio**
- Light, flexible, easily transported
- Easy to tie, brace, assemble

- Cost-effective

**Fire Concern:** Bamboo itself is **combustible**.
If construction scaffolding is close to flammable façade materials (e.g., Styrofoam), it can:
- Ignite rapidly
- Carry flames upward
- Contribute to fire spread during renovations

**4. Fire Prevention in Buildings: Core Design Principles**

| A. Compartmentalization | B. Material Selection | C. Regulatory Measures |
|---|---|---|
| **Purpose: Prevent fire from spreading between areas**.<br><br>**Features:**<br>• Fire-rated walls, floors, ceilings<br>• Fire doors, sealed openings<br>• Limited air gaps behind cladding<br><br>**Effect:** Keeps fire localized for **60–120 minutes**, buying time for evacuation. | **Use:**<br>• Non-combustible materials (concrete, fireproof masonry)<br>• Fire-resistant coatings on steel<br>• Non-combustible cladding systems<br>**Avoid:**<br>• Polyethylene-core ACP panels<br>• Polystyrene/Styrofoam insulation<br>• Continuous façade gaps that act as chimneys | • Minimum separation between buildings<br>• Limits on size of compartments<br>• Bans on combustible façade materials (post-Grenfell reforms in the UK, UAE, EU)<br>Mandatory fire rating for external wall systems |

**5. Passive Fire Protection (PFP)**
PFP = Built-in safety systems that do not require human action.

**A. Protecting Structural Components**
- Concrete encasement
- Intumescent coatings (which expand when heated → insulate steel)
- Fire-rated ceilings to prevent heat reaching beams

**Goal:** Prevent steel from softening and collapsing.

**B. Safe Escape Routes**
- Pressurized stairwells to keep smoke out
- Fire-rated lift lobbies
- Smoke barriers and fire doors that close automatically

Clear escape paths = highest priority in fire engineering.

**C. Refuge Areas (Critical in High-Rises)**
- Located every 15–20 floors
- Fire-resistant walls and doors
- Fresh air and smoke-free environment

**especially for:**
- Elderly
- Disabled persons
- Children or injured persons

Acts as safe waiting zones until fire services arrive.