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1. Restoration of Statehood to Jammu & Kashmir

Introduction: Why This Debate Matters
Post-2019 abrogation of Article 370, J&K became two UTs, prompting debates on integration, development, and the need to restore statehood for democratic federalism.

Historical Background: From Autonomy to Centralisation
1947: J&K acceded to India; **1950–54**: Article 370 granted special autonomy; **2019**: Article 370 & 35A revoked, J&K became UT with legislature, Ladakh UT without legislature.

Current Status (as of September 2025)
J&K UT has elected Assembly (2024 elections, 64% turnout); SC upheld Article 370 abrogation, urged early statehood; full statehood pending, review in Oct 2025.

Constitutional Dimensions
- **Key Articles:** 370 (abrogated), 35A (removed), 3 (state reorganisation), 239–241 (UT governance)
- **Asymmetric Federalism:** Flexible state provisions; restoring J&K fits this model
- **Judicial Position:** SC (2023) upheld abrogation, directed early statehood
- **Political/Admin:** LG controls key powers; elected govt has limited authority; friction exists
- **Economic/Social:** GSDP ~7%, unemployment ~6.1%, tourism >2 crore visitors (2024), benefits from central schemes
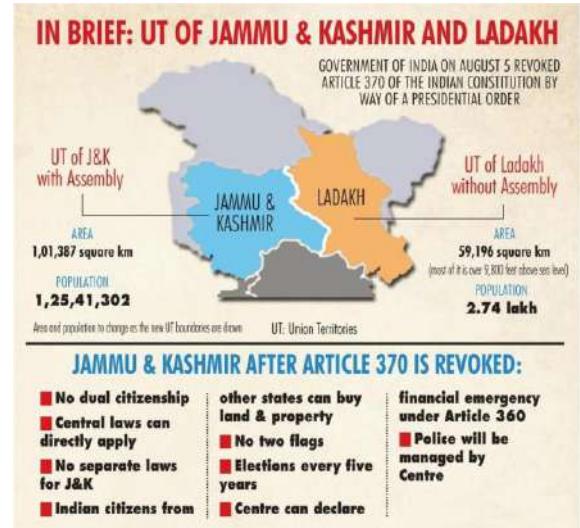
Challenges
- **Unequal Development:** Remote areas face poverty, unemployment
- **Human Rights:** Restrictions on speech, assembly; arrests under security laws
- **Youth Alienation:** Political sidelining persists without statehood
- **Security:** Terror attacks declined; voter turnout high; targeted incidents continue (e.g., Pahalgam 2025)

Pros and Cons of Current Arrangement
- **Pros:** Better integration, smoother central scheme implementation, improved security
- **Cons:** Weakened federalism, limited local accountability, delayed statehood erodes trust

Way Forward
- **Time-bound Roadmap:** Announce a clear timeline for restoration (e.g., within 1 year).
- **Empower Local Govt:** Gradually transfer sensitive subjects like police and land back to elected govt.
- **Dialogue with Stakeholders:** Involve local parties, civil society, and youth.
- **Balanced Approach:** Prioritise security but ensure democratic freedoms.

Conclusion
Restoring statehood to J&K is vital for **trust, federalism, and democracy**. Though recent years have seen **growth and security gains**, delays risk alienation. India must blend **integration with empowerment** to ensure lasting **peace and progress**.

2. Rainfall Patterns and Mini-Cloudbursts

Introduction

Extreme rainfall events in India, including cloudbursts, are causing flash floods, landslides, and significant losses in Himalayan states.

Rainfall Patterns in India

India's monsoon, supplying ~75% of annual rainfall, is becoming erratic with rising localized extremes and above-normal forecasts increasing flood risks.

Mini-Cloudbursts – Meaning and Features

- **Definition:** Sudden, intense rain ≥5 cm/hr over small area
- **Impact:** Flash floods, landslides
- **Causes:** Warming seas, western disturbances, climate change (+7% moisture/°C)

Recent Data and Reports

- **2025 NDMA:** 150 deaths, ₹5,000 cr losses from mini-cloudbursts/floods
- **World Bank 2024:** $10 bn annual flood losses; +20% by 2030
- **Economic Survey 2024–25:** 5–7% drop in crop yields; ₹50,000 cr recommended for resilient infrastructure

Positives in Recent Years

- Better IMD forecasts **(72-hour warning systems).**
- **Community awareness:** Villages in Uttarakhand reduced casualties by 30% (2025 vs 2013).
- Resilient infrastructure investments post-2023 landslides.

Key Challenges

1. **Forecasting Limits:** Mini-cloudbursts are highly localized; prediction beyond 6 hours is difficult.
2. **Urban Flooding:** Poor drainage, concretization worsen impacts in cities like Delhi, Mumbai.
3. **Weak Implementation:** NDMA guidelines unevenly applied across states.
4. **Environmental Degradation:** Deforestation and haphazard construction increase landslide risks.

Suggestions and Way Forward

- **Tech:** Expand Doppler radars, AI-based hyperlocal forecasts
- **Urban Planning:** Permeable pavements, green roofs, zoning in flood zones
- **Community:** Mobile alerts, annual mock drills
- **Environment/Policy:** Reforestation, NDMA–state coordination
- **Global Best Practices:** Japan (radar), Netherlands (Delta Works), Bhutan (forest laws)

Conclusion

With **mini-cloudbursts becoming frequent in the fragile Himalayas**, India must shift from **reactive relief to proactive resilience** through science, planning, and community action. As **climate change intensifies**, the real governance test lies in **resilient infrastructure and ecological balance**.
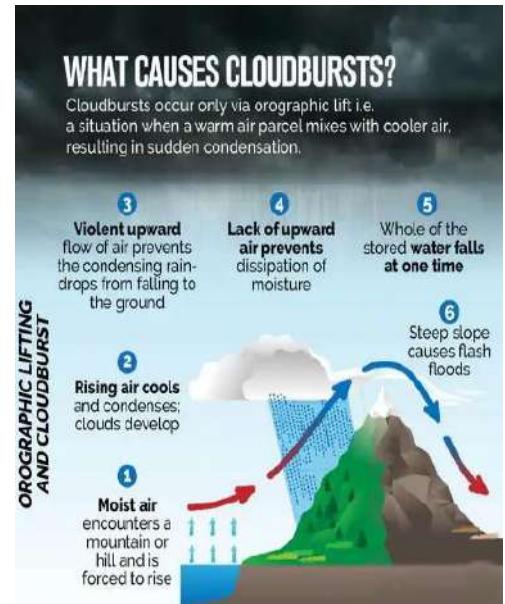
3. India-China Border Relations

Introduction

India–China border tensions (Galwan 2020–2025 talks) affect security, diplomacy, economy, and environment.

Historical Background: The Roots of the Dispute

- **1914 McMahon** Line disputed by China → Arunachal Pradesh issue.
- **Ladakh:** India follows Johnson Line, China claims Macartney Line → Aksai Chin dispute.
- **1962 war:** China occupied Aksai Chin (~38,000 sq km lost).
- **Post-war:** 1993 & 1996 agreements for peace; clashes in 1967, 1987, 2020.
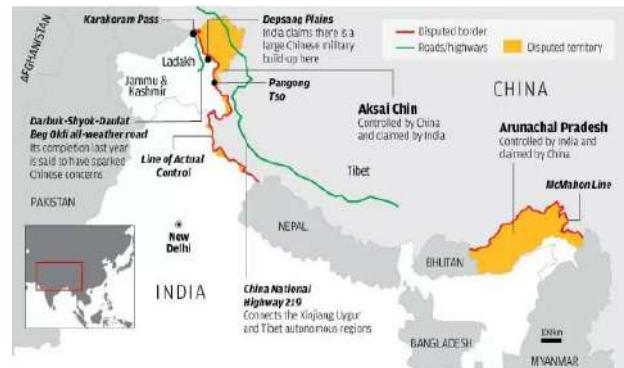
Current Developments (2024–25)

- **Diplomacy:** 2025 Wang Yi visit; Modi–Xi meeting planned; 90% troop withdrawal in Ladakh & Sikkim.
- **Economy:** Trade resumed at Lipulekh, Shipki La, Nathu La; direct flights restarted.
- **Irritants:** $85 bn trade deficit; China's 60 GW Brahmaputra dam → flood/ecology concerns.

Data and Reports

- **MEA (2025)**: 90% disengagement achieved.
- **Economic Survey 2024–25**: $135 bn bilateral trade; $85 bn deficit.
- **SIPRI (2024)**: India's defense spend – $81.4 bn vs China's $296 bn (3.6:1 ratio).
- **Global Times (China, 2025)**: Target 60 GW hydropower on Brahmaputra by 2030.

Positives

- **CBMs:** Flights, trade routes reopened; expert group formed for cooperation.
- **De-escalation:** ~90% LAC disengagement lowers clash risks.Economic: Border trade ↑5% in a month, aiding local economies.
- **Diplomatic:** Summits & military talks institutionalize dialogue.
- **Global Image:** India balances firmness and diplomacy in Indo-Pacific.

Negatives

- Huge trade deficit persists.
- Trust deficit after past clashes.
- Brahmaputra dams threaten downstream ecology.
- China's military edge widens asymmetry.
- Key border points like Depsang & Tawang remain unresolved.

Way Forward

- **Security:** Upgrade border roads, surveillance, logistics.
- **Diplomacy:** Revive Track-II talks; learn from Russia–China border resolution (2004).
- **Economy:** Boost local manufacturing; reduce dependency on Chinese imports.
- **Water Cooperation:** Negotiate on Brahmaputra flows (Norway–Sweden river management model).
- **Regional Balance:** Use Indo–Bangladesh enclave swap (2015) as an example for land settlements.

4. Shanghai Cooperation Organisation (SCO)

Introduction

The SCO, a major Eurasian bloc, offers India a platform to engage key partners and manage rivals.

Genesis & Evolution

- **Origin:** Formed from the 1996 Shanghai Five and became the SCO in 2001.
- **Expansion:** India & Pakistan joined in 2017; Iran in 2023; Belarus set to become the 10th member.

Members & Observers

- **Full Members (9):** China, Russia, India, Pakistan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Iran.
- **Observers:** Afghanistan, Belarus (until full entry), Mongolia.
- **Dialogue Partners:** Turkey, Azerbaijan, Armenia, Sri Lanka, Cambodia, Nepal, etc.

Objectives of SCO

- Strengthen **regional security** against terrorism, separatism, extremism.
- Promote **economic cooperation** in trade, energy, connectivity.
- Enhance **cultural and humanitarian ties**.
- Build a **multipolar world order** balancing Western dominance.

Institutional Mechanisms

The SCO's key bodies include the Heads of State Council (top decision-maker), Heads of Government Council (economic cooperation), the Beijing-based Secretariat, RATS in Tashkent for counter-terror coordination, and its Interbank Consortium and Business Council for economic projects.

Relevance for India

India values the SCO for strategic balancing with China-Pakistan, deeper ties with Russia–Iran–Central Asia, energy and connectivity gains (INSTC/Chabahar), and security cooperation through RATS on terrorism, Afghanistan, and trafficking.

Challenges for India

India's SCO challenges stem from China-Pakistan dominance, blocked land connectivity, differing strategic visions with major powers, and very low regional trade integration.

Criticism of SCO

SCO faces diverging member interests, an authoritarian China-Russia tilt, limited tangible outcomes, and an overemphasis on security over economic integration.

Way Forward for India

India can deepen Central Asian trade and energy links, balance China through partnerships with Russia–Iran–CARs, use RATS for counter-terrorism, promote digital/health cooperation, and push safe, sovereignty-aligned connectivity.

5. Russian Oil and India

Introduction

India, the **third-largest oil consumer**, boosted **energy security** by importing **discounted Russian oil** post-Ukraine war, reshaping **global energy trade** while raising **geopolitical and economic concerns**.

Russia in the Global Oil Market

Russia, a top global oil producer (~12% of world output) and key OPEC+ member, has shifted exports from Europe to Asia due to sanctions.

India's Oil Dependency

India imports 85% of its crude, traditionally from the Middle East, but since 2022 Russia has become a top supplier, making India highly vulnerable to global oil price swings.

SAVINGS FROM RUSSIAN OIL

■ Import bill if oil importedat avg non–Russian price ($ mn)		■ Actual import bill ($ mn)	
Savings $4,873 mn	$5,411 mn	$1,450 mn	$835 mn
Russian discount 13.6%	10.4%	2.8%	6.2%
1,67,078 / 1,62,205	1,44,699 / 1,39,288	1,44,527 / 1,43,077	39,736 / 38,901
FY23	FY24	FY25	APR–JUN FY26

Discount calculated on average per-barrel price of oil imports from all countries except Russia
Source: *Analysis based on India's official trade data available with the Ministry of Commerce and Industry*

Why Russian Oil Matters for India

- **Economic Savings:** Discounts of $10–15/barrel saved India ~$12.6 bn (2022–25), easing CAD and supporting the rupee.
- **Energy Security:** Diversifies beyond the Middle East and ensures stable long-term supply.
- **Refining Edge:** Indian refiners process Russian crude efficiently and export high-value fuels to Europe.
- **Geopolitical Leverage:** Greater bargaining power as Russia relies on Asian buyers; boosts India–Russia strategic ties.
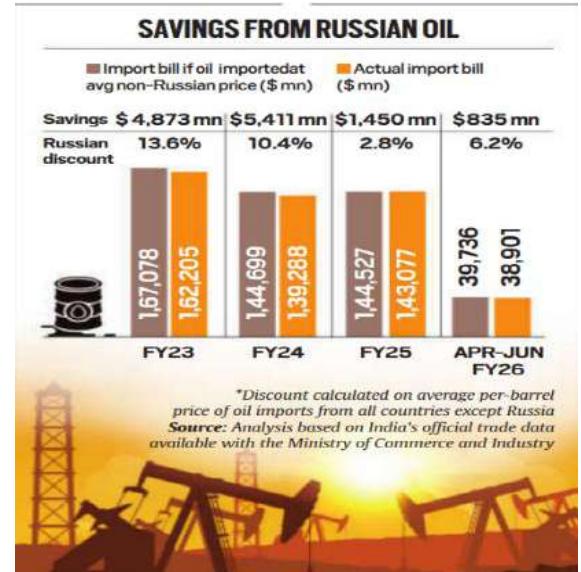
Challenges in Russian Oil Imports

- **Payments:** Sanctions limited dollar/SWIFT use → India used rupee-ruble, dirham, and alternate channels.
- **Logistics:** Western shipping/insurance curbs forced reliance on Russian vessels and non-Western insurers.
- **Balancing Act:** India must manage U.S.–EU pressure while preserving crucial ties with Russia.
- **Price Risks:** OPEC+ cuts and geopolitical shocks can erode discount gains.

Data Snapshot (as of 2025)

India now sources **35–40% of its crude from Russia**, making it the top supplier, yielding **$4–5 billion in direct annual savings** and even higher indirect gains from softer global prices.

Way Forward for India

Continue **diversifying suppliers**, boosting **refining/storage capacity**, building **alternative payment systems**, expanding **renewables**, and pursuing **balanced diplomacy** with Russia and the West.

Conclusion

Russian oil offers India economic relief and strategic leverage amid global uncertainty, but reliance on discounted oil isn't sustainable. India should invest savings in **diversification, renewables, and smart diplomacy** for long-term energy resilience.

6. Earthquakes in Afghanistan: Causes, Vulnerabilities and India's Role

Introduction

Afghanistan, highly earthquake-prone due to its **geology, poor infrastructure, and lack of preparedness**, was struck by a **6.0 magnitude earthquake in September 2025,** highlighting its vulnerability.

Why Do Earthquakes Occur?

Earthquakes occur due to sudden stress release along plate boundaries, sending seismic waves that shake the ground; Afghanistan is highly prone because it sits on the active Indian–Eurasian plate collision zone, where rapid convergence creates frequent seismic activity, especially in the Hindu Kush region.
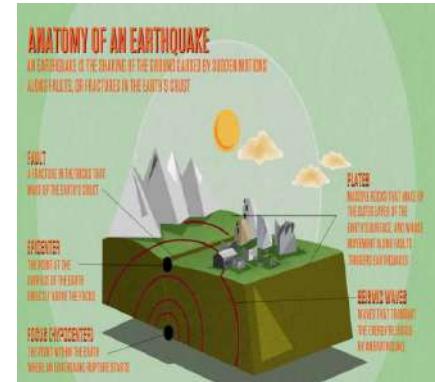
Afghanistan's Vulnerability

- **Geological**: Located on major fault lines such as the Chaman fault and Hindu Kush seismic zone.
- **Topography**: Rugged terrain amplifies damage and restricts rescue operations.
- **Socio-economic factors**:
  - Poorly constructed mud-brick houses collapse easily.
  - Limited medical and emergency infrastructure.
  - Years of conflict have weakened state capacity.

Wider South Asian Earthquake Context

- **2005 Kashmir earthquake** (Magnitude 7.6) – ~80,000 deaths in Pakistan, some in India.
- **2015 Nepal earthquake** (Magnitude 7.8) – ~9,000 deaths; India launched *Operation Maitri* for rescue and relief.
- Shows how the **Himalayan tectonic zone** remains one of the world's most active seismic belts.

India's Role and Missions in Earthquake Relief

- **Immediate Aid:** India regularly sends medical teams, food, medicines, and relief materials (e.g., 27 tonnes in 2022).
- **Soft Power:** Humanitarian support boosts India–Afghanistan goodwill, delivered via UN/NGOs due to Taliban complexities.
- **Regional Cooperation:** Works through SAARC Disaster Centre and SCO disaster-relief exercises.
- **Capacity Building:** NDRF's international experience (Nepal 2015, Turkey–Syria 2023) can support Afghanistan through coordinated missions.

Way Forward

- **For Afghanistan**:
  - Strengthen earthquake-resistant housing.
  - Build regional early-warning systems.
  - Invest in local disaster management infrastructure.
- **For India**:
  - Continue humanitarian assistance and capacity-building in Afghanistan despite political challenges.
  - Use platforms like **SCO** and **UN OCHA** to lead regional disaster relief framewor

7. Rivers: Why Some Stay Single and Others Split

Introduction

Rivers range from single-thread to multi-channel systems, and understanding them is crucial for managing floods, erosion, and ecosystems amid rising climate risks.

Types of Rivers

Single-thread rivers flow in one stable channel (e.g., Yamuna), while **multi-thread/braided rivers** form shifting multiple channels due to high sediment load and variable flow (e.g., Brahmaputra, Kosi).
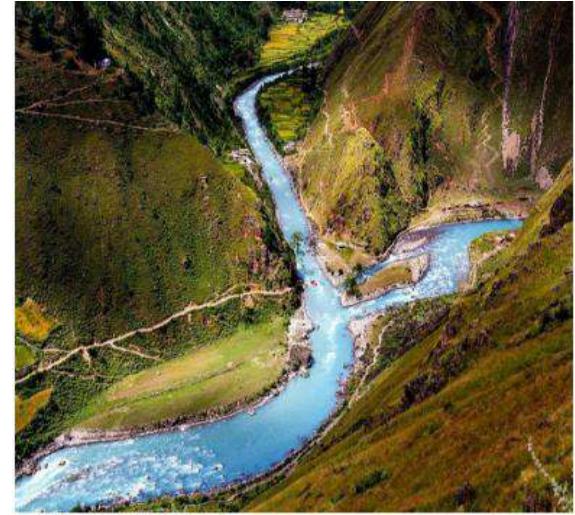
The Karnali River (known as Ghaghara in India) bifurcates in Nepal. SHERPANUI (CC BY-SA)

Why Do Some Rivers Split? (Scientific Explanation)
- **Balance:** Single-thread rivers maintain erosion–deposition balance; braided rivers form when deposition dominates.
- **Sediment Load:** High sediment from landslides, mining, or deforestation promotes multi-channel formation.
- **Flow Instability:** Braided rivers have shifting, unstable channels due to variable flow.
- **Vegetation:** Strong vegetation stabilizes banks; weak vegetation encourages channel splitting.

Importance of This Research
- **Flood Risk:** Braided rivers (Brahmaputra, Kosi) have shifting channels, causing high flood hazards and displacement.
- **Ecosystems:** Single-thread rivers support stable human/agri use; braided rivers are biodiverse but riskier.
- **Climate Change:** Intensifying rainfall increases river splitting, raising disaster risks.

Indian Context & Examples
- **Brahmaputra River (Assam):** Classic braided river, highly unstable, floods annually.
- **Kosi River (Bihar):** Called the "Sorrow of Bihar" due to its frequent course changes.
- **Ganga River (Uttar Pradesh, Bihar, West Bengal):** Some stretches show braiding due to heavy silt load.

Implications for India
- **Disaster Management:** Predicting channel shifts can save lives and reduce flood losses.
- **Infrastructure Planning:** Dams, embankments, and bridges must consider river dynamics.
- **Policy Measures:** Control deforestation, regulate mining, and restore floodplains to stabilize rivers.
- **Research and Mapping:** Use satellite imagery, GIS, and hydrological models to monitor river morphology.

Conclusion

Understanding why rivers are single-threaded or multi-channeled is **crucial for India's flood control, agriculture, and ecological balance, enabling resilient river management strategies** as climate change destabilizes water systems.

8. India–US Relations: An Evolving Partnership

Introduction

India–US ties have evolved from Cold War estrangement to a "**natural partnership**," now covering trade, defense, technology, climate, education, and global governance.

Historical Background

India–US ties moved from Cold War divergence and post-1998 sanctions to post-1991 economic engagement and the 2005 nuclear deal, evolving into today's comprehensive strategic partnership.

Strategic and Security Cooperation

India–US defence ties have deepened through major arms purchases, key foundational agreements (**LEMOA, COMCASA, BECA**), regular joint exercises, and close coordination in the **Indo-Pacific** strategy.

- **Economic & Trade:** $190+ bn trade, strong US investments, rising LNG/oil imports, major IT services link.
- **Technology:** Cooperation in semiconductors, 5G, AI/cybersecurity, and NASA–ISRO projects (e.g., NISAR).
- **People Links:** 4.8M diaspora, 2 lakh students, deep cultural ties.
- **Key Cooperation Areas:** Defence, trade, clean energy, health research, and global governance coordination (Quad, G20, UNSC reform).

Areas of Friction

Trade frictions on tariffs, visas, and market access; US concern over India's Russian arms (S-400); periodic human-rights criticisms; differences on climate burden-sharing; and tensions over India's neutrality on the Russia–Ukraine war.

India's Role in the US Strategy

India's role in the Quad, its stabilizing presence in the Indian Ocean, and its large, growing market make it strategically and economically vital for the US.

Recent Developments

Modi's 2023 US visit, the 2+2 Dialogue, and the launch of iCET deepened cooperation in defense, space, semiconductors, and cutting-edge technologies like AI and quantum.

Conclusion

India–US relations are a **highly consequential partnership**; despite some frictions, shared values of **democracy, innovation, and rule of law** offer vast potential to shape the **21st-century world order**.

Relationship beyond tariffs

The data for the charts were sourced from Reuters; the U.S. Trade Representative; the Indian Ministries of Commerce, Education, and Defence; the U.S. Census, and pharma industry reports

Chart 1: Key export sectors that will be impacted by tariffs

Sector	Export value to U.S. in 2025 ($ billion)
Gems and jewellery	10
Textiles and apparel	8
Agriculture	6
Leather and footwear	3

— Sectors most affected —
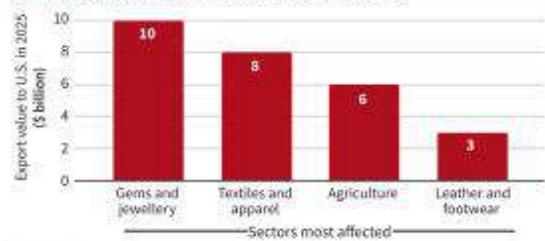
Chart 2: Value of key sectors not directly affected by tariffs

Sector	Value/indicative share ($ billion)
Pharma (H1 2025)	3.7
Services and IT	33.2
Defence and aviation	20
Energy and innovation	15

— Resilient and growing sectors —
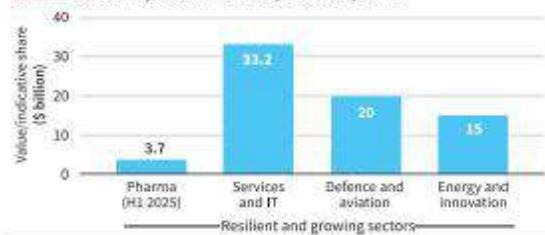
Table 3: Tariff versus trust

Parameter	Values
Export at risk (tariff)	$48B
Indian diaspora in the U.S.	4.8M
Indian students in the U.S.	200K

Tariffs may disrupt markets, unsettle industries, and dominate headlines, but they do not define destiny. The U.S.-India relationship has survived Cold War suspicion, sanctions, and past trade disputes before — and every time, it has emerged stronger

9. RTE and Minority Schools: Striking a Balance between Universal Right & Minority Rights

Background

The RTE Act guarantees free schooling for ages 6–14 with a 25% quota, but exempts minority institutions under the Pramati (2014) ruling.

The Core Issue

Debate centers on whether minority schools should remain exempt, balancing Article 21A's universal education mandate with Article 30's protection of minority-run institutions.

What the SC is Reviewing Now

A larger bench will reconsider *Pramati* to decide if minority schools must share RTE obligations.
If upheld: minority institutions stay exempt from 25% quota, TET norms, and RTE standards—protecting autonomy but limiting equity.
If overturned: they may need to follow quotas, teacher norms, and standards—boosting access and quality but reducing autonomy.

Arguments in Favor of Exemption

- **Constitutional protection (Art. 30):** Ensures minorities can preserve culture & language.
- **Diversity in education:** Minority schools cater to unique community needs.
- **Fear of homogenization:** RTE obligations may weaken the distinct character of these schools.
- **Legal precedent:** Pramati and earlier cases upheld minority rights.
- **Autonomy principle:** Imposing quotas may violate institutional freedom.

Arguments Against Exemption

- **Equity gap:** Exemption denies disadvantaged children access to many private minority schools.
- **Misuse of minority tag:** Many schools self-identify as minority-run to escape RTE obligations.
- **Violation of Article 21A spirit:** Right to Education is a fundamental right, should be universal.
- **Disadvantaged groups suffer:** SC commission reports show weaker sections excluded from minority schools.
- **Accountability issues:** Exemption weakens checks on quality and teacher standards.

Data & Facts

- **RTE Act (2009):** Enforced from 2010, covers ages 6–14.
- **25% quota:** For children from SC/ST, OBC, EWS, and disadvantaged groups.
- **Minority schools:** ~8% of total schools in India (both religious & linguistic).

2012 NCERT study: 62.5% of students in minority schools belonged to non-minority communities, showing dilution of minority purpose.

Way Forward

- **Balanced approach:** Protect minority rights while not undermining universal education.
- **Differentiated compliance:** Core autonomy can be protected while still applying child-centric provisions like teacher quality.
- **Transparent certification:** Prevent misuse of minority status for commercial gains.
- **Dialogue & consensus:** Between judiciary, government, and minority representatives.

10.Semiconductors and India: Shaping the Future, Chip by Chip

Introduction

Semiconductors, vital for **digital devices and defence**, face **East Asia-centric supply chain risks**. India's **Semiconductor Mission** aims to become a **trusted hub in the global value chain**.

Background

Semiconductors power all modern electronics, and while global demand is booming and India's own demand is rising sharply, the country still imports almost all its chips despite strong design talent.

Policy Initiatives

India's push includes the India Semiconductor Mission, a ₹76,000 crore PLI package for fabs and ATMP units, and talent initiatives like the Chips-to-Startups programme with free EDA tool access.

Recent Developments

India has approved 10 fabs/ATMP units, begun large-scale fab construction, trained 60,000+ engineers across 350 institutions, and logged over 1.2 crore EDA tool hours.

India's Strengths

India has a strong chip design base (20% of global workforce), major talent hubs, rising investments from global giants, strategic tech partnerships, and a rapidly growing domestic market across EVs, AI, defence, and 5G.

Challenges

High costs, tech dependence, supply-chain gaps, strong global competitors, and talent retention challenges limit India's semiconductor ambitions.

Opportunities (Positives)

- **China+1 strategy –** companies diversifying to India.
- **Policy stability –** long-term PLI schemes.
- **Huge domestic demand –** electronics, EVs, defence.
- **Niche manufacturing –** focus on automotive & telecom chips.
- **Integration in global value chains –** via collaborations.

Risks (Negatives)

- Execution delays in approved projects.
- Import dependence for raw materials.
- Lag in advanced technology **(<10nm chips)**.
- **Geopolitical shocks** – Taiwan crisis, US–China rivalry.
- **Sustainability concerns** – fabs consume high water & energy.

Way Forward

India should focus on building a complete chip ecosystem—from design to fabrication and packaging—while promoting niche segments like EVs, defence, and telecom. Strengthening public–private partnerships, expanding skilling programs to train a million semiconductor professionals, and securing raw material supply chains through strategic global collaborations will be essential to drive long-term self-reliance and competitiveness in the sector.

11.India's Cancer Map: Understanding the Silent Epidemic

Introduction

Cancer poses a growing public health challenge in India, marked by late detection and sharp regional disparities. **ICMR estimates (2023)** indicate **14.6 lakh new cases** and **8–9 lakh deaths annually**, with **1 in 9 Indians** at lifetime risk. By **2040**, cancer incidence is projected to rise **57%**, reaching **2.1 million cases per year**.

India's Cancer Map (Regional Trends)

- **NE India:** Highest cancer incidence; esophageal, stomach, liver, and cervical cancers driven by tobacco, fermented foods, alcohol, and low screening.
- **North & Central:** Oral cancer from tobacco; gallbladder cancer in UP–Bihar–Assam–WB due to arsenic and river pollution.
- **West:** Head & neck cancers; lung cancer in industrial cities from pollution/occupational exposure.
- **South:** High breast, thyroid, and rising colorectal cancers (lifestyle-linked).
- **Metros:** Breast cancer in women; lung cancer rising in men.
- **Gender:** Men—oral, lung, esophageal; Women—breast, cervical, ovarian.

COMMON CANCER SITES
Incidence rate per 1,00,000 population

BREAST		ORAL CANCER (Female)	
Hyderabad	54.0	East Khasi Hills	13.6
Bangalore	46.7	Cachar	13.0
Chennai	45.4	Meghalaya	12.7
GBN*	44.1	Kamrup Urban	10.5
Alappuzha	42.2	Bhopal	10.3

CERVICAL		ORAL CANCER (Male)	
Aizawl	27.1	Ahmedabad Urban	33.6
Mizoram	22.6	Bhopal	30.4
Pampure	21.3	East Khasi Hills	27.0
Pasighat	18.1	Cachar	25.9
Tamil Nadu	16.6	Kamrup Urban	24.9

LUNG CANCER (Female)		PROSTATE CANCER	
Aizawl	33.7	Srinagar	12.7
Mizoram	24.8	Delhi	12.7
Imphal West	17.0	GBN*	11.7
Manipur	11.8	Thiruvananthapuram	11.1
Pasighat	9.6	Alappuzha	10.8

LUNG CANCER (Male)	
Srinagar	39.5
Aizawl	35.9
Kannur	35.4
Malabar	32.5
Mizoram	27.8

*Gautam Buddha Nagar
Source: National Cancer Registry Programme Investigator Group, 'Cancer Incidence and Mortality Across 43 Cancer Registries in India'. Jama Network Open, August 20; Data from 2015-19; 2020 data was not considered because all health systems, including registries, were affected due to the Covid-19 pandemic.

Causes and Risk Factors

- **Lifestyle:** Tobacco (27% of cancers), alcohol, unhealthy diet, obesity, inactivity.
- **Environment/Occupational:** Indoor biomass smoke, severe urban pollution, industrial chemical exposure, arsenic/pesticide-contaminated water.
- **Biological:** HPV, Hepatitis B/C, and genetic risk.
- **Socio-Economic:** Urban–rural cancer divide; limited oncology centres (metro-heavy); high treatment costs pushing families into debt.

Government Initiatives

- **Policy:** NPCDCS for NCD prevention; NCRP for nationwide cancer data; PM-JAY provides ₹5 lakh coverage for cancer care.
- **Screening & Vaccination:** HPV vaccine added to national immunization (2023); population-based screening for oral, breast, and cervical cancers.
- **Infrastructure:** National Cancer Institute (Jhajjar) and a network of regional cancer centres strengthening treatment and research.

Challenges

Late detection (70% at advanced stages), severe oncologist shortage, high treatment costs, and low awareness—especially in rural women—continue to hinder India's cancer care.

Way Forward

Focus on prevention (tobacco/alcohol control, healthy lifestyles), early detection (rural screening, AI diagnostics), and accessible treatment with affordable medicines and enhanced research.

12.Theatre Commands in India: Towards Jointness in Armed Forces

Introduction

Theatre Commands unify Army, Navy, and Air Force under one regional commander for joint operations, replacing separate service-specific commands for coordinated security and military response.

Why Theatre Commands for India?

Enhances joint operations, optimizes resources, addresses hybrid warfare, and strengthens preparedness for two-front threats.

Structure Proposed for India

Planned commands include Western, Northern, Maritime, Andaman & Nicobar, and Strategic Forces; led by 4-star officers under CDS, overseen by DMA for joint operations and restructuring.

Challenges in Creating Theatre Commands

- **Inter-Service Rivalry:** Army, Navy, Air Force reluctant to cede operational control.
- **Different Doctrines:** Air power viewed as centralised (not divisible by region).
- **Logistics & Resources:** Need for integrated bases, procurement, staffing.
- **Legal & Administrative Issues:** Amendments in rules, clear chain of command required.
- **Cultural Resistance:** A major shift from decades of service-specific autonomy.

Recent Developments

CDS Gen. Bipin Rawat began Theatre Command discussions in 2020; studies, war games, and 2025 SAMANVAY seminar explored structures, but consensus is pending.

Benefits if Implemented

Unified commands enable faster decisions, cost-efficient asset use, stronger two-front deterrence, integrated tech, and align India with global military standards.

Concerns and Criticisms

- Possible dilution of Air Force's role as an independent striking arm.
- High financial cost of restructuring bases, equipment, and personnel.
- Risk of bureaucratic delays in implementing such a massive reform.
- Need for a clear National Security Strategy before restructuring.

Way Forward

- Phased implementation: Begin with functional commands, then move to geographical theatre commands.
- Strengthen joint training to foster inter-service culture.
- Formalize reforms through comprehensive defence legislation.

Conclusion

Theatre commands prepare India for modern warfare, requiring phased implementation despite rivalry and resource limits to maintain an Indo-Pacific strategic edge.

13.Reservation in India: Debates, Dimensions & the Road Ahead

Introduction

Reservation in India promotes social justice for disadvantaged groups, but debates over the 50% ceiling reflect tensions between equity and meritocracy.

Constitutional Basis of Reservation

- Articles 15(4) & 16(4) allow reservations for SCs, STs, and SEBCs; Article 46 directs promotion of weaker sections.
- 102nd Amendment (2018) gave NCBC constitutional status; 105th Amendment (2021) restored states' power to identify backward classes.

Judicial Pronouncements

- **Indra Sawhney (1992):** Upheld 27% OBC reservation, introduced creamy layer, capped total reservations at 50%.
- **Maratha Quota (2021):** Struck down 16% quota exceeding 50%; only SC or amendment can breach cap.
- **EWS Reservation (103rd Amendment, 2019):** 10% quota for general category; SC upheld in 2022, allowing 50% breach.

Why the Debate on 50% Cap?

- **Demographics:** OBC ~40–50%, SC 16%, ST 8%; 50% ceiling debated as unrealistic.
- **Rising demands:** Marathas, Patidars, Jats, Kapus, Lingayats, Vokkaligas seek quotas.
- **Equality debate:** Formal equality vs substantive equality requiring affirmative action.

For >50%: Ensures social justice, reflects population share of disadvantaged groups, allows substantive equality, and judicial flexibility (e.g., Tamil Nadu).
Against >50%: Risks merit erosion, creamy layer capture, societal fragmentation, and conflicts with Indra Sawhney precedent.

Current Scenario

Some states (Tamil Nadu) exceed 50% reservation; SC's EWS ruling allows breach, highlighting the need for rationalisation over unchecked expansion.

Way Forward

- Rationalise quotas to target the most deprived groups.
- Extend creamy layer exclusions to SC/STs.
- Improve education quality, skill training, and private sector opportunities.
- Use SECC and caste census data to redesign policies.
- Balance social justice with efficiency and national integration.

Conclusion

Reservation, a tool for **social justice**, was never meant to be permanent. Its future lies in **empowerment-focused policies**, targeting the **most marginalised** while promoting **equal opportunities** through education, jobs, and reforms.

14.Semiconductors: The New Oil of the 21st Century

Introduction

Semiconductors, vital for technology and defence, are critical for India to build domestic supply, ensure digital sovereignty, and strengthen strategic autonomy.

Why Are Semiconductors Important?

- **Strategic**: Key for defence, space, cybersecurity, AI, 5G, IoT, and quantum tech.
- **Economic**: Global market $574B (2023), projected >$1T by 2030.
- **Everyday Use**: Powers smartphones, EVs, health devices, and renewable energy systems.

Global Semiconductor Landscape

- Dominated by Taiwan (TSMC), South Korea (Samsung), USA (design), China (investing).
- Global supply chains: design (USA), manufacturing (Taiwan/Korea), materials (Japan), assembly (Malaysia).

India and Semiconductors

India has strong chip design talent (20% globally) but imports 100% of semiconductors (~$23.6B, 2022).

Government initiatives: ISM (₹76,000 cr), PLI for fabs, DLI for design start-ups, India–Singapore collaboration, and new fabs (Micron, ISMC, Vedanta-Foxconn).

Challenges for India

High costs ($5–10B), complex nanometer-scale tech, water & power intensive, reliant on imports, and facing strong global competition.

Opportunities for India

- **Strategic Diversification** – Countries want to reduce dependence on Taiwan (geopolitical risks). India can be an alternative hub.
- **Large Market** – India's electronics market expected to reach **$400 billion by 2025**.
- **Skilled Manpower** – India produces ~15 lakh engineers every year.
- **Policy Push** – ISM, PLI, and partnerships with countries like Singapore, Japan, USA.
- **Digital India Drive** – Growth in 5G, EVs, smart devices will increase chip demand domestically.

Case Studies & Examples

Key initiatives: Micron's Gujarat fab, India-US iCET collaboration, and India-Singapore 2025 MoU on chips, AI, and quantum tech.

Way Forward

India aims to build a complete semiconductor ecosystem with robust R&D, international tech partnerships, sustainable fabs, and a skilled workforce for design, fabrication, testing, and packaging.

15.Education System of India & NIRF Rankings

Introduction
India's vast education system faces quality and access challenges. To ensure accountability and excellence, the government launched NIRF in 2015 as a key benchmark for higher education.

Evolution of Education in India
India's education evolved from gurukuls and ancient universities to colonial English systems, with post-independence reforms like RTE, Kothari Commission, and NEP 2020 emphasizing holistic, inclusive, and digital learning.

Present Structure of Education
India's education system spans school (RTE, Samagra Shiksha, PM SHRI), higher education (universities, IITs/IIMs/NITs, regulators), skill development (Skill India, PM Kaushal Vikas Yojana), and digital learning (SWAYAM, DIKSHA, EdTech), with gaps in access and equity.

NIRF (National Institutional Ranking Framework)
NIRF, launched in 2015, ranks Indian higher education institutions annually on Teaching (30%), Research (30%), Graduation Outcomes (20%), Inclusivity (10%), and Perception (10%) across categories like Overall, Universities, Engineering, Management, and more; in 2025, IIT Madras topped overall, IISc Bangalore best university, IIM Ahmedabad top in management, and Hindu College led colleges.

Challenges
- **Quality Gap** – Few world-class institutions; limited global rankings.
- **Access & Equity** – Regional, gender, and rural-urban divides.
- **Research & Skills** – Low R&D spending, skill mismatch, and brain drain.

Opportunities Ahead
- **NEP 2020 Implementation** – Multidisciplinary, skill-based education.
- **Digital & Internationalisation** – Online platforms and foreign universities in India.
- **Industry-Academia Linkages** – Promoting innovation, entrepreneurship, and NIRF-driven competition.

Way Forward
- Raise education spending to 6% of GDP and strengthen research through industry collaboration.
- Modernise curriculum, enhance teacher training, and bridge the digital divide in rural areas.

Conclusion
Education is key to India's demographic dividend. NIRF has improved transparency, but quality and research gaps persist. Effective NEP 2020 implementation can make education a driver of innovation and global leadership.

16.Antibiotics and Mental Health: A Silent Public Health Challenge

Introduction

Antibiotic misuse in India fuels antimicrobial resistance and disrupts the gut–brain axis, linking overuse to rising depression and anxiety—a silent public health threat.

Antibiotic Culture in India

- India is a top global antibiotic consumer, with easy OTC access and self-medication; ~50% used without prescription, projected to reach 12.2 billion doses by 2030.
- Antibiotics disrupt gut microbiota, affecting neurotransmitters (serotonin, dopamine) and potentially worsening depression, anxiety, cognitive decline, and sleep disorders.

Impact of Antibiotic Misuse on Mental Health

- Long-term antibiotic use can trigger neuroinflammation, altering brain chemistry and raising risk of depression and anxiety.
- Behavioural vulnerabilities and overprescription, especially in urban areas, increase dependency risks.
- Children, elderly, and pregnant women are particularly vulnerable to adverse effects.

Economic and Regulatory Factors

- Overprescription driven by profit and patient pressure.
- Pharmacies often sell antibiotics without prescriptions.
- Weak enforcement of Schedule H1 regulations.

Public Health Dimensions

- Antibiotic misuse worsens India's mental health burden.
- AMR and mental disorders create a dual healthcare threat.
- Leads to higher social and economic costs.

Policy and Governance Measures

- **Government**: National AMR Action Plan & NIMHANS research on gut-brain links.
- **International**: Strict antibiotic regulation (Scandinavia) and gut-friendly diets (Japan) offer models for India.

The Way Forward

- **Awareness**: Public campaigns and media to curb antibiotic misuse.
- **Regulation**: Enforce prescription-only sales and discourage overprescribing.
- **Holistic Care**: Include probiotics, fermented foods, and mental health in AMR policies.
- **Research**: Invest in microbiome, psychiatry, and traditional medicine studies.

Conclusion

Antibiotic misuse in India endangers physical and mental health, requiring holistic regulation, awareness, dietary, and mental health interventions.

17.New Foreigners Act, 2025: A Comprehensive Overhaul of India's Immigration Regime

Introduction

India's fragmented immigration framework has been unified under the Immigration and Foreigners Act, 2025 — consolidating old laws, streamlining processes through digital tools, and providing specific exemptions.

Background and Need for Overhaul

Earlier immigration laws were fragmented and outdated, causing enforcement gaps, manual reporting, and scattered exemptions—necessitating a consolidated, digital, and streamlined framework.

Key Features of the New Foreigners Act, 2025

- **Consolidation:** Merges four laws; streamlines entry, stay, exit, registration.
- **Digitalisation:** Mandatory digital records for foreigners and hosts.
- **Entry & Exemptions:** Valid documents required; diplomats, officials, certain refugees and neighboring country minorities exempt.
- **Reporting & Penalties:** Registration within 7 days; fines ₹10k–₹35k for violations.
- **Central Authority:** Central government oversees exemptions and implementation.

Implications

Positive Outcomes

- **Clarity & simplification:** One law instead of four → easier for enforcement and compliance.
- **Digital governance:** Helps in real-time monitoring of foreign nationals.
- **Security benefits:** Better tracking of overstays and illegal entries.
- **Public health support:** Record-keeping helps in disease control and emergencies.
- **Protection of vulnerable groups:** Tibetans, Sri Lankan Tamils, minorities from neighbouring countries.

Challenges and Concerns

- **Privacy issues:** Digital tracking may raise data protection concerns.
- **Implementation capacity:** Rural/semi-urban areas may lack digital infrastructure.
- **Humanitarian angle:** Refugees not covered (post-2003 Tibetan arrivals, Rohingyas, etc.) may face hardships.
- **Centralisation vs federalism:** Too much power with Centre may reduce states' flexibilit

Constitutional and International Context

- **Article 21:** Foreigners have right to life and liberty.
- **Article 51(c):** Uphold international law and treaties.
- **Refugee Policy:** Ad-hoc humanitarian approach; not UN 1951 signatory.
- **CAA 2019 Link:** Certain minorities exempt; secularism concerns debated.

Way Forward

- **Balance security & humanitarianism:** India must protect vulnerable groups while securing borders.
- **Strengthen data protection laws:** To ensure digitalisation does not compromise privacy.
- **Capacity building:** Training of immigration officers and upgrading infrastructure in remote areas.
- **Bilateral agreements:** Streamline cross-border movement with neighbours like Nepal and Bhutan.

18. WHO Mental Health Report 2024: One Billion People Living with Mental Health Conditions

Introduction

According to WHO's Mental Health Atlas 2024, over 1 in 8 people globally face mental disorders, underscoring rising illness, high suicides, and the urgent need for stronger mental health systems.

Key Findings of the WHO Report

- **Global Mental Health (2021):** 14% prevalence; anxiety & depression >2/3 cases; 13.6% age-standardised prevalence.
- **Suicide:** 1% of deaths (~27,000); reduction pace insufficient for SDG 2030.
- **Age & Gender:** Young adults rising; males—ADHD/autism; females—anxiety/depression; older adults—depression peaks.
- **Dementia:** 57 million affected; rising with ageing population.
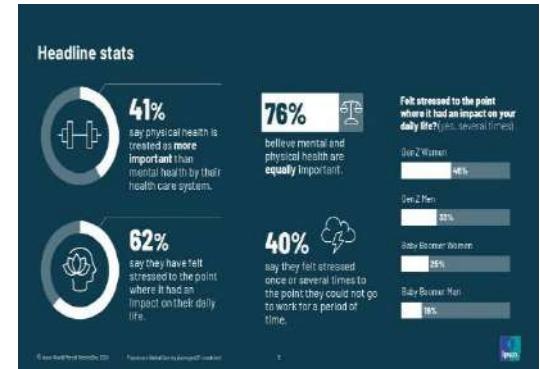
Causes and Risk Factors

- **WHO Factors:** Biological (genetics, brain chemistry), psychological (stress, trauma), social (poverty, conflict), environmental (urban stress, tech exposure).
- **India-Specific Challenges:** Stigma, low awareness, psychiatrist shortage, limited beds/community support, poverty, academic pressure, youth suicides.

WHO Recommendations

- Expand infrastructure: more beds, rehab centres, community care.
- Integrate mental health into primary healthcare.
- Increase trained professionals (psychiatrists, nurses, counsellors).
- Multi-sectoral approach: schools, workplaces, communities.
- Reduce stigma via awareness; use digital platforms for remote access.

Indian Context

- 14% of Indians need mental health care (NMHS 2016).
- 1.71 lakh suicides in 2022 (NCRB).
- Severe manpower shortage: 0.75 psychiatrists per 1 lakh population vs WHO's 3.

Policies and Initiatives

India's mental health framework includes the 2017 Mental Healthcare Act and support services like KIRAN Helpline and Tele-MANAS.

Challenges in India

India faces major mental health challenges, including stigma, urban-rural disparities in care, severe underfunding, shortage of trained professionals, and inadequate infrastructure, especially in rural areas.

Way Forward

Integrate mental health into primary care, boost funding, use digital/tele-counselling, and promote school, workplace, and community support.

19.The 2025 Punjab Floods: A Wake-up Call

Overview & Severity

In Aug–Sep 2025, Punjab's worst floods in 40 years affected 1,400+ villages, displaced 3.54 million people, inundated 2.5 lakh acres, and caused 30+ deaths.

Causes and Amplifying Factors

Punjab floods were triggered by heavy monsoon rains and dam releases, worsened by deforestation, illegal mining, floodplain encroachments, and poor drainage infrastructure.

FIELDS FLOODED, PEOPLE DISPLACED

District	Population affected	Crop area affected
Gurdaspur	1,45,000	40,169
Amritsar	1,35,880	26,701
Kapurthala	5,728	17,807
Fazilka	24,212	17,786
Ferozepur	38,594	17,221
Tarn Taran	60	12,828
Mansa	178	11,042

Crop area in hectares; situation on Friday

Impacts: Human, Agricultural & Infrastructure

Punjab floods affected 3.5 million people, destroyed 1.7 lakh hectares of crops, submerged homes and roads, and disrupted power and water supply, with thousands rescued via relief camps and operations.
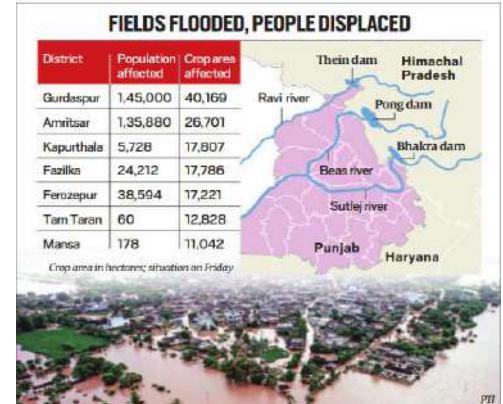
Government Response & Relief Efforts

Central and state authorities deployed 24 NDRF teams, military units, helicopters, and boats, rescued 21,000+ people, and operated 196 relief camps, while SDRF and MPLADS funds supported immediate relief and damage assessment.

Historical Resonance & Regional Spillover

The 2025 Punjab floods recalled the catastrophic 1988 and 1993 events, while also impacting Pakistan's Punjab (2,000+ villages, 2 million affected); India issued humanitarian warnings, with experts attributing the disaster to climate-driven heavy monsoons rather than "weaponised water."

Policy & Institutional Measures

Punjab needs better floodplain zoning, stronger embankments, regulated riverine activities, proper sediment management, and improved drainage and sanitation infrastructure.

Adaptation & Climate Imperatives

Climate change intensifies monsoons, necessitating resilient infrastructure, early warning systems, and interstate/transboundary coordination.

Community & Agrarian Resilience

- Investment in **crop insurance**, alternate livelihoods, and infrastructure to secure the agrarian economy.
- Community awareness and participation are key—both during preparedness and relief phases.

Governance & Constitutional Lens

- Remedies include adopting a **multi-dimensional response**: combining administrative, infrastructure, environmental, and social welfare policies.
- Uphold **right to life and livelihood** via effective execution of DRR (Disaster Risk Reduction) strategies.

Conclusion

The 2025 Punjab floods reveal how climate risks, weak infrastructure, and policy gaps can turn hazards into disasters, emphasizing the need for holistic prevention, preparedness, and resilience.

20.Urbanisation and Climate Resilience: Building Sustainable Cities in India

Introduction

India's rapid urbanisation—projected to reach 900 million by 2050 and generate 70% of new jobs—faces climate risks like heatwaves, floods, and cyclones, making climate-resilient, inclusive, and sustainable cities crucial for future growth.

Key Issues

- **Urban Population Boom:** Rapid rural-to-urban migration; 144 million new homes needed by 2070—opportunity for sustainable city design.
- **Climate Vulnerability:** Urban housing exposed to floods, heat, cyclones, landslides, earthquakes (e.g., Bihar 80% flood risk, Chennai recurring urban floods).
- **Infrastructure Deficit:** Existing housing/services inadequate; over half of future infrastructure yet to be built.
- **Economic Costs:** Flood damages could reach $1.5B/year by 2030; climate-resilient infrastructure requires $105B investment by 2070.

Opportunities Ahead

- Climate-resilient housing and compact city planning reduce disaster losses.
- Nature-based solutions (wetlands, trees, green roofs) mitigate floods and heat.
- Flood-proof transport with mapped roads, drainage, and public transit improves resilience.
- Technology and private-sector innovation enhance early warning and smart urban planning.

Way Forward

- **Integrated Planning:** Coordinate housing, transport, waste, and disaster resilience; avoid fragmented sectoral approaches.
- **Climate-Smart Infrastructure:** Promote low-carbon, energy-efficient housing; embed resilient designs in building codes.
- **Institutional & Financial Strengthening:** Empower municipal bodies with funds and technical capacity; use PPPs for innovation.
- **Citizen-Centric Approach:** Involve communities in resilience planning; promote sustainable behaviours.
- **Best Practices:** Kolkata – flood early warning; Ahmedabad – Heat Action Plan; Europe – blue-green infrastructure.

Conclusion

India must urgently develop climate-smart, inclusive, and resilient cities, as decisions today will shape whether urban areas become engines of sustainable growth or hubs of vulnerability by 2070.

21.India's Foreign Capital

Introduction

Despite 8.2% GDP growth (2021–24), India's FDI and portfolio inflows hit a 15-year low, raising concerns about investment constraints.

Types of Foreign Capital

Foreign Capital in India: FDI (long-term investment), FPI (short-term securities), ECBs (foreign loans), and NRI deposits make up the capital account. Recent trends show volatile FPI ($2.9–$22.7 bn), stagnant FDI (~$22–23 bn), rising ECBs ($15.8 bn), and strong NRI deposits ($18.3 bn), reflecting cautious investor sentiment but steady diaspora support.

Foreign Direct Investments in India

Why Capital Flows Are Low Despite Growth?

Factors Limiting FDI in India: High equity valuations, global uncertainties (US rates, dollar strength, geopolitical risks), domestic structural and regulatory challenges, preference for debt financing, and stronger FDI appeal of countries like Vietnam and Indonesia.

Balance of Payments (BoP) Implications

- **Merchandise Trade Deficit:** Q1 2024–25 deficit $86.5 bn; imports (energy, electronics, gold) exceed exports.
- **Invisibles Surplus:** IT, healthcare, and remittances partially offset trade deficit, keeping CAD manageable.
- **Capital Flows Weakness:** Low inflows may strain forex reserves if CAD financing falters.

Why it matters for India

- **Economic Growth:** FDI provides capital, technology, jobs, and expertise, sustaining growth.
- **External Stability:** Stable inflows finance imports and support the balance of payments.
- **Geopolitical Edge:** Competes with China and Southeast Asia for global investments.

Government Efforts & Reforms

- **FDI liberalisation** in defence, retail, insurance, and telecom.
- **PLI (Production-Linked Incentive) Schemes** to attract manufacturing investment.
- **Ease of Doing Business reforms**: digital single-window clearances, faster approvals.
- **Bilateral trade agreements**: India–UAE CEPA, India–Australia ECTA.

Way Forward

- **Policy Stability:** Ensure predictable, investor-friendly regulations.
- **Structural Reforms:** Improve labour laws, land acquisition, and judicial efficiency.
- **Infrastructure & Markets:** Modern ports, logistics, smart cities; deepen capital markets.
- **Demographic Advantage:** Skill workforce to boost manufacturing and attract FDI.

Conclusion

India's strong economic growth is not enough to attract foreign capital; stability, policy predictability, and investor confidence are essential to convert growth into sustained investment inflows.

22. Nilgiris Tea and the Brewing of a Crisis

Introduction
Nilgiris tea faces a crisis as small growers grapple with low prices, rising costs, middlemen dependence, and poor modernisation, reflecting broader rural livelihood challenges.

Historical Background
Nilgiris tea, once thriving on Soviet imports, faced export shocks and price instability after the USSR's 1991 collapse, leaving the sector struggling.

Economic Importance
- Nilgiris tea spans 34,408 ha with 46,481 small growers.
- Renowned for orthodox tea with unique aroma and international demand.
- Supports livelihoods of thousands of farmers and workers.

Key Challenges
- Persistent low GTL prices below production cost, worsened by broker-driven auctions.
- Overreliance on limited export markets and weak market diversification.
- Production inefficiencies, small fragmented holdings, and dependence on bought-leaf factories.
- Structural challenges: global competition, climate impact, and unhealthy auction practices.

Government & Institutional Efforts
- Tea Board of India – regulation, quality, promotion.
- INDCOSERVE – largest co-op, collective bargaining for growers.
- TANTEA – state plantations, support to small growers.
- Subsidies & schemes – limited government support.
- GI Tag – Nilgiri tea branding advantage.

Environmental and Social Dimensions
- Labour-intensive crop employing thousands of women.
- Unsustainable practices harm environment.
- Plantation expansion causes deforestation and soil degradation in fragile Nilgiris region.

Way Forward
- Ensure fair prices via auction reforms and MSP-like support.
- Diversify crops and promote intercropping.
- Focus on value addition, specialty teas, and GI-based branding.
- Adopt mechanisation and modern processing technologies.
- Explore new export markets beyond traditional regions.
- Strengthen cooperatives to protect growers' interests.
- Develop skills in marketing, branding, and e-commerce.

23.Maternal Mortality Ratio (MMR) in India – Concerns and Way Forward

Understanding Maternal Mortality Ratio (MMR)

- MMR (WHO): Maternal deaths per 1,00,000 live births.
- Maternal death: During pregnancy or within 42 days of termination, due to pregnancy-related complications.
- Indicator of healthcare quality, women's health, and socio-economic development.

Global and National Scenario

- Global MMR (2020): 223/1,00,000; India: 97/1,00,000 (down from 130 in 2014–16).
- SDG 3.1 target: <70/1,00,000 by 2030.

Seven states have very high maternal mortality

India's maternal mortality ratio (MMR) has improved from 113 in 2016-18 to 103 in 2017-19. The ratio has worsened in West Bengal, Haryana, Uttarakhand and Chhattisgarh.

Maternal Mortality Rate (2017-19)
- Very high (130 or more maternal deaths per 100,000 live births)
- High (100-130 maternal deaths)
- Low (71-100 maternal deaths)
- Very low (70 or less maternal deaths)

Kerala Case Study – Rising MMR

Kerala, a leader in maternal health, saw MMR rise from 18 to 30 (2021–23) due to COVID-19 deaths and fewer live births, yet remains among India's lowest along with Andhra Pradesh.

Reasons for Maternal Mortality in India

- **Medical causes**: postpartum hemorrhage, pre-eclampsia/eclampsia, infections, unsafe abortions, obstructed labour, pre-existing conditions.
- **Socio-economic causes**: malnutrition, adolescent pregnancy, low antenatal care, transport delays, and gender inequality.

Government Initiatives to Reduce MMR

Key initiatives: NHM (maternal & child health), JSY (cash for institutional delivery), JSSK (free delivery/medicines), LaQshya (quality maternity care), PMSMA (free antenatal check-ups), Poshan Abhiyaan (nutrition), MDSR (maternal death tracking).

Challenges in Reducing MMR

Challenges: Regional MMR disparities, shortage of skilled birth attendants, high female anemia (57% NFHS-5), reliance on costly private healthcare, and social issues like early marriage and low women's autonomy.

Way Forward

- **Strengthen primary healthcare** with 24×7 skilled staff and emergency obstetric care.
- **Address anemia and malnutrition** via Poshan Abhiyaan and Anaemia Mukt Bharat.
- **Use technology:** telemedicine, AI monitoring, digital maternal tracking.
- **Promote awareness:** women's education, delayed marriage, family planning.
- **Ensure equity:** focus on high-MMR states (UP, Bihar, MP, Assam).
- **Implement post-COVID protocols** for maternal health emergencies.

Conclusion:

Maternal Mortality Ratio reflects women's health, social status, and societal development. India must address healthcare, nutrition, education, gender equality, and economic empowerment to achieve the SDG target of <70 by 2030.
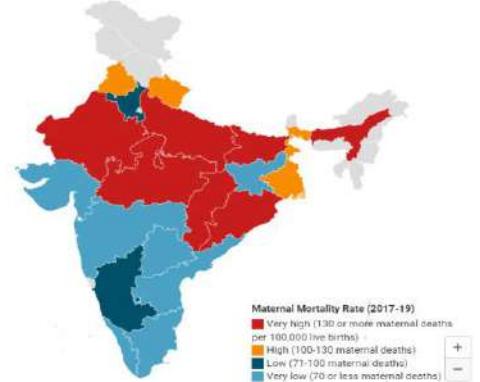
24.India and Iran: Ancient Civilisations and Contemporary Strategic Ties

Historical and Civilisational Bonds

- India and Iran share ancient civilisational ties with cultural, linguistic, and philosophical exchanges.
- Persian influence shaped Urdu, literature, architecture, and Sufi traditions in India.
- Iran was among the first to recognise independent India in 1947.

Strategic and Economic Importance

- Iran's vast oil and gas reserves are vital for India's energy security, though US sanctions affected trade.
- Connectivity projects like Chabahar Port and INSTC enhance India's access to Afghanistan, Central Asia, and Europe.
- Iran's strategic location at the West–Central–South Asia crossroads boosts its geopolitical importance.

Shared Geopolitical Interests

- India and Iran collaborate on regional stability, opposing extremism and terrorism.
- Both advocate a multipolar world, supporting Global South and reforms in global institutions.
- Engage in BRICS and SCO as alternatives to Western dominance, while balancing U.S. influence.

Challenges in Relations

- **U.S. Sanctions:** American restrictions on Iran have disrupted India's oil imports and slowed projects like Chabahar.
- **Balancing Act:** India must balance its ties with Iran and with the U.S.–Israel–Saudi bloc.
- **China's Presence:** Iran's increasing closeness to China (25-year strategic deal) may limit India's influence.
- **Taliban in Afghanistan:** Both India and Iran share concerns, but strategies may differ.

Recent Developments

- India operates Chabahar Port (Shahid Beheshti terminal) since 2018.
- INSTC cargo shipments via Iran-Russia corridor are rising.
- Iran's 2024 BRICS entry boosts India–Iran cooperation.
- India may resume Iranian oil imports if sanctions ease.

Future Potential

- Secure long-term oil and gas contracts for energy stability.
- Strengthen Eurasian connectivity via INSTC and Chabahar.
- Promote cultural diplomacy through tourism and academic exchanges.
- Enhance strategic autonomy via tech, defence, and cyber cooperation.

Conclusion

India–Iran ties combine ancient civilisational links and modern strategic interests. Despite sanctions and regional challenges, Iran remains vital for India's energy security, connectivity, and Eurasian engagement.

25.Adaptive Learning in India: A Path Towards Smarter Education

Introduction

Adaptive Learning tailors pace and content to individual students, addressing diverse learning needs; Andhra Pradesh's PAL programme exemplifies this, boosting math performance.

What is Adaptive Learning?

Adaptive Learning is an AI-driven method that tracks student progress, identifies gaps, and offers personalized, gamified learning paths with real-time feedback.

Findings from Andhra Pradesh PAL Study (2025)

In Andhra Pradesh, the PAL programme in 60 govt schools showed students gained 1.9 years of learning, especially in Grades 6–7, via 2×40-min adaptive tablet sessions at $20–25 per student annually.

Why Adaptive Learning Matters for India

- Bridges foundational learning gaps, addressing weak literacy and numeracy.
- Promotes equity by supporting slow and advanced learners, reducing dropouts.
- Low-cost and scalable, aligning with NEP 2020's EdTech vision.
- Offers real-time performance data for teachers, parents, and policymakers.

Government Initiatives Related to Adaptive Learning

- **NEP 2020:** Emphasises use of technology for personalized learning.
- **NIPUN Bharat Mission:** Focus on foundational literacy and numeracy (FLN).
- **DIKSHA Platform:** Digital content for teachers and learners.
- **PM e-VIDYA:** Expanding digital learning during COVID-19.

Global Examples

- **USA:** "DreamBox" and "Khan Academy" widely used for adaptive math learning.
- **China:** EdTech firms like Yuanfudao use AI-driven adaptive tools.
- **OECD Countries:** Blend classroom teaching with adaptive learning platforms.

Challenges in India

- Digital divide limits access to devices and internet.
- Teacher resistance and inadequate training hinder adoption.
- Data privacy and misuse concerns persist.
- Focus mainly on math; other skills neglected.
- Scaling to 15 lakh schools requires massive investment.

Way Forward

- **Blended Learning Model:** Combine adaptive tech with human teachers, not replace them.
- **Localization:** Develop content in Indian languages.
- **Capacity Building:** Train teachers to use adaptive systems effectively.
- **Public–Private Partnerships:** Involve EdTech startups under CSR and government schemes.
- **Monitoring & Evaluation:** Independent assessments like AP PAL should be scaled nationally.

26. The Politics and Ethics of Human Longevity: Transhumanism and Society

Introduction

AI and genetic engineering may extend lifespans beyond 100, raising ethical and social challenges central to transhumanism.

What is Transhumanism?

Transhumanism advocates using technology to overcome biological limits—extending life, enhancing intelligence, and achieving well-being—envisioning a future "post-human" evolution.

Technologies Driving Longevity Research

- **Genetic Engineering: CRISPR and gene editing to slow aging and remove hereditary diseases.**
- **Nanotech & Biomedicine:** Nano-devices repair tissues and combat diseases.
- **AI & Neuroscience:** Maps brain function; potential for digital consciousness.
- **Regenerative Medicine:** Stem cells and organ replacement extend functional lifespan

Arguments in Favor of Radical Longevity

- **Demographics:** Longer productive lives counter aging populations and workforce shortages.
- **Scientific Progress:** Longevity research drives breakthroughs in major diseases.
- **Social Contribution:** Healthy elders stay economically active, easing welfare burdens.

Concerns and Challenges

- **Inequality:** Life-extension tech may favor the rich, deepening social gaps.
- **Ethics:** "Playing God," designer babies, and engineered perfection raise moral concerns.
- **Politics:** Nations may compete militarily and technologically via human enhancement.
- **Environment:** Longer lifespans could strain resources.
- **Society:** Extended life affects family, education, careers, and social roles.

Geopolitical Dimensions

Major powers and tech billionaires are investing in longevity tech, sparking a global "longevity race" with strategic implications.

Posthumanism: Beyond Transhumanism

Posthumanism challenges human exceptionalism, merging humans, machines, and environment to redefine life.

Indian Perspective

India's aging population makes longevity tech appealing for economic relief, but it raises ethical, inequality, and regulatory challenges.

Conclusion

Human immortality tech could transform society, but its pursuit demands ethical, equitable, and sustainable balance—asking not just if we *can*, but if we *should*.

27.Rare Earth Minerals: Strategic Resources of the 21st Century

Introduction

Rare Earth Elements, vital for high-tech, renewable energy, and defense applications, are abundant but hard to extract. China's dominance makes them strategically and geopolitically important.

What are Rare Earth Elements (REEs)?

REEs are 17 metallic elements, classified as Light (LREEs: La, Ce, Nd, Pr, Sm) and Heavy (HREEs: Tb, Dy, Yb, Y, Eu, etc.), abundant in the crust but rarely in mineable concentrations.

Uses and Applications

REEs power clean energy (EVs, wind, solar), electronics (smartphones, LEDs), defense (missiles, radars), medical tech (MRI, drugs), and industrial uses (catalysts, ceramics).

Global Distribution and Reserves

- China holds 44% of global REE reserves and dominates production (66%) and exports (~30%).
- Brazil (17%) and India (7%) have notable reserves; U.S., Australia, and Russia hold 5–6% each.
- Other producers include the U.S. (13% output), Myanmar (9%), and Australia (5.6%).
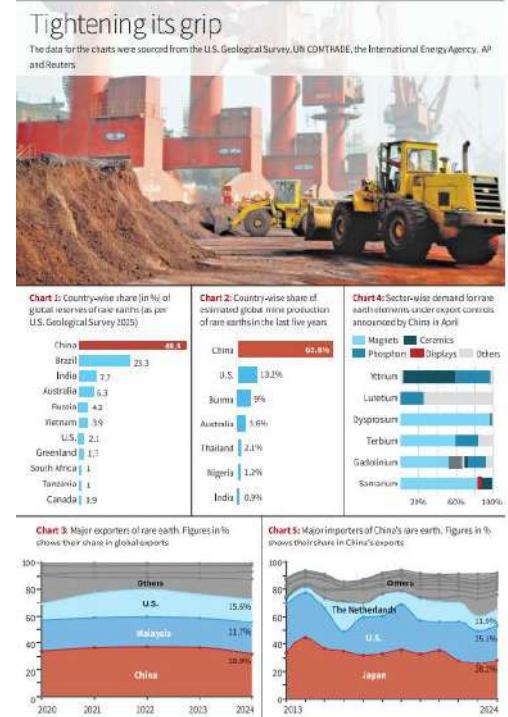
China's Dominance and Strategy

- China controls REE mining, refining, and exports, dominating global supply chains.
- It wields geopolitical leverage, restricting exports (e.g., seven critical REEs in 2024).
- Major importers, including India (75% REEs), U.S., Japan, and EU, depend heavily on China.

India and Rare Earths

- India has 7% of global REE reserves (monazite sands) but produces only 0.9% due to limited refining capacity.
- IREL manages extraction; private involvement is minimal.
- Challenges: high costs, radioactive monazite, and lack of advanced processing and magnet industries.

Challenges in Rare Earth Sector

Challenges: environmental hazards, costly/refinement barriers, China dependence, and export restrictions.

Way Forward for India

Strategies: boost exploration, develop refining tech, build strategic reserves, and integrate REEs into domestic industries.

Conclusion

Rare Earth Elements are strategic assets influencing geopolitics and technology. India's reserves offer opportunities, but limited processing capacity means building a strong domestic ecosystem is key for energy security, economic growth, and strategic autonomy.

28.The Vice-President of India: Role, Election, and Significance

Introduction

The Vice-President, India's second-highest constitutional office, serves as Rajya Sabha Chairman and presidential successor, ensuring legislative balance and governance continuity.

Constitutional Provisions

Article 63 establishes the Vice-President; Articles 64–71 cover election, qualifications, term, powers, and removal (Part V, Chapter I).

Election of Vice-President

Vice-President of India (Election Overview): Elected by an **Electoral College of all MPs (including nominated members)** through **proportional representation via STV**. **Eligibility:** Indian citizen, ≥35 years, Rajya Sabha qualification, no office of profit. *Example:* In 2025, **C.P. Radhakrishnan** won with 452 votes vs 300, reflecting NDA's parliamentary majority.

Comfortable victory
Radhakrishnan won by a margin of 152 votes, as 98.2% of the total electorate, comprising both Houses of Parliament, cast their ballot

Full electoral college
788 245 (RS) 543 (LS)

Present strength of electoral college
781 239 (RS) 542 (LS)

Number of ballots cast
767 752 (Valid votes) 15 (Invalid)

First preferential votes secured
752 452 (C.P. Radhakrishnan) 300 (B. Sudershan Reddy)

C.P. Radhakrishnan
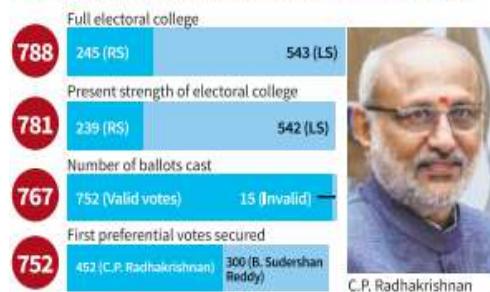
Oath and Term

Term & Administration: Vice-President is **administered by the President**, serves **5 years** (continues until successor assumes office), and is **eligible for unlimited re-election**.

Removal of Vice-President

- Can be removed by a **resolution of Rajya Sabha** passed by a majority and agreed to by Lok Sabha.
- Requires **14 days' prior notice**.

Powers and Functions

- Legislative: Ex-officio Chairman of Rajya Sabha, manages debates, orders, and has casting vote in ties.
- Executive: Acts as President temporarily during vacancy or incapacity, without full permanent powers.
- Ceremonial: Represents India at official functions and upholds democratic traditions.

Significance

Ensures governance continuity, balances politics as Rajya Sabha head, resolves legislative deadlocks, and acts as a constitutional backup during President's vacancy.

Challenges & Criticism

Often ceremonial with limited executive powers, mainly manages Rajya Sabha, and VP's political neutrality can be questioned in polarized periods.

Way Forward

- Emphasize VP as a **non-partisan Rajya Sabha moderator**, strengthen parliamentary democracy, and increase **public awareness** of the VP's constitutional role.

Conclusion

The Vice-President may not wield executive power like the President, but the office is critical to India's **legislative stability and constitutional functioning**. In times of political flux, the Vice-President emerges as the guardian of **parliamentary traditions and constitutional continuity**.

29.Nepal Crisis

Introduction
Nepal, India's key partner, faces political instability and economic challenges, with its stability crucial for regional security and Indo-China balance.

Historical Background
Monarchy ended in 2008 after pro-democracy movements and Maoist insurgency; the 2015 constitution sparked protests from marginalized groups, straining India-Nepal ties.

Dimensions of the Current Crisis
- **Political Instability:** Frequent government changes, party factionalism, and constitutional disputes eroding trust.
- **Economic Fragility:** Heavy reliance on remittances (25% of GDP), post-COVID tourism slump, inflation, unemployment, and energy shortages despite hydropower potential.
- **Social Tensions:** Ethnic representation demands (Madhesis, Tharus, Janajatis), youth brain drain, and disaster vulnerability.
- **Geopolitics:** Balances India–Nepal trade/dependence and border issues with growing Chinese influence via BRI, risking over-dependence.
- **Governance & Corruption:** Weak institutions, scandals, and poor public service delivery.

Recent Flashpoints
Border dispute with India (Kalapani-Lipulekh-Limpiyadhura), rising Chinese influence, political instability from party realignments, and economic strain post-COVID and Ukraine war.

Data and Facts
Nepal Economy Snapshot: GDP ~$45B (2024), remittances ~26% of GDP, hydropower potential 10,000 MW by 2030, population ~30M, India accounts for ~60% of trade.
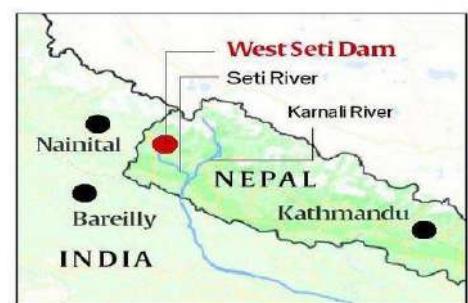
Implications for India
Security risks from instability, strategic challenge from China, hydropower cooperation potential, people-to-people ties strained, and unresolved border disputes affecting trust.

Way Forward
- **Nepal:** Promote inclusive politics, strengthen institutions, diversify economy, and harness hydropower.
- **India:** Engage sensitively, focus on people-centric projects, deepen economic and hydropower ties, and counter Chinese influence diplomatically.
- **Regional:** Use SAARC/BIMSTEC for energy, disaster, and connectivity cooperation; collaborate on climate and mountain ecosystems.

Conclusion
Nepal's crisis stems from structural issues of representation, economic dependence, and geopolitical pressures. For India, Nepal's stability is vital for regional peace and connectivity. India needs a balanced, sensitive approach, while Nepal must strengthen democracy and institutions.

30.Left-Wing Extremism in India: Challenges and Way Forward

Introduction

LWE/Naxalism is India's major internal security threat, reflecting deep socio-economic and governance deficits.

Historical Background

Origin & Spread: Began in 1967 at Naxalbari (WB) under Charu Majumdar and Kanu Sanyal, inspired by Maoism; spread across the Red Corridor in 20 states, active in 200+ districts by 2010.

Causes of LWE (Structural and Immediate Factors)

- **Socio-Economic:** Land alienation, poverty, exploitation, and lack of livelihoods.
- **Governance Deficit:** Weak institutions, corruption, and slow justice delivery.
- **Identity & Alienation:** Tribal exploitation, cultural neglect, and perception of state repression.
- **Political:** Weak democracy and opportunistic politics in tribal areas.

Impact of LWE

- **Security:** Attacks on forces and civilians, infrastructure destruction.
- **Development:** Investment deterrence, disruption of education and welfare schemes.
- **Humanitarian:** Civilian casualties, parallel courts undermine democracy.
- **International:** Cross-border Maoist links, risk of arms smuggling.

Government Response

- **Security:** Operation Green Hunt, CRPF CoBRA, SAMADHAN Doctrine.
- **Development:** Aspirational Districts, IAP, RRP-LWE.
- **Legal:** UAPA, NIA.

Challenges Ahead

Bastar & Gadchiroli remain LWE hotspots; unresolved land/displacement issues; human rights concerns; Maoists use guerrilla tactics, IEDs, and tribal recruitment.

Way Forward

Targeted security with minimal collateral damage; simultaneous infrastructure & welfare development; empower local governance; implement Forest Rights & PESA Acts; promote dialogue, rehabilitation, and skill-based employment.

Conclusion

Left-Wing Extremism is both a socio-economic and governance issue. Declining violence shows the success of India's "Security + Development" strategy, but lasting peace needs trust-building, tribal empowerment, and a state seen as a source of justice and opportunity.

31.Literate States in India – Understanding the Concept

Why in News?
Himachal Pradesh declared "fully literate" in 2024–25, joining states/UTs with over 95% literacy, as per Ministry of Education's 95% benchmark.

What is Literacy in India?
Census 2011—read & write with understanding (7+ years); 2023 ULLAS—includes reading, writing, numeracy, digital & financial literacy. **Fully literate:** ≥95% literacy.

ULLAS Programme – India's Path to Full Literacy
ULLAS (Understanding Lifelong Learning for All in Society): Launched 2022 to achieve 100% adult literacy (15+) by 2030 via app and offline teaching, aligning with SDG-4 & NEP 2020.

Skills Taught under ULLAS
Basic literacy & numeracy, life skills, and financial & digital transaction handling.

Certification
Assessment: Adults take FLNAT, certified by NIOS.
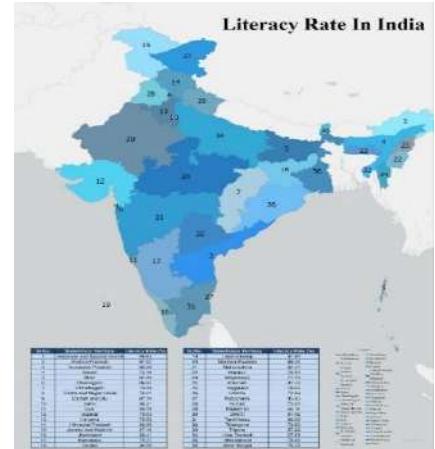
Literacy Status in India – Key Data

- **Census 2011**: 74% overall; Male 80.9%, Female 64.6%; Adult (15+) 69.3%.
- **NSS 2014**: Adult literacy 71%; high performers Mizoram 96%, Goa 90%, Himachal 83%, Tripura 86%.
- **PLFS 2023–24**: National literacy 77.5%; top—Himachal 99.3%, Mizoram 98.2%, Tripura 93.7%, Goa 93.6%; lowest—Bihar 33.1%, Andhra 31.5%, MP 28.9%.

Significance of "Fully Literate" States
Benefits of Literacy: Enhances human capital, social empowerment, economic inclusion, democratic participation, and progress toward SDG-4.

Challenges to Universal Literacy

- Regional disparity: Kerala vs. Bihar gap is still huge.
- Gender gap: Female literacy still lags behind male literacy.
- Quality vs. Quantity: Literacy is often mechanical (reading/writing names) without comprehension.
- Digital Divide: Exclusion of rural and elderly population.
- Dropouts: High school dropout rate affects future literacy sustainability.

Way Forward

- Strengthening adult education via ULLAS.
- Targeted interventions in low-literacy states (Bihar, Andhra Pradesh, Madhya Pradesh, Rajasthan).
- Focus on women literacy through SHGs, microfinance, and vocational training.
- Expanding digital learning platforms for rural areas.
- Integrating literacy with livelihood skills for long-term sustainability.

31.Literate States in India – Understanding the Concept

32.Great Nicobar Island Project: Development, Strategy, and Sustainability

Introduction

The Great Nicobar Project aims to boost trade, security, and connectivity but raises concerns over ecological impact and tribal rights.

Components of the Project

ICTT (14.2M TEUs, near Malacca Strait), greenfield airport (civil & military), 450 MVA power plant, and 16,610-ha modern township.
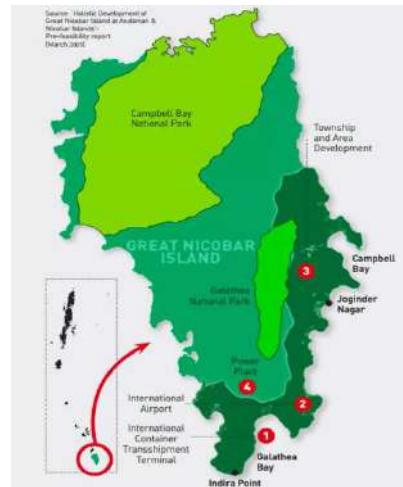
Strategic and Economic Importance

Strategically near Malacca Strait, counters Chinese presence; ICTT boosts trade & jobs; airport enhances dual-use defence and maritime monitoring.

Environmental Concerns

Great Nicobar hosts unique biodiversity (turtles, megapode, coral reefs); 65+ lakh trees to be felled; ₹81 crore for conservation, EIAs, wildlife corridors, and compensatory afforestation—critics argue off-island afforestation may not replace lost ecosystems.

Tribal Rights and Social Dimensions

- Nicobarese & Shompen (PVTGs) face land loss; govt. limits development to 7 sq.km and adds 76.98 sq.km reserve, following Shompen & Jarawa policies, but cultural impact remains a risk.

Challenges

- Balancing development with ecological preservation.
- Effectiveness of mitigation (off-island afforestation).
- Protecting tribal autonomy amid strategic goals.
- Ensuring long-term execution and funding until 2047.

Comparative and Global Context

- **China's South China Sea islands** show how big projects can change the power balance in oceans.
- **Sri Lanka's Hambantota Port** warns of debt and foreign control risks.
- **India's Nicobar plan** is seen as self-reliant and security-focused, but its success will depend on how well it is carried out and whether it includes local communities.

Way Forward

Tribal participation, strong in-situ ecological safeguards, phased monitored execution, and strategic communication framing development as secure & sustainable.

Conclusion

The **Great Nicobar Project** reflects India's Indo-Pacific ambitions, offering economic and defence gains but raising ecological and tribal concerns. Its success depends on balancing **security with sustainability and inclusivity**; otherwise, it risks becoming a case of growth at the cost of environment and culture.

33.Indus Waters Treaty (IWT): India, Pakistan and Strategic Dimensions

Introduction

The **Indus Waters Treaty (1960)** has endured 60+ years of conflict but its fairness and strategic relevance are now debated.

Historical Background

Post-1947 water disputes led to the 1960 IWT, brokered by the World Bank, ensuring equitable Indus River usage.

Key Provisions of the Treaty

Eastern rivers to India, western to Pakistan (India retains limited rights); India uses ~20%, Pakistan ~80%; disputes via PIC → Neutral Expert/Arbitration; World Bank as facilitator.

Strategic and Geopolitical Significance

India gains hydropower rights, strategic leverage, and riparian credibility; Pakistan secures essential water for agriculture but fears flow reduction from Indian projects.
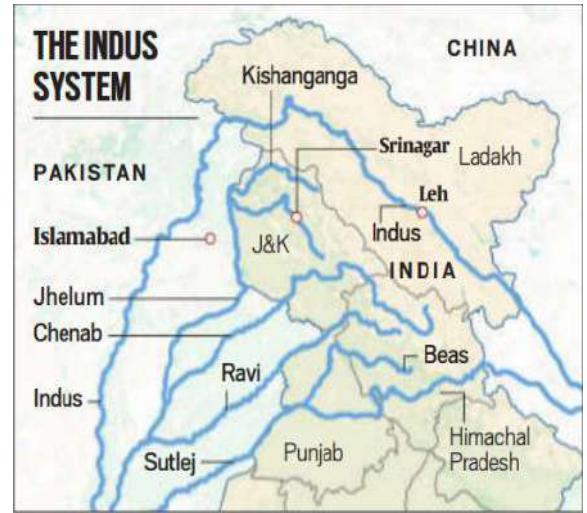
Issues and Criticisms

Perspectives on IWT: India views it as overly generous to Pakistan, limiting its water use; Pakistan fears treaty violations, flow manipulation, and links water to security.

Recent Developments

India has periodically challenged the IWT—post-terror attacks (2016, 2019), sought 2023 modifications, and suspended it in 2025—while climate change heightens water-sharing concerns.

Challenges Ahead

1. **Rising Water Demand:** Both countries face growing agricultural and energy needs.
2. **Climate Change:** Melting glaciers threaten long-term river flow patterns.
3. **Trust Deficit:** Regular disputes on Indian hydro projects deepen suspicion.
4. **Geopolitical Rivalry:** Kashmir issue further complicates cooperation.

Way Forward

- **Revisit and Update Treaty:** Reflect new realities like climate change and population pressure.
- **Strengthen Indus Commission:** Greater transparency in data sharing.
- **Promote Joint Projects:** Hydropower, flood management, disaster relief cooperation.
- **Depoliticize Water Issues:** Prevent water from being weaponized in conflicts.

Conclusion

The Indus Waters Treaty reflects uneasy India-Pakistan cooperation—vital for Pakistan's survival and a test of India's restraint—yet needs modernization to tackle climate change and regional tensions while keeping water a means of cooperation, not conflict.

34. Shipbuilding Sector in India – A Strategic Pillar of Blue Economy

Introduction

India, with 7,500 km coastline, aims to grow shipbuilding from <1% global share to Top 10 by 2030 and Top 5 by 2047 under its Blue Economy & Maritime India Vision 2030.

Historical Context

Advanced in ancient India (Lothal, Cholas), hubs in medieval Surat & Mumbai, colonial Bombay Dockyard supplied British Navy; post-independence focused on defence, lagging commercially.
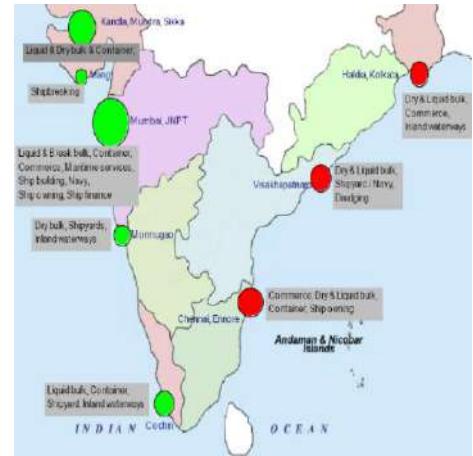
Current Status of Shipbuilding in India

16th largest maritime nation; maritime sector ~4% GDP; <1% global shipbuilding (~$200B), 18M DWT; 12% of world seafarers; key shipyards—Cochin, Hindustan, Mazagon Dock (public), L&T, ABG, Bharati (private).

Government Measures to Promote Shipbuilding

- **Financial Support:** Shipbuilding Finance Assistance, Shipbreaking Credit Note, up to 30% subsidy for green ships.
- **Development Funds & Missions:** $3B Maritime Development Fund (45% for shipbuilding/repair), National Shipbuilding Mission.
- **Policy & Infrastructure:** 100% FDI in shipbuilding/repair, $82B port investment by 2035, coastal shipbuilding clusters.

Shipbuilding Goals & Significance:

- **Targets:** Top 10 by 2030, Top 5 by 2047; maritime GDP 4→12%; seafarers 12→25%.
- **Significance:** Drives economic growth, defence strength, geopolitical leverage, trade & energy security, and green shipping.

Challenges in India's Shipbuilding Sector

High costs, technology gaps, limited infrastructure, global competition (China 40%+), skilled manpower shortage, and regulatory delays.

Global Context

- **China**: World leader with ~40% market share; heavy state subsidies.
- **South Korea & Japan**: Leaders in high-tech ships (LNG carriers, container ships).

Way Forward

1. **Boost Competitiveness** – Tax incentives, cheaper credit, and faster clearances.
2. **Technology Push** – Invest in **green hydrogen ships, LNG carriers, and autonomous vessels**.
3. **Public-Private Partnerships (PPP)** – Expand private shipyards and global tie-ups.
4. **Skill Development** – Expand training under DG Shipping and Maritime Universities.
5. **Export Promotion** – Make India a hub for **ship repair, recycling, and green shipbuilding**.
6. **Regional Strategy** – Align shipbuilding growth with **Sagarmala** and **Make in India**.

35.India–Mauritius Ties: Strategic, Cultural and Geopolitical Dimensions

India and Mauritius share historical, cultural, and strategic ties, strengthened by economic, maritime, and people-to-people cooperation in the Indian Ocean and Indo-Pacific.

Historical and Cultural Foundations

70% of Mauritians are of Indian origin; festivals like Diwali/Holi celebrated; strong emotional and spiritual ties emphasized by leaders' visits.

- **Diplomatic & Political**: Frequent high-level visits; Mauritius key to India's Neighbourhood First policy; maintains strategic autonomy while trusting India.
- **Economic Ties:**
  - Mauritius: 2nd largest FDI source for India.
  - CECPA (2021): India's first African trade pact.
  - $1.1B Indian assistance in last decade; $680M package in 2025.
  - UPI & RuPay introduced; local currency trade planned.
- **Healthcare & Social Development:**
  - 500-bed hospital, AYUSH Centre, veterinary school.
  - Jan Aushadhi Kendra for affordable medicine.
  - Mission Karmayogi modules and educational collaborations (IIT Madras, Indian Institute of Plantation Management).
- **Maritime & Security:**
  - Hydrography agreement (2025) for surveys & EEZ mapping.
  - Maritime domain awareness support and defence infrastructure/training.
  - Support for Mauritius' Chagos Archipelago claim enhances regional influence.

Geopolitical Significance

Mauritius' location aids India's Western Indian Ocean presence; partnership reinforces India as net security provider, counters China, promotes South-South cooperation, and advances Indo-Pacific vision.

Diaspora Connect

70% of Mauritians are of Indian origin; shared languages (Bhojpuri, Hindi, Tamil) and culture strengthen people-to-people engagement.

Challenges in the Relationship

- **Taxation & FDI Concerns**: Amendments in India–Mauritius Double Taxation Avoidance Agreement (DTAA) have affected investment flows.
- **China's Growing Influence**: Mauritius is carefully balancing India and China.
- **Geopolitical Sensitivities**: The **Diego Garcia base** remains a tricky point due to US-UK presence.
- **Dependency Risks**: Mauritius may fear over-reliance on India.

Conclusion

India–Mauritius ties combine civilizational, strategic, and developmental partnership, serving as a gateway to Africa, Indo-Pacific ally, and counter to China under Neighbourhood First and SAGAR.

36.Online Gaming in India: Regulation, Growth, and Challenges

India became the world's largest gaming market in 2023 (568M gamers), prompting innovation and jobs but raising addiction, RMG, and consumer issues, addressed by the 2025 Online Gaming Act.

Constitutional and Legal Context

Legal Framework for Gaming: Betting/gambling under State List (Entry 34); 2025 Act passed via Finance Bill; regulated through IT Act, BNS 2023, IGST Act, and Consumer Protection Act, balancing innovation with social responsibility.

Promotion and Regulation of Online Gaming Act, 2025

- **Objectives:** Promote e-sports/social games, ban harmful RMG, ensure responsible digital gaming.
- **Game Types:** E-sports (skill), online social games (entertainment), online money games (financial stakes).
- **Key Provisions:** Ban RMG advertising/payment; banks barred from RMG transactions; National Regulatory Authority to register, monitor, and handle grievances; penalties—up to 3 yrs/₹1 crore for offering RMG, 2 yrs/₹50L for advertising.

Growth of India's Gaming Industry

Indian Gaming Market: $2.2B (2023) → $8.6B (2028); 40,000+ jobs; $2.8B startup funding; 5G & mobile penetration drive growth; COVID boosted gaming hours and career opportunities.
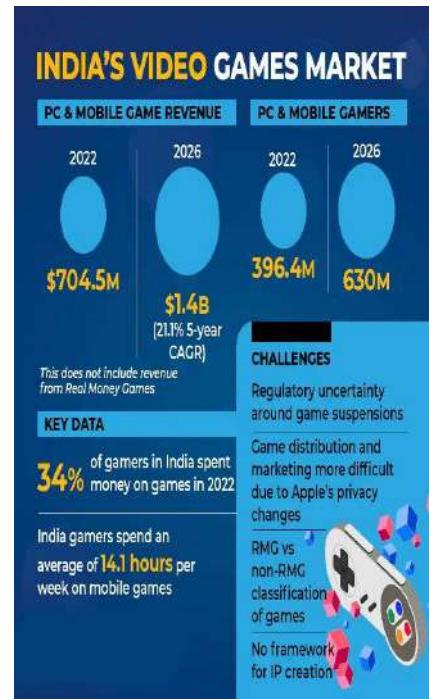
Opportunities

E-sports diplomacy, secure digital payments, skill development, educational gaming, and global leadership in gaming norms.

Concerns

Fragmented laws, addiction & mental health issues, financial losses (~₹20,000 crore/yr), cybersecurity breaches, illegal gambling/money laundering, and misleading ads/celebrity endorsements.

Way Forward

1. **Clear National Framework**: Harmonise central and state laws on online gaming.
2. **Age Gating & Spending Limits**: Mandatory restrictions to curb addiction.
3. **Gaming Literacy Campaigns**: Public awareness on risks of money games.
4. **Dedicated Gaming Zones/Incubators**: Boost local game development.
5. **Global Cooperation**: Anti-money laundering efforts and regulation of offshore betting.
6. **Balanced Approach**: Promote **positive gaming (e-sports, ed-tech, social games)** while curbing harmful money games.

Conclusion

The **Promotion and Regulation of Online Gaming Act, 2025** is a landmark attempt to **strike a balance** between encouraging innovation and addressing risks of addiction, fraud, and money laundering. With the right mix of **regulation, awareness, and technological safeguards**, India can become not just the **largest gaming market**, but also a **responsible global leader in digital gaming governance**.

37.Ease of Doing Science in India

Introduction

India, despite being in the **top five in 29 technologies**, struggles with attracting and retaining talent; the challenge now lies in research quality, innovation ecosystems, and global competitiveness rather than numbers.

Current Status of Indian Science

India contributes 2–2.5% of top-cited research, excels in AI, space, and quantum tech, but lags in patents, commercialization, and global faculty retention.

Key Challenges

Low compensation & career prospects drive brain drain; fragmented, non-mission-oriented ecosystem; R&D funding (~0.7% GDP) is low; bureaucratic hurdles, weak IP culture, and lack of focused research organisations impede progress.

Global Comparisons

- **China**: Produced over **twice as many high-impact research papers** as India, fueled by mission-mode investments and global recruitment drives.
- **USA**: Built talent hubs through NIH, NSF, and strong industry-academia collaborations.
- **EU**: Established the "Marie Curie Fellowships" to retain global researchers.

Positive Developments in India

- **National Research Foundation (NRF)** – ₹1.1 lakh crore planned over five years; aims to fund large-scale science missions.
- **National Quantum Mission (2023)** – ₹6,000 crore investment for quantum technologies.
- **Atal Innovation Mission & Start-up India** – nurturing innovation-driven entrepreneurship.
- **Gati Shakti & BharatNet** – enabling digital infrastructure for science.
- **Examples of Breakthroughs**:
    - IIT Delhi & DRDO achieved **1 km quantum entanglement-based free-space secure communication**.
    - ISRO's success in **Chandrayaan-3 & Aditya-L1** missions highlighted indigenous capabilities.

Way Forward: Reforms Needed

- **Talent:** Competitive pay, fellowships, tenure-track, research autonomy.
- **FROs:** Permanent institutions in strategic domains.
- **Industry–Academia:** PPPs, tech-transfer offices.
- **Funding:** R&D 2% GDP, incentivize private investment.
- **Ease of Science:** Cut red tape, simplify IP/procurement, develop research hubs.

Conclusion

Science underpins national competitiveness and sovereignty, and without reforms India risks staying a consumer of knowledge. Strengthening **talent, funding, mission-driven FROs,** and **industry linkages** can ensure true "**Ease of Doing Science**" and position India as a **global science power by 2047**.

38.Manipur: Understanding the Crisis and the Road to Peace

Introduction

Manipur's 2023 Meitei–Kuki clashes caused 250+ deaths, 57,000 displaced, ethnic divides, with PM Modi's 2025 visit highlighting internal security, federalism, and Act East policy concerns.

Historical and Social Background

Manipur Ethnic Context: Meiteis (~53%, valley, Hindu) vs. Kuki-Zo/Nagas (hill tribes, Christian); historical land/resource conflicts; Meitei ST status demand opposed by Kukis.

Dimensions of the Current Crisis

- **Humanitarian:** 57,000+ displaced in 280 camps; slow resettlement (~5,000 returned); poor living conditions, trauma.
- **Security:** Hardened ethnic buffer zones; armed Meiteis (valley) & Kukis (hills); restricted movement; SoO mistrust persists.
- **Political:** President's Rule since Feb 2025; demand for elected govt rising; centre cautious.
- **Ethnic:** Dialogue deficit; Kuki demand separate UT; Meitei fear territorial loss; Naga groups uneasy.
- **Border/Geo:** 398 km Myanmar border; FMR scrapped, fencing opposed by Kukis/Nagas; risks to Act East Policy & local economy.
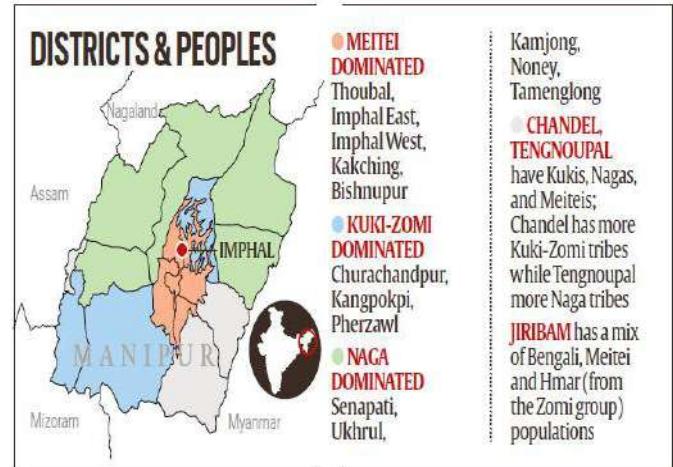
Broader Implications

- **Internal Security:** Risk of insurgency, youth radicalisation.
- **Federalism:** Prolonged President's Rule vs. risky early elections.
- **Development:** Trade/travel disruptions deter investment and tourism.
- **Foreign Policy:** Border fencing and instability threaten Indo-Myanmar ties and Act East projects.

Way Forward

1. **Humanitarian:** Fast-track rehabilitation, livelihoods, education, mental health support.
2. **Confidence Building:** Structured inter-community dialogue; Naga intermediaries.
3. **Security:** Neutral armed forces; curb illegal arms.
4. **Political:** Phased return to elected govt; empower Autonomous District Councils.
5. **Border Management:** Smart fencing, protect cultural rights.
6. **Long-Term:** Education for shared identity; youth employment to prevent militancy.

Conclusion

The Manipur crisis goes beyond law and order, encompassing **humanitarian, political, ethnic, and geopolitical challenges**. PM Modi's visit is symbolic; the real task is restoring **trust and dignity among communities**. A peaceful Manipur is crucial for **India's unity, security, and Act East goals**.

39. Supreme Court Case Pendency: A Growing Challenge for Justice Delivery in India

Introduction

As of August 2025, India's Supreme Court faces a record 88,417-case backlog despite 34 judges, highlighting urgent access-to-justice concerns.

Present Status of Pendency

Supreme Court Pendency (Aug 2025): 88,417 total (69,553 civil, 18,864 criminal); new filings outpace disposals despite 80–88% disposal rate, driving backlog growth.

Why Case Pendency is Rising?

- New filings exceed disposals (e.g., Aug 2025: 7,080 filed vs 5,667 disposed).
- Limited judicial capacity (34 judges, vacancies worsen load).
- Heavy daily caseload (100–150 cases/judge).
- Court recesses and partial working days.
- COVID-19 delays caused backlog "pile-up."
- Systemic issues: excess SLPs, poor case management, limited tech adoption.

Delayed justice

The Supreme Court continues to battle the problem of pendency of cases

Current pendency **88,417** cases, an all-time high

Civil cases **69,553**

Criminal cases **18,864**

AUGUST DATA	2025 ANNUAL DATA
Cases instituted **7,080**	Cases filed **52,630**
Cases disposed **5,667**	Cases disposed **46,309** (nearly 88%)
Disposal rate **80.04%** (of cases in August)	**Judicial strength:** The court is currently functioning with its full sanctioned strength of 34 judges

Consequences of Rising Pendency

Impacts of SC Backlog: Delayed justice for citizens, economic slowdown, loss of public trust, and judge burnout affecting judgment quality.

Steps Taken So Far

SC Measures to Reduce Backlog: Recess working, rapid judge appointments, tech integration (e-filing, NJDG), and special benches for fast-track disposal.

Way Forward

- **SC Backlog Solutions:**
- **Judicial Capacity:** Increase judges beyond 34; maintain zero vacancies.
- **Case Management:** Fast-track benches, strict timelines, limit adjournments.
- **Technology:** AI scheduling, digitization, virtual hearings.
- **SLP Filtering:** Reserve SC for constitutional/national importance; routine cases to High Courts.
- **Lower Judiciary:** Fill 5,000+ vacancies; reforms to cut inflow.
- **ADR:** Promote mediation, arbitration, Lok Adalats, Gram Nyayalayas.

Conclusion

The pendency crisis in the Supreme Court reflects deeper structural issues in India's judiciary. Despite measures like vacation benches, filling vacancies, and adopting technology, the backlog keeps rising. A comprehensive approach—expanding capacity, systemic reforms, and better use of technology—is essential to uphold the principle of **timely justice under Article 21**. Pendency is not just a matter of numbers but of ensuring the **credibility of justice in the world's largest democracy**.

40. Global Plastic Pollution Crisis: An Escalating Environmental Emergency

Introduction
Plastic's durability and ubiquity have turned it into a major global threat to ecosystems, health, and sustainable development.

Current Status of Global Plastic Pollution
Plastic Waste Snapshot: Production doubled to 460 MT (2000–2020); only 9% recycled, 50% landfilled, 22% mismanaged; by 2050, ocean plastic may outweigh fish.

Global Plastic Waste

Recent statistics indicate that plastic waste is approximately 30% of all waste produced worldwide.

The world generated **242 million tonnes** of plastic waste, 12% of all municipal solid waste.

Why is Plastic Pollution a Grave Problem?
- **Non-Biodegradable:** Persists for centuries; forms micro- and nanoplastics contaminating air, soil, water, food.
- **Ecological:** Ubiquitous; kills marine life; damages coral reefs and wetlands.
- **Human Health:** Microplastics in water, food, blood; linked to hormonal and respiratory issues.
- **Climate:** 3.4% of GHG emissions; could reach 19% of carbon budget by 2040.
- **Economic:** $19B annual marine ecosystem damage; affects tourism, fisheries, livelihoods.

Global Efforts to Address Plastic Pollution
Global & National Measures: UN aims for a legally binding plastic treaty by 2024 and 80% waste reduction; EU bans single-use plastics; India and China impose phased restrictions.

Challenges in Tackling the Crisis
1. Reliance on fossil fuels for plastic production
2. Very low recycling rate (~6%)
3. Inadequate waste management infrastructure
4. High demand for cheap, single-use plastics
5. Weak and fragmented legal/policy frameworks

Solutions and Way Forward
- **Government:** Ban single-use plastics, enforce EPR, levy recycling incentives, promote biodegradable alternatives.
- **International:** Global binding treaty, tech transfer, financial support for waste management.
- **Industry:** Innovate eco-friendly packaging, adopt circular economy practices.
- **Individuals:** Refuse single-use plastics, use sustainable alternatives, join clean-ups.
- **Media & Civil Society:** Raise awareness, hold governments and companies accountable.

Conclusion
Plastic pollution is a global environmental, health, and developmental crisis. Urgent collective action—through global cooperation, strong policies, corporate accountability, and individual responsibility—is needed to prevent it from defining the Anthropocene and endangering future generations.

41. Women, Work and India's Growth: Why Better Gender Data Matters

Introduction

India's $30 trillion 2047 goal hinges on inclusive growth, but with women contributing just 18% to GDP and rising rural female youth unemployment, gender-focused policies are crucial to harness the demographic dividend.

India's Gender and Employment Paradox

- Women contribute only 18% to GDP, with 196 million employable women outside the labour market.
- Female LFPR: 41.7% overall, 21.4% for youth; WPR stagnant at 17.6%.
- Most employed women work in informal, low-paid, or unrecognized jobs.

PLFS August 2025: The Female Youth Job Crisis

- Young women face disproportionate unemployment: Urban UR 25.7%, Rural UR 30.2% vs. male rural 14.3%.
- Overall UR fell to 5.1%, but gains largely bypass women, especially in rural areas.

INDIA'S YOUTH UNEMPLOYMENT SITUATION

Note: UR is unemployment rate; figures for 15-29 ages
Source: MoSPI

Why Better Gender Data is Crucial

- Aggregate data hides rising female unemployment.
- Policy gaps persist without gender-disaggregated data.
- UP's WEE Index exposed systemic barriers, guiding targeted employment and infrastructure reforms.

Structural Challenges

- High female dropouts limit employability.
- Employment data ignores job quality and leadership.
- Gender budgeting focuses on welfare, not core sectors.
- Entrepreneurship hindered by credit access despite high skilling enrolment.
- Rural women face 30.2% unemployment due to mobility, social norms, and infrastructure gaps.

Why Closing the Gender Gap Matters

- Boost GDP by closing the gender workforce gap.
- Enable targeted, gender-responsive policies.
- Promote women in non-traditional roles.
- Realize demographic dividend through equal female participation.

Way Forward

- Mainstream gender-disaggregated data and use tools like WEE Index for targeted reforms.
- Promote women's employment in core sectors with better maternity, safety, and childcare support.
- Boost women entrepreneurship through credit access, market linkages, and procurement quotas.

Conclusion

India's growth risks leaving young women behind; gender-disaggregated data, targeted policies, and tools like UP's WEE Index are key to a $30 trillion economy.
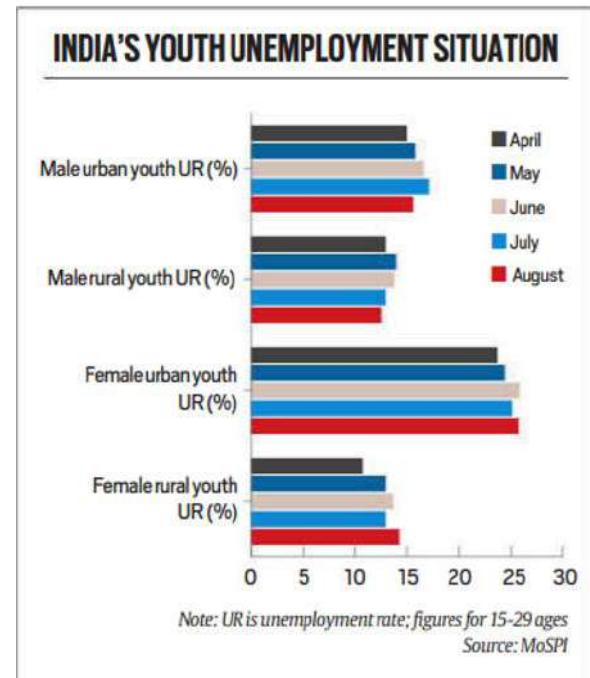
42. Supreme Court's Order on Waqf (Amendment) Act, 2025

Background

The Waqf (Amendment) Act, 2025 faced 65 SC petitions; on 15 Sept, the SC stayed select controversial provisions pending review.

What is Waqf?

- Waqf: Permanent Muslim endowment for religious or charitable purposes.
- Ownership: Vests in God; cannot be sold or inherited.
- Management: Overseen by a mutawalli to use income for designated causes.

Key Amendments in 2025 Act

- Abolition of "Waqf by Use": Waivers now need registration and documents.
- Non-Muslim Inclusion: One-third representation, including women, in Waqf Boards.
- Collector's Powers: Can investigate and suspend wrongly declared waqf properties.
- Five-Year Rule: Only properties dedicated within five years of ownership qualify.
- Limitation Act: Restricts old claims to prevent perpetual litigation.

Why Was the Amendment Challenged?

1. **Religious Freedom:** Non-Muslim inclusion seen as infringing Article 26 rights.
2. **Five-Year Rule:** Criticised as arbitrary, affecting historic waqf properties.
3. **Collector's Powers:** Risk of misuse and violation of due process.
4. **Autonomy Debate:** Viewed by some as state interference in minority institutions.

Supreme Court's Interim Order (15 Sept 2025)

- **Stayed:** Collector's suspension powers, one-third non-Muslim board composition, five-year waqf creation rule.
- **Not stayed:** Rest of the Act, including limitation provisions.
- **Reason:** Prima facie violation of freedom of religion (Arts. 25 & 26) and separation of powers.

Constitutional & Governance Dimensions

- **Article 25 & 26**: Right to practice and manage religious affairs.
- **Article 14**: Equality before law – critics said non-Muslim inclusion may breach religious autonomy.
- **Judicial Review**: Reinforces SC's role as guardian of minority rights.
- **Governance Angle**: Balancing transparency/accountability in waqf management with **minority rights protection**.

Wider Implications

- **Minority Rights:** Limits of state intervention in religious endowments.
- **Federalism:** Potential central–state conflicts over waqf management.
- **Property Law:** Clarifies ownership and protects against encroachments.
- **Social Harmony:** Needs careful handling to prevent communal tensions.

Promote waqf reforms via transparent auditing, community consultation, balanced legislation, and digital record-keeping while respecting religious autonomy.

43. India's First Bamboo-Based Ethanol Plant: A Step Towards Green Energy Transition

Introduction

India launched the world's first bamboo-based bioethanol plant in Assam, advancing renewable energy, ethanol blending, and Net-Zero 2070 goals under Atmanirbhar Bharat.

What is Bamboo-Based Ethanol?

- Ethanol, usually from sugarcane or maize, can blend with petrol to cut fossil fuel use.
- Golaghat plant uses green bamboo, offering a sustainable, non-food, zero-waste biofuel alternative.

Key Features of the Golaghat Plant

The Golaghat bamboo bioethanol plant in Assam produces ethanol, acetic acid, furfural, and green power using zero-waste technology, sourcing 6 lakh tonnes of bamboo from Northeast India.

Significance of the Project

- **Energy Security:** Reduces oil imports; supports National Bio-Energy Mission and 20% ethanol blending target.
- **Economic Benefits:** Boosts Assam/Northeast economy; creates jobs in bamboo supply chain.
- **Environmental Gains:** Renewable bamboo reduces carbon emissions; supports climate targets.
- **Social Impact:** Empowers tribal communities; ensures stable bamboo market; avoids food-vs-fuel conflict.

Challenges Ahead

- **Logistics:** Bamboo is bulky, transportation from remote tribal areas could increase costs.
- **Supply Chain Risks:** Dependence on Northeast states may face disruptions due to floods, insurgency, or infrastructure gaps.
- **Economic Viability:** Higher cost of ethanol from bamboo compared to sugarcane-based ethanol.
- **Policy Consistency:** Need for steady government support and incentives for scaling such projects.

Government Policy Context

- **EBP 2025:** 20% ethanol blending target.
- **Biofuels Policy 2018:** Promotes non-food biofuels (bamboo, crop residues, waste).
- **Make in India/Atmanirbhar Bharat:** Boosts local production, reduces energy imports.

Way Forward

- Strengthen **infrastructure in Northeast India** (roads, storage, bamboo cultivation zones).
- Encourage **research & innovation** in cellulosic ethanol technology.
- Provide **financial incentives** for scaling similar plants in other bamboo-producing states.
- Create **Bamboo Development Boards** linking farmers with bioethanol plants to ensure a sustainable supply chain.

44. Anticipatory Bail and the SC/ST (Prevention of Atrocities) Act, 1989

Introduction

The SC in *Kiran vs Rajkumar Jivaraj Jain* (2025) upheld Section 18 of the SC/ST Act, barring anticipatory bail, reinforcing social justice over pre-arrest liberty in caste-based offences.

What is Anticipatory Bail?

- **Anticipatory bail:** Pre-arrest protection under CrPC Section 438.
- **Purpose:** Safeguard personal liberty from arbitrary arrest.
- **SC/ST Act:** Section 18 bars it if a prima facie atrocity case exists.

Why Anticipatory Bail is Barred in SC/ST Cases

- **Victim protection:** Prevents accused from intimidating marginalized victims or witnesses.
- **Legislative intent:** Section 18 ensures unhindered prosecution of caste crimes.
- **SC precedents:** Ram Krishna Balothia (1995), Vilas Pawar (2012), Prathvi Raj Chauhan (2020) upheld bar on anticipatory bail once a prima facie case exists.

The Case in Spotlight: *Kiran vs Rajkumar Jivaraj Jain*

In a 2024 Assembly election case, a SC complainant alleged caste-based assault and intimidation. While the trial court denied anticipatory bail, the Bombay High Court granted it, citing political motives. The Supreme Court reinstated the Section 18 bar, cancelled bail, ruled that electoral retaliation and public insults against SC/ST voters fall under the SC/ST Act, and warned High Courts against holding "mini-trials" at the bail stage.

Key Features of SC/ST (PoA) Act, 1989

- Covers caste-based abuse, violence, sexual exploitation, social/economic boycotts, land loss, and denial of services.
- Special Courts, witness protection, and compensation schemes ensure speedy justice and rehabilitation.
- 2015 & 2018 amendments broadened offences and held public servants accountable for negligence.

Constitutional and Social Justice Dimensions

- SC/ST Act upholds Articles 14, 17, and 21, ensuring equality, abolition of untouchability, and protection of life and dignity.
- It also safeguards democratic rights by preventing caste-based electoral retaliation.

Criticism and Concerns

- **Misuse Concerns**: Critics allege political or false cases.
- **Judicial Dilemma**: Balancing prevention of misuse with protection of victim dignity.
- **2018 Dilution & Reversal**: *Subhash Kashinath Mahajan* allowed preliminary inquiry; overturned by 2018 amendment restoring strict provisions.

Way Forward

Enforce the SC/ST Act swiftly, sensitize authorities, balance victim protection with fair probes, and ensure compensation and witness support.

45. Why the Himalayas Receive Heavy Rainfall

Introduction

The Himalayas face rising cloudbursts, floods, and landslides, with intensifying and unpredictable monsoon rains driven by geography and climate change.

Geographic and Meteorological Factors

- **Orographic lifting:** Monsoon winds rise over Himalayas → rapid cooling → intense local rainfall (e.g., Udhampur 630 mm/24 hrs).
- **Steep slopes & narrow valleys:** Quick runoff → flash floods, debris flows.
- **High-altitude convection:** Warm moist air rises → cumulonimbus clouds → sudden cloudbursts.
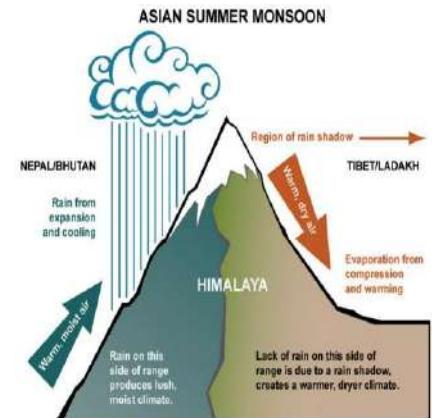
Monsoon Dynamics

- **Bay of Bengal lows:** Monsoon depressions move NW → 2025 saw 34% (Aug) & 67% (Sep) excess rainfall in NW India.
- **Western disturbances:** Winter rain/snow systems interact with monsoon → erratic, heavy Himalayan rainfall.

Why Hilly Regions Face Higher Disaster Risks

In 2025, Himalayan steep slopes amplified rainfall into landslides and flash floods, destroying villages in Uttarakhand and HP, while river blockages triggered sudden downstream flooding.

Role of Climate Change

Rising temperatures, shifting western disturbances, and a weakened jet stream intensify Himalayan rainfall, while fragile geology, deforestation, and construction worsen floods and landslides.

Why Cloudbursts are Common in Himalayas

The Himalayas' location at the convergence of monsoon and westerly winds, combined with steep slopes that rapidly lift moist air, triggers intense localized downpours, which are further intensified by climate change through higher moisture content and slower-moving storms.

Observation and Forecasting Challenges

Current tools like Doppler radars, rain gauges, and satellites provide limited coverage in the Himalayas, and short-duration cloudbursts offer very little warning time.

Broader Implications

Disaster Management

- State Disaster Management Authorities (SDMAs) must strengthen **early warning, evacuation, and resilient infrastructure**.

Sustainable Development

- Strict regulation of construction, deforestation, and riverbed mining in eco-sensitive zones.
- Promote **eco-sensitive zoning and slope stabilization** projects.

Policy Angle

- NDMA's guidelines on landslides and floods need **region-specific execution**.

46. The Hidden Human Cost of Artificial Intelligence

Introduction

AI's efficiency relies on low-paid "ghost workers" in developing countries who label data and moderate content, facing exploitation and mental stress.

Why Human Labour is Central to AI

- **Data Annotation:** Humans label images, videos, and text for AI training (e.g., identifying objects, traffic signs).
- **Language Models:** Humans correct errors, remove biases, and fine-tune outputs in LLMs like ChatGPT.
- **Content Moderation:** Humans manually label harmful content on social media (hate speech, nudity, violence).

Areas of Human Involvement

- **Data Labelling:** Humans annotate images and videos to teach AI concepts like colors or emotions.
- **Self-Driving Cars:** Human-labelled footage helps AI identify pedestrians, vehicles, and signals.
- **Content Moderation:** Humans review harmful images and texts to ensure platform safety.
- **Voice & Audio Training:** Actors record sounds and movements to make AI voices and avatars realistic.

The Human Cost

- **Low Wages & Insecurity:** Ghost workers in countries like India, Kenya, and the Philippines earn <$2/hour via fragmented gig platforms.
- **Exploitation & Rights Violations:** Workers often unaware of the hiring company; unionizing is suppressed and labour rights unprotected.
- **Mental Health Risks:** Exposure to extreme content and constant surveillance causes PTSD, anxiety, and depression.
- **Digital Slavery:** Workers describe conditions as "modern-day slavery," highlighting exploitation through global legal loopholes.

Ethical and Governance Concerns

1. **Transparency Deficit:** Lack of awareness about who does the work and under what conditions.
2. **Labour Rights Violations:** No minimum wage protections, no job security, and no unionisation.
3. **Mental Health Neglect:** No safeguards for those exposed to disturbing online content.
4. **Global Inequality:** Exploitation disproportionately affects workers in developing countries while profits accrue to tech giants in the Global North.

Way Forward: Balancing Innovation with Human Dignity

- **Stricter Regulations:** International standards for digital labour must ensure fair wages, job security, and dignity of work.
- **Transparency:** Big tech companies should disclose their supply chains of digital labour.
- **Worker Protection:** Mental health support, counselling, and reasonable work deadlines are essential.
- **Ethical AI Development:** Policymakers must treat data labelling and annotation as legitimate work, not invisible "ghost work."
- **Global Labour Governance:** Similar to climate agreements, digital labour rights need global coordination.

47. WTO Agreement on Fisheries Subsidies

Introduction

The WTO Fisheries Subsidies Agreement is the first global trade pact linking environmental sustainability with trade, aiming to curb overfishing and harmful subsidies in line with SDG 14.6.
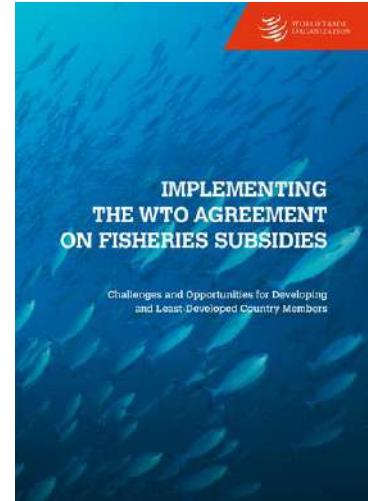
Background

- **Adoption & Entry**: Adopted at WTO MC12 (June 2022) and entered into force in 2024 after two-thirds ratification.
- **Historical Context**: Overexploited fish stocks rose from 10% (1974) to 35.5% (2021); global fisheries subsidies total ~$35B, ~$22B harmful.
- **Rationale**: Subsidies promoting overfishing threaten marine biodiversity, food security, and distort trade.

Key Provisions of the Agreement

- **Prohibited Subsidies:** Bans subsidies for IUU fishing, overfished stocks, and unregulated high-seas fishing.
- **Transparency & Monitoring:** WTO members must report subsidies; a Committee ensures compliance.
- **Support for Developing Countries:** Special treatment, technical/financial assistance via the WTO Fisheries Fund (~USD 18M pledged).

Implementation Mechanisms

- **WTO Fish Fund:** Assists developing nations in sustainable fisheries management.
- **Committee on Fisheries Subsidies:** Provides a platform for dialogue and monitoring.
- **First Call for Proposals (2025):** Members can apply for project grants (deadline 9 October 2025).

Significance

- **Environmental:** Curbs overfishing, restores marine ecosystems.
- **Economic:** Safeguards fishing livelihoods, promotes sustainable income.
- **Food Security:** Ensures protein supply, vital for developing/coastal states.
- **Trade & Multilateralism:** First WTO pact with sustainability at core, boosts trust in global trade system.

Challenges

- **Implementation Challenges:** Hard to monitor IUU fishing; some developing countries lack regulatory capacity.
- **Equity Issues:** Large developed-country fleets drive overfishing, yet small fishers may face penalties.
- **Limited Scope:** Only "worst" subsidies covered; broader overcapacity and overfishing subsidies still under discussion.

Way Forward

- **Ban Overcapacity Subsidies:** Complete second-wave negotiations.
- **Support Developing Nations:** Strengthen WTO Fisheries Fund.
- **Tech & Monitoring:** Use satellites, AI, and digital tools for transparency.

48. Judicial Nudge on Governors' Assent: Resolving Legislative Deadlock

Introduction

Article 200 empowers Governors to assent to State Bills; recent SC rulings (Punjab 2023, TN 2025) set a three-month limit, sparking debates on democracy and separation of powers.

Constitutional Framework of Article 200

- Governor can assent, withhold, return (non-Money Bill), or reserve Bills for President.
- Must act on Council of Ministers' advice (Art. 163).
- Role is constitutional head, not independent executive.

The Debate on Discretion

- Constitution limits Governor's discretion (unlike 1935 Act).
- Judicial rulings (Shamsher Singh 1974; Nabam Rebia 2016; TN 2025) confirm discretion is limited and cannot block legislative will.
- Commissions (Sarkaria 1988; Punchhi 2010): Discretion only in exceptional cases.

Judicial Response: Fixing a Time Limit

- SC mandates Governors/President act on Bills within 3 months to prevent paralysis and uphold democracy.
- Critics view it as judicial overreach; Court cites necessity of filling constitutional gaps (e.g., Maneka Gandhi 1978).

Union's Role and Article 355

- **Article 355:** Union duty to ensure that States are governed in accordance with the Constitution.
- **Implication:** Union could direct Governors to act, if they fail to discharge duties.
- **Practice:** Union has never exercised this power → hence, judiciary steps in.

Constitutional and Political Implications

1. **Positive Outcomes:**
   o Reinforces **democratic accountability**.
   o Prevents misuse of Governor's office as a political tool.
   o Strengthens **cooperative federalism**.
2. **Concerns:**
   o Judiciary stepping into the domain of Constitution-makers.
   o Sets precedent for **judicial legislation**.
   o May strain Centre–State relations further.

Way Forward

- **Legislative Clarity:** Parliament could amend the Constitution to insert a timeline in Articles 200–201.
- **Guidelines for Governors:** Codify the limits of discretion in line with constitutional conventions.
- **Political Maturity:** Both Union and States must respect the spirit of cooperative federalism.
- **Judicial Oversight:** Courts should intervene only in extreme cases to prevent democratic paralysis.

48. Judicial Nudge on Governors' Assent: Resolving Legislative Deadlock

49. Out-of-Pocket Health Expenditure (OOPE) in India

Introduction

- OOPE: Direct payments by individuals for healthcare without insurance or government support.
- Significance: Major source of health financing in India, pushing families into debt and affecting poverty and inequality.

Current Scenario in India

- **OOPE** in India (2021–22) ≈ 39% of total health expenditure (down from 64.2% in 2013–14, NHA).
- **CMIE** shows fluctuations; Household Survey (2022–23) reports 5–7% of consumption, higher in urban areas.
- **Global context**: India ~39%, WHO average 18%, Sri Lanka <10%.

Causes of High OOPE in India

- **Health System Gaps**: Low public spending (~1.9% of GDP) and weak infrastructure push people to private care.
- **Expenditure Nature**: High costs for hospitalization, diagnostics, medicines (~50% of OOPE), and unregulated private providers.
- **Insurance Limits**: Partial coverage; Ayushman Bharat excludes many and co-pays/claim denials persist.
- **Pandemic Impact**: COVID-19 raised OOPE via oxygen, medicines, PPE, and private hospital costs.

Consequences of High OOPE

- **Poverty & Inequality**: OOPE pushes ~5 crore Indians into poverty annually, hitting rural poor, women, elderly, and informal workers hardest.
- **Social Impact**: Children drop out for family income; women delay or avoid healthcare.
- **Health Outcomes**: Affordability barriers cause late or no treatment, raising morbidity and mortality.

Policy Interventions to Reduce OOPE

- **Government Schemes**: Ayushman Bharat (PM-JAY), Health Infrastructure Mission, Jan Aushadhi Kendras, free diagnostics/drugs in some states.
- **Public Spending**: Union Budget 2023-24 ~2.1% of GDP on health.
- **Digital Health**: ABDM with health IDs, telemedicine, e-records to cut repeat costs.
- **Private Sector Regulation**: National Clinical Establishments Act, 2010, yet weakly enforced.

Challenges in Addressing OOPE

OOPE data is inconsistent, with gaps in PM-JAY coverage and weak urban public healthcare, while patient preference for private providers drives costs higher.

Way Forward

Reducing India's high OOPE demands stronger public healthcare, universal coverage, affordable medicines, and preventive care, ensuring equity, dignity, and progress toward SDG-3.
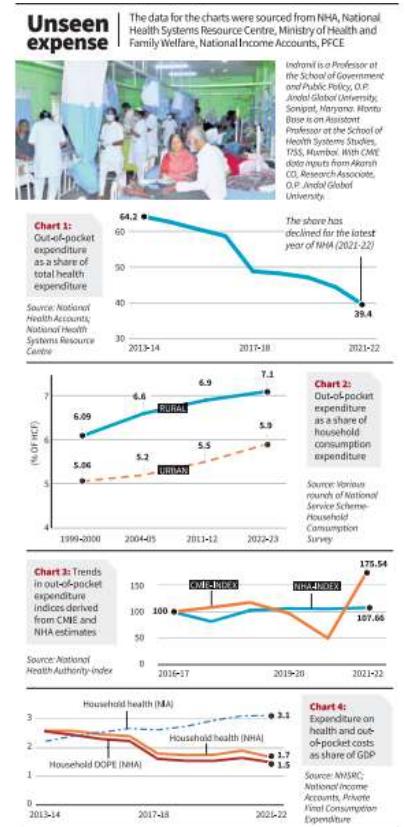
50. Bima Sugam Digital Insurance Marketplace: Towards Insurance for All

Introduction

India's low insurance penetration (4.2% of GDP) led IRDAI to launch Bima Sugam in 2025, a unified digital platform aiming for universal coverage by 2047.

Background: The Bima Trinity

Bima Trinity, IRDAI's strategy to boost insurance, comprises Bima Sugam (digital marketplace), Bima Vistaar (affordable bundled products), and Bima Vahak (women-led distribution) to ensure availability, affordability, and accessibility.

Bima Sugam: Concept and Launch

Bima Sugam, launched by BSIF under IRDAI in Hyderabad, is a phased digital platform connecting insurers, intermediaries, and customers for information, transactions, and claims.

BIMA SUGAM – INDIA'S UPI MOMENT FOR INSURANCE

VISION

The Indian government and IRDAI aim to create Bima Sugam, a unified digital marketplace for insurance providing one-stop access to policies, renewals, claims and more.

KEY FEATURES

- Digital locker (e-Bima account) for all policies
- Seamless e-KYC with Aadhaar, PAN & DigiLocker
- Real-time claim processing
- Integration with ABHA IDs & Account Aggregators
- Neutral ownership by insurers (life & general)

POTENTIAL IMPACT

Part of the "Bima Trinity" strategy for "Insurance for All 2047" Bima Sugam has potential to democratize insurance

Key Features of Bima Sugam

- **Unified Marketplace**: Single platform for all insurance types; enables purchase, renewal, management, and claims with secure digital policy storage.
- **Transparency & Low Cost**: Minimal fees; comparative policy analysis for informed choices.
- **End-to-End Services**: Handles distribution, claims, grievance redressal, and policy servicing.
- **DPI Approach**: Inspired by UPI/India Stack; promotes interoperability and common insurance infrastructure.

Range of Offerings

- **Life Insurance**: Term plans, savings policies, annuities, pensions, ULIPs.
- **Health Insurance**: Individual, family floater, wellness covers, critical illness.
- **Motor Insurance**: Third-party liability, own damage, comprehensive policies.
- **Travel & Accident Insurance**: Domestic and international travel, personal accident covers.
- **Business & Agriculture Insurance**: Property, marine, crop, and industry-specific solutions.

Benefits and Significance

Bima Sugam offers transparent, affordable insurance to customers, lowers costs for insurers, and boosts rural coverage and financial inclusion.

Challenges Ahead

Challenges include digital divide and awareness gaps, integration hurdles for insurers, and ensuring data security.

Way Forward

- **Phased implementation** to allow smooth onboarding.
- **Strong cybersecurity protocols** under Data Protection Act, 2023.
- **Integration with Jan Dhan, Aadhaar, and Mobile (JAM Trinity)** for last-mile reach.
- **Capacity building** of intermediaries through Bima Vahak.
- **Public awareness campaigns** to instil trust and encourage uptake.

51. Saudi Arabia–Pakistan Defence Pact: Strategic Shift in Regional Security

Introduction

Saudi Arabia and Pakistan signed a mutual defence pact, establishing a collective security alliance amid waning U.S. guarantees.

Historical Background of Saudi–Pakistan Defence Ties

Saudi-Pakistan military ties date back decades, with Pakistani troops in the 1960s, support during the 1979 Grand Mosque crisis, and a 1982 security cooperation agreement covering training, advisory roles, and arms sales. Pakistan has long trained the Royal Saudi Air Force, while Riyadh has been a key arms buyer, providing financial and energy support, making the recent pact an upgrade of this longstanding relationship.

Key Features of the 2025 Defence Pact

- **Mutual defence**: Aggression against one counts as aggression against both.
- Joint military training and exercises institutionalized.
- **Deterrence**: Signals unity against regional threats (Iran, Houthis).
- **Financial support**: Saudi investments and defence funding bolster Pakistan.
- **Pan-Islamic role**: Pakistan positioned as a security guarantor in the Muslim world.

India's Response

- MEA acknowledges long-standing Saudi–Pakistan ties and will monitor regional security implications.
- India maintains strong Saudi relations: $43 bn trade (2023–24), major crude imports, strategic partnerships (2006–2019), and crisis diplomacy support.
- Pact not seen as immediately hostile, but India stays vigilant regarding military consequences.

Challenges and Uncertainties

- **India's Concerns**: Possibility of enhanced Pakistan military capability through Saudi funding.
- **Fragile Regional Stability**: Could escalate arms race with Iran.
- **Balancing Act for Riyadh**: Maintaining neutrality in Indo-Pak disputes while deepening defence with Islamabad.
- **Global Reactions**: U.S. may see this as erosion of its traditional influence in West Asia.

Way Forward for India

- **Strategic Engagement with Saudi Arabia**: Continue strengthening trade, investment, and energy ties.
- **Multi-Alignment Policy**: Engage both Riyadh and Tehran to prevent any hostile alignment.
- **Defence Diplomacy**: Expand naval and counter-terror cooperation with Gulf states.
- **Monitoring Mechanisms**: Assess implications of Pakistan's access to advanced weaponry.

Conclusion

The Saudi–Pakistan Defence Pact of 2025 represents a **major milestone in West Asian security** and a **strategic lifeline for Pakistan**. For Saudi Arabia, it provides a **nuclear deterrent partnership** beyond U.S. guarantees. For India, the pact is a reminder that **West Asia's geopolitics is in flux** and requires **careful diplomacy** to safeguard its interests while maintaining its growing strategic partnership with Riyadh.

52. U.S. Revokes Waiver on Chabahar Port Sanctions – Implications for India

Background

- **Chabahar Port**, in Iran's Sistan-Baluchestan, gives India direct access to Afghanistan and Central Asia, bypassing Pakistan.
- India has developed the Shahid Beheshti terminal since 2016, investing ₹400 crore (₹200 crore spent).
- U.S. granted a sanctions waiver in 2018, but in Sept 2025 began revoking it despite port growth (43% rise in vessel traffic, 34% in container traffic, 2023–24).

Strategic Importance of Chabahar for India

- **Regional Connectivity**: Gateway to Afghanistan, Central Asia, and part of INSTC.
- **Strategic Counter**: Bypasses Pakistan, balances China's Gwadar influence.
- **Trade & Energy Security**: Supports goods and energy transport, strengthens supply chains.
- **Geopolitical Leverage**: Enhances India's regional influence through infrastructure investment.
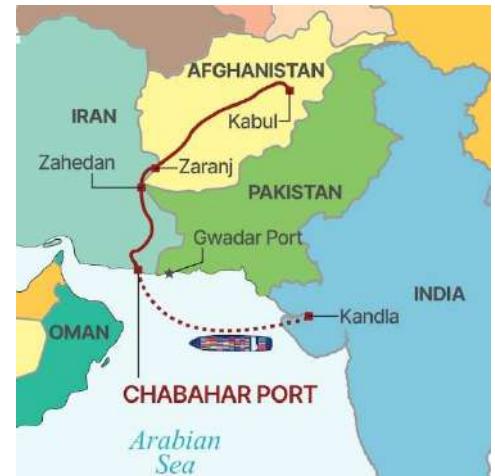
Implications of U.S. Decision

- **Economic Risk**: ₹200 cr investment threatened; Chabahar's trade hub plans disrupted; reliance on costlier routes rises.
- **Strategic Concern**: Connectivity to Afghanistan and Central Asia weakened; strengthens China–Pakistan Gwadar axis; reduces India's leverage in Iran.
- **Diplomatic Fallout**: Complicates India–U.S.–Iran balancing; undermines trust in U.S. support.
- **Regional Security**: Afghanistan's market access jeopardised; South and West Asian connectivity and stability affected.

Broader Challenges for India

- **Policy Dilemma**: Aligning with U.S. strategic interests vs. maintaining autonomy in relations with Iran.
- **Energy Dependence**: India already stopped Iranian oil imports due to earlier U.S. sanctions.
- **Geoeconomic Competition**: China's deepening footprint in Iran (25-year cooperation agreement, investments in infrastructure and energy).
- **Uncertainty in Global Supply Chains**: Frequent policy reversals hurt India's long-term investments.

Way Forward

- Engage U.S., Iran, Russia to keep Chabahar/INSTC functional.
- Diversify regional partnerships with Central Asia, Gulf, ASEAN; use forums like SCO.
- Strengthen domestic ports/logistics; support private overseas investments.
- Maintain strategic autonomy; assert India's stance in multilateral platforms.

Conclusion

The U.S. revocation of the Chabahar waiver is more than a trade setback — it exposes the **fragility of India's regional connectivity ambitions** when caught in great-power rivalries. For India, the challenge is to **preserve strategic autonomy**, balance ties with both the U.S. and Iran, and ensure that its vision of linking South Asia with Central Asia is not derailed by shifting global geopolitics.

53. Curbing Fake News in India

Introduction

Fake news threatens elections, social stability, public trust, and national security, especially in India's digital age dominated by social media and messaging platforms.

Data & Facts

- 800M+ internet users in India; 400M+ on WhatsApp.
- Global laws (EU DSA, Singapore POFMA) mandate transparency and penalise misinformation.
- Fake news risks elections, economy, and social stability.

Why is Fake News a Serious Issue?

- **Threat to democracy**: manipulates voters (Art. 19).
- **Public order disruption**: panic, violence (e.g., lynchings).
- **Erosion of trust**: media, govt., science credibility.
- **National security risks**: destabilising campaigns.
- **Health hazards**: false cures endangering lives.

Challenges in Tackling Fake News

- No clear definition; hard to distinguish from satire/opinion.
- Free speech concerns vs regulation (Art. 19).
- Tech challenges: deepfakes, bots, anonymity.
- Global platforms limit enforcement.
- Rapid viral spread outpaces fact-checking.
- Low digital literacy hinders verification.
- Overregulation risks censorship and trust erosion.

India's Current Framework to Counter Fake News

- **Press Council of India** – Sets ethical journalism norms; can censure violations.
- **IT Act & 2021 Rules** – Regulates online platforms; mandates removal of unlawful content.
- **Fact-Checking Units** – PIB Fact Check; EC's 'Myth vs Reality Register' for elections.
- **Advisories & Bans** – MIB guidelines on surrogate ads and online betting.
- **Cyber Crime Mechanisms** – I4C and National Cyber Crime Reporting Portal.

Recommendations by Parliamentary Committee (2025)

- Media fact-checking & internal ombudsman.
- Stricter penalties & PCI strengthening.
- AI content regulation with licensing and labeling.

Way Forward – A Robust Mechanism

Curbing fake news in India requires clear laws balancing free speech, platform accountability, independent fact-checking, AI tools, and widespread digital literacy, supported by coordinated governance to protect democracy, security, and public trust.

54. New Strategic EU-India Agenda: Deepening Partnership for a Multipolar World

Why in News?
The EU's 2025 Strategic Agenda aims to deepen ties with India across trade, tech, defence, and global governance, targeting a global-scale FTA by year-end.

Historical Background
India's engagement with the EU has evolved from establishing diplomatic ties with the European Economic Community in 1962 to a Strategic Partnership in 2004, culminating in the 2025 launch of a comprehensive New Strategic Agenda reflecting the multipolar global context.

Five Strategic Pillars of the Agenda

- **Prosperity & Innovation:** Boost trade (€120 bn), finalize FTA, tech collaboration (Horizon Europe, fintech, AI), green transition, disaster resilience.
- **Security & Defence:** Maritime security in IOR, cyber & counterterrorism cooperation, joint defence projects (Airbus C-295, R&D, supply chain diversification).
- **Connectivity & Global Issues:** India-Middle East-Europe Corridor (IMEC), EU Global Gateway alignment, multilateral cooperation (UN, WTO, G20, rules-based order).
- **People-to-People Cooperation:** Mobility and skill development (European Legal Gateway), academic/youth exchanges (Erasmus+), EU-India Business Forum for civil society and entrepreneurship.
- **Enablers:** Intergovernmental coordination across EU institutions and member states, respect for India's strategic autonomy in foreign policy.

Significance of EU-India Relations

- **For India**: Boosts EU FDI (~USD 107 bn), expands export markets, access to defence tech, cyber cooperation, and tech transfer (semiconductors, clean energy, digital finance).
- **For EU**: Gains market access, skilled workforce, strategic leverage in Indo-Pacific & Global South, and stable Indian Ocean trade routes.

Key Challenges in India-EU Relations

- **FTA & Trade Barriers:** Disagreements over tariffs (cars, dairy vs IT, pharma), CBAM carbon tax, and strict EU standards (SPS/TBT, GDPR).
- **Geopolitical & Strategic Challenges:** India-EU differences on Russia and reliance on China affect supply chain alignment.

Way Forward: Strategies to Strengthen Ties
The EU-India Agenda focuses on fast-tracking the FTA, promoting green and digital cooperation, strengthening defence and IPR frameworks, and expanding people-to-people ties. Learning from Singapore and EU-Japan models, it positions India as a strategic Indo-Pacific partner, while addressing trade, CBAM, and data issues to realise the full potential of this multipolar partnership.

55. Rising Public Debt of Indian States: Challenges and Way Forward

Why in News?

The CAG's decadal report (2013–14 to 2022–23) flags rising state public debt, debt-to-GSDP ratios, and fiscal sustainability concerns, offering the first comprehensive analysis of state-level borrowing and fiscal management.

Understanding Public Debt

- **Public Debt**: Government borrowing to cover revenue shortfalls.
- **Types**: Internal (G-Secs, T-Bills, state bonds) and External (foreign/government loans).
- **Use**: Ideally for capital expenditure, not routine expenses.

Debt-to-GDP/GSDP Ratio

- **Debt Sustainability**: Measures a state's ability to repay debt; high ratio signals fiscal risk.
- **Recommended Levels**: Centre 40% of GDP, States 20% of GSDP, Combined 60% of GDP.
- **Significance**: Assesses if deficits fund productive assets or routine expenses.

Long-dated fixed rate debt has kept interest costs in check despite rate hikes

Ratio for Centre and states, combined

■ Debt/GDP — Interest expenses/GDP (right-hand scale)

Source: Reserve Bank of India
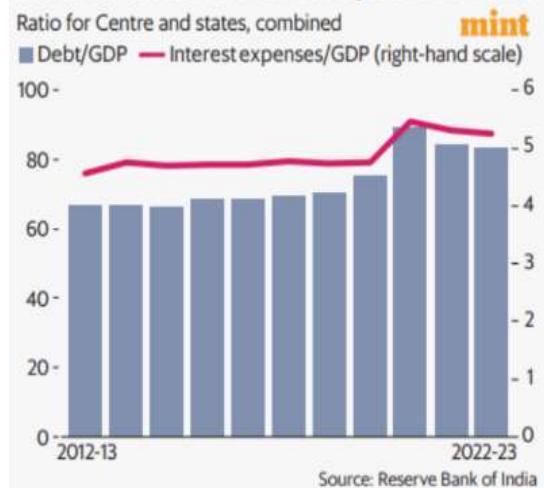
Sources of State Debt

State Borrowing Sources: Market borrowings (G-Secs, T-Bills, bonds), bank loans (SBI/others), RBI Ways & Means Advances, financial institutions (LIC, NABARD), and Union Government support (GST compensation, special capital assistance).

Fiscal Management Concerns

Golden Rule of Borrowing: Borrow only for capital expenditure. Violations (e.g., Andhra Pradesh 17%, Punjab 26% for capital) increase reliance on GST/COVID loans, risk unsustainable debt, and threaten fiscal stability and Centre-State relations.

Way Forward: Strategies for Fiscal Sustainability

1. **Fiscal Discipline:** Borrow for capital expenditure; avoid routine spending.
2. **Debt Management Strategy:** Set up Public Debt Management Agency (PDMA) for transparency, monitoring, and restructuring.
3. **Strengthen State Finances:** Diversify revenues, rationalize subsidies, improve tax buoyancy, reduce reliance on central transfers.
4. **Adherence to FRBM Act:** Legally binding debt and deficit targets to ensure fiscal prudence.
5. **Institutional Mechanisms:** Empower State Finance Commissions; strengthen CAG oversight for sustainable fiscal federalism.

Conclusion

Rising state debt poses fiscal risks. States should prioritize capital-focused borrowing, fiscal discipline, and revenue diversification, backed by strong institutional oversight and coordinated Centre-State management to ensure long-term fiscal stability.

56. Public Distribution System (PDS) in India: Ensuring Food Security and Nutrition

Introduction

Despite NFSA covering ~80 crore people, Crisil's Thali Index shows widespread hidden hunger, with many Indians unable to afford two nutritious meals a day—far beyond what income-based poverty estimates suggest.

Objectives of PDS

- Ensure food security and minimum caloric intake.
- Protect vulnerable populations via subsidized grains.
- Stabilize food prices.
- Reduce hunger and malnutrition.

How the Public Distribution System works:
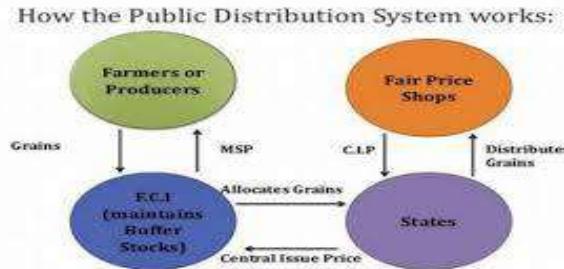
Limitations

- **Nutritional Gap**: PDS focuses on cereals, neglecting proteins and micronutrients.
- **Inequitable Benefits**: Subsidies skewed toward richer rural households; urban over-coverage persists.
- **High Fiscal Cost**: Adding pulses raises procurement, storage, and distribution expenses.
- **Operational Issues**: Pulses need better storage; higher leakage and diversion risks.

Poverty Measurement and Food Deprivation

- **Dandekar–Rath (1971)**: 2,250 kcal/day → Calorie-based poverty line.
- **Alagh Committee (1979)**: Rural 2,400 kcal, Urban 2,100 kcal → Food-expenditure norm.
- **Tendulkar (2009)**: Broader consumption basket → Moved beyond calorie norms.
- **Rangarajan (2014)**: Separate rural–urban lines (₹972/₹1,407 per month) → Higher poverty estimates.
- **Thali Index**: Measures affordability of a balanced meal; reveals hidden nutritional deprivation.

Need for Nutrition-Sensitive PDS

A nutrition-sensitive PDS is essential to close protein–micronutrient gaps, cut subsidies to the better-off, and address hidden hunger while ensuring more equitable, dignified food access.

Challenges in Reform

Key challenges include targeting errors, political resistance to reducing entitlements, costly and limited pulse procurement, rising fiscal burden, higher leakage risks, and the need for strong digital monitoring.

Proposed Reforms

Key reforms include adopting region-specific nutrition norms, targeting subsidies using updated data, expanding pulse supply via MSP and buffers, reducing excess cereal allocation, piloting reforms in states, strengthening digital tracking, integrating PDS with nutrition schemes, and promoting nutrition awareness.

Conclusion

While PDS ensures **caloric sufficiency**, hidden hunger persists. A **nutrition-sensitive, targeted, and technologically enabled PDS** can bridge the gap, ensuring **equitable and dignified food access**. Reforming PDS is essential not just for hunger alleviation but for **nutrition, equity, and sustainable development**.

57. The $100,000 H-1B Entry Fee: Implications for India, the US, and Global Talent Flows

Why in News?

US set a 12-month $100,000 fee for employers sponsoring new H-1B applicants from abroad; in-country renewals are exempt, with possible national-interest waivers.

What Is the H-1B Visa?

The H-1B visa lets US firms hire foreign skilled professionals, especially in STEM, and Indians dominate its usage, making up about 71% of approvals in FY2024.

What Has Changed?

No new H-1B petitions or consular stamping will be approved without proof of the $100,000 fee, and clarity is still lacking on whether usual cap-exempt institutions (universities, non-profits, research bodies) will receive exemptions.

Political Backdrop: Immigration is now a major US voter issue; Trump portrays H-1B workers as depressing wages and taking tech jobs, with most Indian petitions offering salaries below the US IT median.

Industry View: Tech firms argue H-1Bs are essential to fill severe STEM skill gaps, as China and India produce far more STEM graduates than the US, leaving shortages in AI, cloud, and engineering.

India at the Epicentre of Impact

- **India most affected** as the largest H-1B user.
- **Students & young professionals**: Fee discourages employers from hiring Indian graduates transitioning from OPT to H-1B.
- **Family impact**: Travel and re-entry may require paying the fee, creating uncertainty for dependents.
- **IT industry**: Higher costs for firms like TCS, Infosys, Wipro, HCL; likely shift more work to offshore hubs (Bengaluru, Hyderabad, Pune).

Industries Most Affected

- **Big Tech/Cloud:** Major firms face sharply higher hiring costs.
- **IT Services:** Onsite-heavy Indian/global IT firms hit hardest.
- **Finance/Consulting:** Costlier recruitment of specialist talent.
- **Startups/SMEs:** May halt hiring or shift roles offshore.
- **Universities/Research:** Risk talent shortages without exemptions.

Challenges and Criticisms of the Policy

The fee disproportionately hits Indians, creates uncertainty for key exempt sectors, risks undermining US competitiveness, and may push firms toward offshoring.

Way Forward

India should boost domestic STEM jobs, attract returning talent, and seek diplomatic exemptions, while the US must protect jobs without blocking essential global talent. The steep H-1B fee risks harming US innovation and pushes India to strengthen its tech ecosystem and diversify migration pathways.

58. WAVES Bazaar: India's Digital Marketplace for Creative Content

Introduction

The I&B Ministry launched WAVES Bazaar in January 2025 as a government-backed digital marketplace to boost India's media sector by supporting creators and promoting the country as a global content hub.

Objectives of WAVES Bazaar

- Expand creator access
- Promote global collaborations
- Boost investment and skills
- Strengthen India's creative economy

Key Features of WAVES Bazaar

- **Digital Marketplace:** One-stop platform linking creators with investors, distributors, and OTT platforms across media sectors.
- **Pitching & Secure Viewing:** Direct online pitches with protected viewing rooms to safeguard content.
- **AI Matchmaking:** AI-driven pairing of creators with financiers, automated profiling, and scoring for better visibility.
- **Knowledge & Skills:** Webinars, masterclasses, and AI tools for project and portfolio improvement.
- **Global Outreach:** Supports co-productions and international exposure through festivals and global partnerships.

Significance for India's Creative Economy

- **Democratisation** – Small creators now compete on a level playing field.
- **Global Positioning** – Enhances India's presence in international festivals, co-productions, and digital content markets.
- **Sector Diversification** – Supports **animation, gaming, short-form content, and music** alongside films.
- **Investment and Sustainability** – Builds long-term collaborations and funding pipelines.
- **Soft Power Promotion** – Strengthens India's cultural influence globally.

Challenges and Future Outlook

Challenge	Implication
Data Security & IP Protection	Secure handling of creative content is essential to prevent theft or misuse.
Digital Inclusion	Regional creators often lack access to technology or high-speed internet.
Sustaining International Partnerships	Requires continuous engagement beyond initial events.
Scalability	Managing large volumes of projects while maintaining quality control.

Conclusion

WAVES Bazaar leverages technology and global collaborations to boost India's creative economy, support small creators, and enhance cultural exports, digital growth, and soft power.

59. FPI Commodity Trading in India: SEBI's Proposal and Its Implications

Introduction
SEBI is considering allowing FPIs to trade in non-agri, non-cash-settled commodity derivatives to deepen markets, improve price discovery, and enhance India's global financial integration.

Understanding Commodity Derivatives
Commodity derivatives are financial contracts whose value is tied to a physical commodity (gold, oil, wheat). They involve agreements to trade a set quantity at a fixed future price, with profits depending on price movements. The main types are **futures** (obligatory future trade) and **options** (right but not obligation to trade).

Parameters	FDI	FPI
Definition	FDI refers to the investment made by foreign investors to obtain a substantial interest in an enterprise located in a different country.	FPI refers to investing in the financial assets of a foreign country, such as stocks or bonds available on an exchange.
Role of Investor	Active Investor	Passive Investor
Type	Direct Investment	Indirect Investment
Degree of Control	High Control	Very Low Control
Investment Done On	Physical assets of the foreign country	Financial assets of the foreign country
Term	Long Term	Short Term
Entry & Exit	Difficult	Relatively Easy
Leads to	Transfer of funds, technology, and other resources to the foreign country	Capital inflows to the foreign country
Risk	Stable	Volatile

Current FPI Rules in India
FPIs can currently trade only in **cash-settled non-agri derivatives**, while **physically settled metals** (gold, silver, copper, zinc, etc.) and **most agri commodities** remain off-limits due to food security and inflation concerns.

SEBI's Proposal: What's New?
FPIs may soon gain access to **physically settled non-agri commodities** (gold, silver, base metals), backed by a new institutional framework, offering them an alternative investment route amid recent equity market sell-offs.

Why SEBI Wants FPIs in Non-Cash Commodity Derivatives
- **Higher Liquidity:** FPIs deepen markets, especially long-term contracts.
- **Improved Price Discovery:** Global participation leads to more accurate pricing.
- **Lower Hedging Costs:** Fewer rollovers reduce expenses for industrial users.
- **Stronger Domestic Hedging:** Encourages Indian firms to hedge locally instead of abroad.
- **Greater Global Integration:** Aligns India's commodity markets with global norms.

Potential Benefits
The move would boost India's capital efficiency and strengthen its global presence in metals and bullion, while giving FPIs diversified access beyond equities and debt. Domestic sectors like steel, jewellery, and power would also benefit from more effective risk-hedging options.

Challenges and Concerns
- **Regulatory Oversight** – Risk of speculation-driven volatility if foreign capital floods in.
- **Market Manipulation** – Global players may distort prices if checks are weak.
- **Physical Settlement Risks** – Ensuring delivery infrastructure (warehouses, vaults, quality standards).
- **Geopolitical Risks** – Global commodity prices are sensitive to wars, sanctions, and supply chain shocks.
- **Domestic Impact** – Excessive foreign control could affect local producers and small traders.

A cautious, phased opening for FPIs—supported by strong regulation and better delivery infrastructure—can boost liquidity and price discovery in India's commodity markets while keeping agriculture protected.
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60. River Pollution in India: A Persistent Challenge

Introduction

India's rivers remain heavily polluted despite a small drop in polluted stretches (311 to 296), with urbanisation, sewage, and industrial waste driving contamination, especially in states like Maharashtra, Kerala, and Madhya Pradesh.

Understanding River Pollution

River pollution is the contamination of rivers by sewage, chemicals, plastics, and pesticides, degrading water quality and ecosystems. **BOD**—oxygen used by microbes to decompose organic matter—is the key indicator; high BOD means low oxygen and severe pollution, with levels above **3 mg/L** unfit for bathing.

Causes of River Pollution in India

1. **Untreated sewage:** Only ~30% treated; majority flows into rivers.
2. **Industrial waste:** Toxic effluents from major industries pollute key stretches.
3. **Farm runoff:** Fertilisers and pesticides contaminate rivers during monsoons.
4. **Encroachment & sand mining:** Disturb river flow and degrade ecosystems.
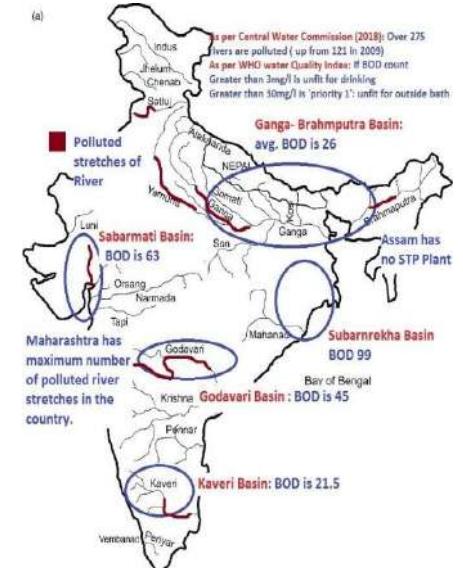
Impact of River Pollution

- **Health:** Unsafe for drinking/bathing → waterborne diseases (cholera, diarrhoea).
- **Biodiversity Loss:** Fish kills, decline in aquatic species.
- **Economic Cost:** Reduced fisheries yield, loss to agriculture.
- **Social Tensions:** Local protests around **Ganga, Yamuna, Musi** reflect public anger.
- **Cultural Impact:** Sacred rivers losing sanctity (Yamuna in Delhi, Ganga in Bihar/UP).

CPCB's 2023 report shows polluted river stretches reduced from 311 to 296, affecting 271 rivers across 32 states, with Maharashtra most impacted. Critical Priority-I rivers like the Yamuna, Sabarmati, Chambal, and Tungabhadra show extremely high BOD levels, while several rivers—including the Jhelum, Ganga (in Bihar), Cauvery, and Periyar—have worsened, indicating persistent pollution hotspots despite marginal overall improvement.

Challenges in River Rejuvenation

Key obstacles include inadequate and poorly functioning sewage treatment systems, weak coordination among CPCB, State Boards, and municipalities, and inconsistent funding for state action plans. Rapid urbanisation continues to overwhelm waste management capacity, while many industries still evade compliance and release untreated effluents, worsening river pollution.

Way Forward

Reviving India's rivers requires stronger sewage treatment capacity, stricter industrial compliance, protection of catchments, sustainable farming practices, and greater community involvement, supported by modern monitoring technologies. Despite fewer polluted stretches, rivers remain under stress, making coordinated, long-term action essential for restoring their ecological health.

61. India–Morocco Relations: Strengthening Strategic and Defence Ties

Introduction

India and Morocco, diplomatic partners since 1957, strengthened ties by signing a defence MoU on 22 September 2025 in Rabat, marking a key step in India's expanding defence diplomacy in North Africa.

Institutional Framework of Defence Cooperation

The defence MoU creates a structured framework for long-term India–Morocco military cooperation through:

• **Joint exercises and training** to improve interoperability.

• **Defence industry collaboration**, including co-development and co-production.

• **Capacity building** in areas like military medicine, peacekeeping, and emergency response.

• **Expert and personnel exchanges** to strengthen trust and knowledge sharing.

Implication: It ensures sustained, outcome-oriented defence engagement between the two countries.

Strategic Areas of Collaboration

India and Morocco aim to deepen cooperation in **counter-terrorism**, **cyber security**, **maritime security**, **military medicine/emergency response**, and **UN peacekeeping**.

Significance: These areas reflect aligned strategic interests and a shared approach to modern security challenges.

Defence Wing in Rabat

India will set up a permanent Defence Wing at its Embassy in Rabat to implement the MoU. It will serve as the key node for military coordination, enable joint training/exercises and defence exports, and support industrial and capacity-building initiatives—reflecting India's long-term strategic commitment to Morocco.

Strategic Importance of India–Morocco Defence Ties

    India's Africa Outreach

        MoU aligns with India's Africa policy/IADD; Morocco's strategic Atlantic–Mediterranean location supports India's security and trade goals.

    Morocco's Defence Modernisation

        Diversifying defence partners; Indian tech (drones, counter-drone, cyber) aids modernisation and self-reliance.

    India–Morocco Relations

        Diplomatic: Ties since 1957, cooperation in UN/IAFS.

        Economic: Growing trade (pharma, IT, renewables); defence ties can boost co-development.

        Cultural: Strong education, tourism, and training links.

    Geostrategic Value

- Morocco's location boosts India's access to Europe/West Africa; supports maritime security and energy/trade routes.

Conclusion

The India–Morocco defence MoU strengthens bilateral ties and India's defence diplomacy in Africa. Joint training, technology sharing, and the Defence Wing in Rabat signal long-term commitment, enhancing security cooperation, industrial partnerships, and India's role as a proactive global player.

62. Manual Scavenging in India – An Unfinished Battle

Introduction
Manual scavenging continues despite bans, harming Dalit workers. The Supreme Court fined Delhi's PWD ₹5 lakh for unsafe sewer work, reaffirming that the practice violates Articles 21 and 23.

Constitutional & Legal Framework
Constitutional Safeguards:

- **Arts. 14, 17, 21, 23 ensure equality, dignity, and ban untouchability/forced labour; Art. 243W assigns sanitation to municipalities.**

Laws:

- **1993 Act: First ban, weak implementation.**
- **PEMSR 2013: Total prohibition, mandated rehabilitation; offences cognisable and non-bailable.**

SC Directives (2023):

- **National survey; 100% mechanisation; mandatory safety gear.**
- **Rehabilitation, compensation, and education rights.**
- **Central portal to track deaths and rehabilitation.**

Status of Manual Scavenging in India

- **732 out of 766 districts** have officially declared themselves manual scavenging-free (2024).
- Yet, **58,000 manual scavengers** remain identified (Ministry of Social Justice & Empowerment, 2024).
- **Data Gaps**: Independent studies estimate numbers to be far higher due to under-reporting.

Why Does Manual Scavenging Persist?
Dalit sub-castes such as Valmikis, Madigas, and Helas remain trapped in manual scavenging due to persistent caste bias, poverty, and lack of skills. Limited mechanisation—mostly urban—and weak law enforcement, often circumvented through informal hiring and the contractor system, perpetuate the practice. Under-reporting and data gaps further obscure its true scale.

Health, Social & Economic Dimensions
Manual scavengers face severe **health risks** (toxic gases, diseases, 400+ sewer deaths since 2018), **social stigma** (untouchability, exclusion), and **economic insecurity** (low wages, no social security). Women bear a **gendered burden** with discrimination and harassment, while unsafe conditions and stigma cause **psychological distress**.

Government & Civil Society Initiatives
Key efforts: **schemes** (Safaimitra Suraksha, NAMASTE), **mechanised tech** (Bandicoot, Endobot), and **NGO advocacy** (Safai Karmachari Andolan).

Way Forward

- **Mechanisation:** Ensure 100% mechanised sanitation via SRUs and affordable local technologies.
- **Law Enforcement:** Treat sewer deaths as culpable homicide; make compensation automatic and time-bound.
- **Rehabilitation:** Expand SRMS, provide PM-DAKSH training for alternative livelihoods.
- **Social Security:** Extend health insurance, pensions, and education support.
- **Awareness:** Run campaigns against caste bias and promote community-driven rehabilitation.

63. Fusion Power – India's Roadmap to the Energy of the Future

Introduction

Fusion, the "holy grail" of clean energy, joins light atoms to release massive energy. India's IPR plans fusion development, aligned with global projects like ITER.

Fission vs. Fusion

- **Fission:** splits heavy atoms, generating radioactive waste and safety risks.
- **Fusion:** combines light atoms, safer, waste-free, and far more energetic—potentially a limitless clean energy source.

This photograph shows bright plasma glowing inside the reactor vessel of the Mega Ampere Spherical Tokamak in Culham, UK. (HETTEOL.RUH CC-BY)

India's Fusion Power Plan

India's **SST-1** at IPR uses magnetic confinement to heat plasma above 100 million °C, aiming for sustained fusion and net electricity. Under the **Roadmap 2060**, a prototype fusion plant is targeted by 2040, with a full-scale 20–250 MW station by 2060, at an estimated cost of ₹25,000 crore.

Challenges

- **Scientific:** Sustaining 100 million °C plasma; developing superconducting magnets and heat-resistant materials.
- **Economic:** High R&D costs; near-term fusion electricity costlier than solar/wind.
- **Technological:** Scaling experimental devices to commercial plants; efficient energy extraction.

India's Technological & Policy Steps

- **Membership in ITER** → provides access to cutting-edge global research.
- **NAMASTE Scheme (2022)** and energy innovation funds could support fusion R&D.
- **IPR Gandhinagar's roadmap** → aligns with India's net-zero targets by 2070.

Why Fusion Matters for India

- **Energy Security:** India imports ~85% of oil; fusion offers a domestic, long-term solution.
- **Climate Goals:** Helps meet **Net Zero by 2070** and reduce coal dependence.
- **Geopolitical Edge:** Being early in fusion R&D gives India a say in **future global energy markets**.
- **Clean & Safe:** No carbon emissions, no Fukushima-type accidents, minimal waste.

Way Forward

- **Accelerate R&D:** More funding for plasma physics, superconducting magnets, and materials science.
- **International Cooperation:** Strengthen role in ITER and collaborate with USA, EU, Japan, China.
- **Public-Private Partnership:** Encourage Indian start-ups in robotics, AI, and advanced materials for fusion.
- **Skilled Workforce:** Train engineers and scientists in fusion technology.
- **Balanced Energy Mix:** Fusion should complement renewables like solar, wind, and green hydrogen.

Conclusion

Fusion is a long-term clean energy investment, and India's IPR roadmap aims to make the country a global leader in sustainable, next-generation power.

64. India May Increase Energy Efficiency Target for COP30

Context

India will submit updated NDCs at COP30 (Nov 10, 2025), likely strengthening energy efficiency targets to enhance climate action.

Significance of NDCs

NDCs, central to the Paris Agreement, outline countries' climate commitments on emissions, renewables, efficiency, and carbon sinks, with five-year updates ensuring accountability and progressive action.

India's Previous NDCs

India's 2022 NDCs aimed to cut GDP emissions intensity by 45% (2005 levels), achieve 50% non-fossil electricity, and create a 2 billion-tonne carbon sink by 2030. By 2023–2025, emissions intensity fell 33%, and half of electricity capacity is from non-fossil sources. (Emissions intensity measures carbon per unit of GDP.)

Clean energy: India has committed to source half of its electric power capacity from non-fossil fuel sources by 2030. REUTERS

Global Climate Context

- **Temperature Goals**: Paris Agreement targets 1.5–2°C warming; current NDCs may still cause ~3°C rise by 2100.
- **EU**: Targets net-zero by 2050; proposes 90% emission cut by 2040.
- **US & Australia**: US exited Paris Agreement; Australia aims for 62–70% emission reduction by 2035; China's updated NDCs pending.

India's Strategic Initiatives

- **JCM:** India collaborates with Japan (and others) for carbon credit trading, promoting clean energy investment.
- **India Carbon Market:** Launching by 2026 with 13 sectors under mandatory targets, enabling emission certificate trading to incentivize reductions.

Challenges

- Developed countries may **hesitate to provide adequate finance**, making ambitious climate targets difficult for developing nations.
- Fossil fuels remain a **key energy source for development**, requiring a **balanced transition strategy**.
- Practical implementation of JCM and carbon markets may take **a few years**.

Key Takeaways

- **Policy**: Aligns domestic energy strategy with international climate diplomacy.
- **Economic**: Cuts costs, reduces imports, and attracts green investments.
- **Environmental**: Expands renewables, lowers carbon intensity, and mitigates climate risks.
- **Technological**: Promotes clean energy and carbon market innovations.
- **Global**: Supports Paris Agreement goals while balancing development priorities.

Conclusion

India's higher energy efficiency targets reflect a strategic, sustainable approach, balancing climate action, development, and technological innovation while ensuring energy security and growth.

65. Youth-led Ladakh Protests: Demands for Statehood, Sixth Schedule and Autonomy

Why in News?

Ladakh saw youth-led protests for statehood and Sixth Schedule inclusion; Leh violence on 24 Sept 2025 caused 4 deaths, reflecting ongoing political vacuum post-Article 370 abrogation.

Background: Ladakh's Political Status

The **2019 Reorganisation Act** made Ladakh a UT without legislature, ending its limited autonomy, leading to concerns over representation, land rights, jobs, culture, and ecological security.

Core Demands of Protesters

Protesters demand **statehood**, **Sixth Schedule inclusion** for tribal autonomy, a **separate public service commission** with local job reservations, and **two Lok Sabha seats** for better representation.

Sixth Schedule: Constitutional Context

The **Sixth Schedule**, now in NE states, grants autonomous councils authority over land, culture, and local governance; in Ladakh, it would protect tribal land and limit outside influence.

Government's Position

MHA is open to a separate PSC and extra Lok Sabha seat but rejects statehood and Sixth Schedule for Ladakh, citing strategic concerns, suggesting instead stronger Hill Councils.

Youth-Led Mobilisation

Sonam Wangchuk led hunger strikes and peaceful protests, while LAB and KDA mobilised historic unity between Leh's Buddhist and Kargil's Muslim communities.

Concerns Driving the Protests

- **Political Vacuum:** No elected assembly or statehood.
- **Land Rights:** Fear of outsiders buying land in ecologically fragile Ladakh.
- **Employment Crisis:** Lack of opportunities, rising educated unemployment.
- **Cultural Identity:** Risk of dilution of Ladakhi traditions, language, and lifestyle.
- **Ecological Fragility:** Concerns over large-scale tourism and corporatisation.

Possible Way Forward

- **Strengthen Hill Councils** with legislative, financial, and administrative powers.
- **Special Job and Land Reservations** – similar to Himachal Pradesh and Uttarakhand.
- **Partial Autonomy Framework** – without full statehood, but with Sixth Schedule-like provisions.
- **Confidence-Building Measures** – Immediate dialogue with LAB & KDA, avoiding delays.
- **Balanced Approach** – safeguard local rights while ensuring strategic interests (border security, infrastructure).

66. Personality Rights in India: Emerging Challenges in the Age of AI

Why in News?

In 2025, the Delhi HC extended personality rights protection to Aishwarya and Abhishek Bachchan against AI misuse, following earlier relief for other celebrities, reflecting growing judicial recognition in India's digital era.

What are Personality Rights?

Personality rights protect an individual's name, image, voice, and likeness from unauthorized commercial use, safeguarding dignity, privacy, and economic interests, and apply to both celebrities and ordinary citizens.

Constitutional Basis

Personality rights balance **Article 21** (life, dignity, privacy) with **Article 19(1)(a)** (free speech), protecting individuals while allowing criticism, parody, and news reporting.

Legal and Statutory Safeguards

- **Judicial Precedents:** Cases from R. Rajagopal (1994) to AI misuse rulings (2023–25) recognise control over identity, image, voice, and persona.
- **Copyright Act:** Sections 38A/B grant performers reproduction and moral rights.
- **Trade Marks Act:** Names, signatures, catchphrases can be trademarked; Section 27 prevents false endorsement.
- **Common Law:** Right to publicity, defamation, and privacy protect dignity and prevent commercial misuse.

Recent Judicial Trends

Indian courts are actively curbing AI-related misuse of celebrity personas, granting injunctions, takedowns, and damages, while distinguishing **legitimate uses** like criticism, news, and parody from **unauthorised commercial exploitation** and AI-generated fakes.

Concerns and Challenges

Personality rights in India face challenges due to the lack of a comprehensive law, growing AI/deepfake threats, and enforcement difficulties. Overbroad protections risk curbing free speech and parody, while ordinary citizens—especially women—remain vulnerable to misuse like revenge pornography, with courts struggling to manage the scale of violations.

Way Forward

Proposed reforms include a **comprehensive law** on personality rights, clear **exceptions** for satire and news, **AI regulation** with disclosure norms, stronger **enforcement** and takedown mechanisms, and extending protections to **ordinary citizens** against digital misuse.

67. Unpaid Care Work in India: The Invisible Backbone of the Economy

Why in News?

Experts call for TUS to track women's unpaid care work and whether it's voluntary, addressing low female labour participation and gender gaps.

What is Unpaid Care Work?

Unpaid care work includes household and community tasks done without pay. Economically invisible, it's excluded from GDP, and women, especially in India, bear a disproportionate burden.

INVOLVEMENT IN PAID, UNPAID ACTIVITIES

- Participation rate in unpaid activities (%)
- Participation rate in paid activities (%)

	Unpaid	Paid
Rural females	84.4	21.8
Rural males	47.4	60.1
Urban females	82.8	18.0
Urban males	42.4	61.2
All females	83.9	20.6
All males	45.8	60.5

Note: Participation rate in paid, unpaid activities in 2024 for persons 6 years and older   *Source: MoSPI*

The Indian Scenario

Unpaid Care Work in India: Women spend 4.5 hours/day vs. men's 1.5 (TUS 2019), doing household, caregiving, and community tasks. This heavy burden limits female labour participation (23% FLFPR), education, and career growth, while causing health stress. Economically, monetising women's unpaid work could add ₹19 lakh crore/year, highlighting its undervaluation and macroeconomic significance.

Limitations of the Time Use Survey (TUS)

- Captures **hours spent**, but not the **why** behind unpaid care work.
- Misses critical aspects:
    o **Choice vs compulsion:** Do women do this work willingly or due to social/economic pressure?
    o **Quality of life:** How does this affect health, aspirations, and opportunities?
    o **Policy integration:** How to design childcare, eldercare, or flexible jobs based on findings?

Expert Recommendations

Improving TUS: Refine methodology to capture choice vs. obligation and generational differences; link with PLFS to show impact on female labour participation; use data to enhance schemes like PMMVY and childcare/elderly services; develop satellite accounts to value women's unpaid work, following examples from Mexico and South Africa.

Global Perspective

- **OECD countries:** Recognise unpaid care work through surveys and gender budgeting.
- **Nordic model:** Publicly funded childcare and eldercare reduce women's burden → high FLFPR.
- **Latin America:** Some nations (e.g., Mexico, Chile) have integrated unpaid care into **national accounts**.

Way Forward for India

- Refine TUS to capture unpaid care work and its impact
- Invest in childcare, eldercare, and community services
- Promote flexible work, remote work, and shared parental leave
- Encourage redistribution of household work through awareness campaigns
- Recognise women's unpaid care in GDP, e.g., via satellite accounts

68. Defamation in India: Balancing Reputation and Free Speech

Why in News?

A Supreme Court judge highlighted the need to decriminalise defamation, citing its misuse to settle disputes and the tension between free speech and reputation.

What is Defamation?

- **Defamation** is harming someone's reputation through speech, writing, or signs, affecting individuals, groups, or the deceased. Types:
- **Libel**: Permanent form (writing, images).
- **Slander**: Spoken or temporary form.
  Courts assess based on intent, proof, and context.

Regulation of Defamation in India

- **Legal Framework:** Defamation is governed by IPC Sections 499 & 500 (Bharatiya Nyaya Sanhita, 2023) and can be criminal or civil.
- **Criminal defamation** deters misuse, protects reputation and vulnerable groups, and requires strong proof.
- **Judicial precedent:** Subramanian Swamy v. Union of India (2016) upheld its constitutionality, linking reputation to Article 21 and allowing reasonable restriction under Article 19(2).

Why Decriminalisation is Being Considered

Arguments for decriminalising defamation: prevent misuse by politicians, protect free speech, rely on civil remedies (as in the USA), and reduce court backlog.

Measures to Strengthen Defamation Laws While Protecting Free Speech

Reforms: decriminalise private defamation, strengthen civil remedies, define fair criticism vs. malicious defamation, protect press freedom, prevent SLAPPs, and promote media literacy.

Examples & Comparative Perspectives

- **United States:** Defamation is **civil-only**; public figures must prove "actual malice."
- **UK:** Recent reforms reduce burdensome criminal defamation; focus on civil remedies.

Balancing Free Speech and Reputation

Defamation in India sits at the **intersection of two fundamental rights**:

- **Freedom of Speech (Article 19(1)(a))**
- **Right to Reputation (Article 21 – Right to Life)**

Any reform must **balance these rights**:

- Avoid silencing legitimate criticism.
- Protect dignity and public interest.

Conclusion

Defamation balances free speech and reputation; decriminalising private cases, strengthening civil remedies and press protections, and preventing misuse can ensure fair and democratic reforms.

69. India's Tea Industry: Brewing Growth Amidst Challenges

Why in News
India can become a global tea superpower, but climate shocks, stagnant prices, and high costs require sustainable practices and value addition.
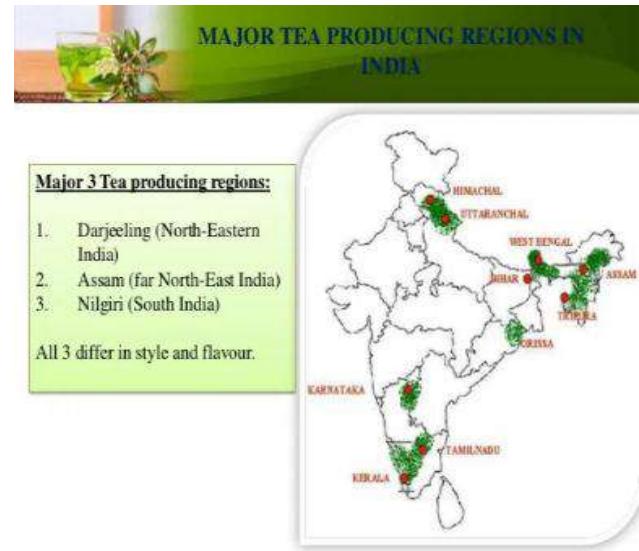
Significance of Tea in India
Tea in India: Rich cultural legacy, major employer (notably women in Assam and Bengal), and strong global exports (Darjeeling, Nilgiri, Kangra).

India's Tea Industry: Key Facts & Figures
India's Tea Profile: 2nd in global production & consumption, 3rd in exports; 80% consumed domestically; exports mainly black tea to Russia, Iran, UAE, USA, UK, Germany, China.

Major Tea Producing Regions in India
About 96% of production comes from four states:

- **Assam:** Assam Valley & Cachar – strong, malty, 55% of production
- **West Bengal:** Dooars, Terai, Darjeeling – GI-tagged, "Champagne of Teas"
- **Tamil Nadu:** Nilgiri Hills – aromatic, medium-bodied
- **Kerala:** Wayanad, Idukki – flavored, organic
- **Others:** Himachal (Kangra), Tripura, Sikkim, Uttarakhand – boutique teas

Agro-Climatic Requirements
Tea Cultivation Requirements: Temperature 20–30°C; rainfall 150–300 cm; slightly acidic loamy soil (pH 4.5–5.5); undulating, well-drained land; shade trees for heat and moisture control.
Tea is a rain-fed crop — highly vulnerable to climate extremes such as droughts and floods.

Institutional Framework: Tea Board of India
Tea Board of India: Established 1953 under Ministry of Commerce & Industry, HQ Kolkata; overseas offices in London, Dubai, Moscow; provides financial/technical support, promotes Indian tea, and manages GI certification and quality control.

Challenges Facing India's Tea Industry
Challenges for Indian Tea: Climate shocks reduce yield, stagnant exports create oversupply, rising input costs squeeze margins, global competition from cheaper producers, small growers face market/quality issues, and low value addition limits profits.

Pathways to Sustainability
Strategies: promote specialty/organic teas, diversify exports, boost domestic wellness teas, support small growers, adopt sustainable farming, and implement climate-smart practices.

India's tea industry must combine heritage with reforms, emphasizing quality, small-grower inclusion, climate resilience, and value addition through branding and sustainability.

70. India's Urban Blind Spot: Revisiting Census Definitions

Why in News

For Census 2027, India plans to retain 2011 urban criteria, risking undercounting fast-growing settlements and impacting governance and planning.

Current Urban Classification in India (2011 Census)

Urban Settlements: Statutory towns have formal urban governance; census towns meet population, workforce, and density criteria but often remain under rural administration, causing governance gaps despite 31.2% urban population.

DEGURBA: A Global Framework

- **Degree of Urbanisation (DEGURBA)**: Developed by six international organisations, endorsed by the **UN in 2020**.
- Uses **satellite imagery and 1 km² population grids** to classify settlements into **seven categories**:
  - Urban centres, Dense/semi-dense clusters, Peri-urban areas, Various rural types

Advantages:

- Captures urbanisation beyond administrative boundaries
- Helps monitor services and guide financial targeting

Limitations:

- May misclassify low-density areas (croplands, peri-urban fringes)
- Relies on algorithms and satellite data, risking under- or over-detection

Limitations of India's Current Urban Definition

- Outdated urban definitions may undercount millions
- Semi-urban and peri-urban areas often overlooked
- Census towns under rural governance face autonomy and infrastructure gaps
- Misclassification affects funding, services, and policy-making
- Emerging urban clusters remain unrecognised, misaligning planning

Examples: West Bengal's census towns lack urban governance; nationwide, 55% live in urban-like areas vs. 31% official figure (World Bank 2010).

Way Forward / Recommendations

- **Update Definitions:** Factor in population, density, livelihoods, women's informal work, and seasonal/non-agricultural jobs.
- **Data-Driven Methods:** Use DEGURBA or similar frameworks.
- **Governance Alignment:** Convert census towns into statutory towns with elected bodies.
- **Dynamic Classification:** Adopt flexible, regularly updated criteria.
- **Policy & Planning:** Ensure funds, infrastructure, housing, transport, and civic amenities for new urban areas.

Conclusion

India's outdated urban definitions undercount growing settlements. Updating criteria, using spatial data frameworks like **DEGURBA**, and aligning governance with reality is vital for effective planning and building sustainable, inclusive, and resilient cities.

71. New Farming Technology to Combat Desertification

Introduction

CUoR scientists used indigenous bioformulation to grow wheat in Thar Desert soil, offering a breakthrough to halt desertification, restore land, and boost food security.

Background

Around 30% of India's land, especially in Rajasthan, Gujarat, and Maharashtra, is degraded due to rainfall variability, sand dunes, overgrazing, and deforestation, affecting SDG 15 commitments.

The Technology: Desert Soilification

Desert Soilification: Uses polymers and bioformulations to improve sand structure, retain moisture, and support crops in arid zones. **Pilot:** Banseli (Ajmer) – wheat, bajra, guar, chickpea grown on 1,000 m² with only 3 irrigations.

Key Outcomes

Desert bioformulation halved irrigation, doubled yield, improved water retention, and boosted soil microbial activity.

Institutional Support

CUoR, with KVK and Horticulture Dept., led desert soilification trials; second phase on 400 sq. ft. boosted bajra, guar, chickpea yield by 54%, with plans to expand to millets and green gram.

Benefits

Desert Soilification Benefits: Controls desertification, saves water, restores ecology, boosts yields, expands arable land, creates rural jobs, and can be replicated in arid regions.

Challenges & Way Forward

Challenge	Way Forward
Cost of bioformulation	Subsidies & PPPs
Awareness & Training	KVK & Extension support
Scaling	Integrate with **PMKSY**, **NMSA**
Policy Backing	Include under **Desertification Mitigation Mission**

Government Linkages

- **PM Krishi Sinchai Yojana (PMKSY)**
- **National Mission on Sustainable Agriculture (NMSA)**
- **Soil Health Management**
- **RKVY**, **UNCCD National Plan**

Conclusion

Desert soilification showcases sustainable agriculture, turning barren deserts productive and helping India aim for Land Degradation Neutrality by 2030.

72. AFSPA in India: Powers, Controversies, and Contemporary Issues

Introduction
AFSPA, 1958 grants armed forces special powers in "disturbed" areas; recently extended in parts of Manipur, Nagaland, and Arunachal Pradesh, highlighting the security vs. human rights debate.

Historical Background
AFSPA Origin & Basis: Enacted 1958 for Naga Hills insurgency; grounded in Article 355; later extended to other North-Eastern states and J&K.

Key Provisions of AFSPA, 1958
AFSPA Provisions: Governments declare "disturbed" areas; armed forces can use force, arrest/search without warrant, destroy insurgent facilities; personnel get immunity without central sanction.

Current Extension (2025)
AFSPA Status (Oct 2025–Mar 2026): Extended in most of Manipur (except 13 police stations), parts of Arunachal Pradesh (Tirap, Changlang, Longding, Namsai, Mahadevpur, Chowkham), and five districts in Nagaland; previously withdrawn from some Manipur valley areas (Apr 2022–Apr 2023).

Rationale Behind AFSPA
- **Counter-Insurgency:** Helps the Army deal with militancy and cross-border terrorism.
- **Difficult Terrain:** In hilly and forested regions, quick action is needed.
- **Weak Local Police:** Many insurgency-hit areas lack adequate police infrastructure.
- **National Security:** Important in border states with external linkages (Myanmar, China).

Criticisms of AFSPA
Concerns: AFSPA leads to human rights violations (custodial deaths, harassment; e.g., Irom Sharmila's protest), grants forces legal immunity, fuels local alienation, though SC (2016) mandates no excessive force even in disturbed areas.

Committees and Recommendations
Reforms Suggested: Jeevan Reddy (2005) recommended repealing AFSPA and integrating provisions into UAPA; Second ARC (2007) called for review and accountability; Santosh Hegde Commission (2013) reported fake encounters in Manipur.

Balancing Security and Rights
AFSPA Debate: Needed for counter-insurgency, but reforms required—periodic review of "disturbed" areas, clear force guidelines, enhanced state police role, and citizen grievance mechanisms.

Conclusion
AFSPA highlights India's need to balance security and freedoms; pragmatic reforms with accountability and gradual de-notification can prevent misuse and protect citizens.

73. Understanding the Rupee's Slide Against the US Dollar

Introduction

The Indian Rupee fell to ₹88.6/USD, raising concerns over trade competitiveness, external stability, and macroeconomic management.

Recent Trend

In September 2025, the INR fell over 3% against the USD and weakened against the Euro and Pound, unlike most major currencies.

Causes Behind the Rupee's Depreciation

- **Trade & Current Account:** High import bill (crude, electronics, gold) vs. modest export growth widens CAD.
- **Capital Inflows:** FPIs negative; FDI plateauing amid policy and earnings uncertainty.
- **Interest Rate Gap:** US rate hikes attract capital, causing rupee outflows.
- **Domestic Growth:** Slower economic growth and protectionist measures reduce investor confidence.

Impact of a Weaker Rupee

- **Negative Impacts:** Higher import costs → inflation; increased fiscal deficit and subsidy burden; stock market volatility from FPI outflows.
- **Positive Impacts:** Cheaper exports boost competitiveness; higher remittance and tourism inflows; supports import substitution and domestic manufacturing.

RBI's Response and Policy Space

The RBI has taken a mild approach, avoiding aggressive defense of the rupee to preserve foreign exchange reserves (~$650 billion) and allow market-driven adjustments that support exports, while retaining tools like spot interventions, swap facilities, and interest rate measures to manage volatility.

Structural Issues Exposed

The rupee's decline highlights structural vulnerabilities, including heavy dependence on oil imports, low export diversification, persistent trade deficits with China and others, and limited manufacturing competitiveness.

Way Forward

Short-term measures: maintain forex reserves, attract stable FPI/FDI, and use targeted interventions. **Medium-term reforms**: diversify exports, reduce oil dependence, deepen bond markets, and ensure price stability. While a falling rupee can aid exports, prolonged weakness risks inflation and investor confidence; balanced exchange rate management with structural reforms is essential.

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PRELIMS POINTERS

Blue Sea Dragon

Why in News: Several beaches in Spain shut down due to invasion of Blue Sea Dragons, raising public safety concerns.

About:

- A nudibranch mollusk (sea slug), also called blue angel/sea swallow.
- Size: 3–4 cm; floats upside down on ocean surface.
- Distribution: Atlantic, Pacific, Indian oceans (warm & temperate waters).
- Hermaphroditic.

Diet & Adaptation:

- Feeds on venomous siphonophores (e.g., Portuguese man-o-war).
- Stores their nematocysts in finger-like structures (cerata) → delivers stronger sting than prey.

Impact on Humans:

- Causes pain, nausea, dermatitis, allergic reactions.
- Riskier for children & elderly.

Significance/Concerns:

- Controls jellyfish population (ecological role).
- Beach tourism disrupted.
- Climate change & ocean warming linked to unusual appearances.

Dioscorea balakrishnanii

Why in News: Newly identified edible yam species from Wayanad, Kerala.

About:

- New species of Dioscorea (yam family Dioscoreaceae).
- Locally called chola kizhangu by Kattunayikar tribes.
- Found in **shola evergreen forests** of Wayanad, Western Ghats.
- Tubers edible when cooked; good flavour; low glycemic index.
- Dioecious species (separate male & female plants).

Significance:

- Potential for food security & crop diversification.
- Conservation importance – wild relatives of cultivated yam (kachil/kavat).
- Medicinal potential.

Mira Stars

Why in News: IUCAA scientists used Mira stars to make the most precise measurement of the universe's expansion rate.

About:

- Mira (*Omicron Ceti*): first known **variable star** (brightness changes regularly).
- Prototype for **Mira variables** – cool, giant stars (~3000 K) in late life stage.
- Brightness varies in cycles (100–1000 days) due to expansion & contraction.
- Relationship between brightness & pulsation period → used as standard candles.
- Help measure cosmic distances → key to extragalactic distance ladder.

Significance:

- Crucial for calculating Hubble constant (rate of expansion of universe).
- Complements Cepheid variables and supernovae as distance indicators.

Mauritania

Key Facts

- **Location:** NW Africa; Sahel region; borders Western Sahara, Algeria, Mali, Senegal; Atlantic Ocean (W).
- **Area:** ~1.03 million sq. km; 90% desert (Sahara).
- **Geography:** Eye of the Sahara (Guelb er Richat); Senegal River (lifeline).

People & Society

- **Ethnicity:** Moors (Arabs + Berbers) dominant.
- **Population:** Coastal cities & Senegal River basin.
- **Capital:** Nouakchott.
- **Religion:** Islam.
- **Language:** Arabic (official); Fulani, Soninke, Wolof, French common.

History

- **Independence:** 1960 (from France).
- **1981:** Last country to outlaw slavery.

Economy

- **Resources:** Iron ore, gold, copper, gypsum, phosphate, oil (exploration).
- **Exports:** 75% minerals/oil, 20% fisheries.
- **Fishing:** Among richest global waters.

Swarnamukhi River

Key Facts

- **Location:** Andhra Pradesh; east-flowing river.
- **Catchment Area:** ~3,225 sq. km.
- **Length:** ~130 km.
- **Origin:** Eastern Ghats, near Pakala (Chittoor district), at ~300 m elevation.
- **Course:** Flows NE through Tirumala & Srikalahasti; joins Bay of Bengal.
- **Cultural Significance:** Sacred sites like Tirumala Hills & Srikalahasteeswara Temple on its banks.
- **Hydrology:** Independent river (not part of major networks); rain-fed, seasonal flow.
- **Rainfall:** 1270 mm (east) → 762 mm (west) across basin.
- **Tributary:** Kalyani River; Kalyani Dam built in 1977.
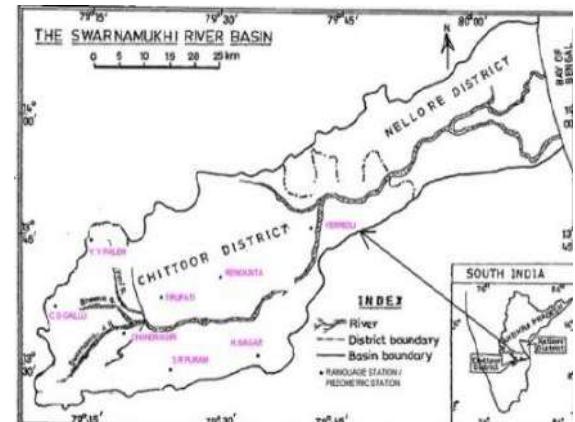
Killer whales

Key Facts

- **Scientific name:** Orcinus orca
- **Family:** Delphinidae (largest member; includes dolphins & pilot whales).
- **Distribution:** Found worldwide – from open seas to coastal waters.
- **Status:** IUCN – Data Deficient.

Features

- **Appearance:** Distinctive black-and-white body.
- **Size:** Largest dolphin species.
- **Social Structure:** Live in pods (matrilineal groups).
- **Communication:** Depend on underwater sound for feeding, navigation & communication.

Ecology

- **Role:** Apex predator (top of marine food chain).
- **Diet:** Fish, seals, whales, seabirds (varies by pod).

Threats

- Fishing gear entanglement.
- Habitat loss & degradation.
- Pollution & prey depletion.

CEREBO

- **Developer:** Indian Council of Medical Research (ICMR).
- **Type:** Hand-held, indigenous diagnostic device.
- **Technology:** Near-infrared spectroscopy + Machine Learning.
- **Purpose:** Detects **Traumatic Brain Injuries (TBIs)** – intracranial bleeding & edema.
- **Features:**
    - Non-invasive, radiation-free.
    - Safe for infants, pregnant women, repeat use.
    - Provides results in **<1 minute**.
    - **Color-coded outputs** for easy use by healthcare staff.
    - Portable – designed for ambulances, trauma centers, rural clinics, disaster zones.
- **Cost-effective:** Affordable alternative to CT scans (but not a replacement for deep tissue assessment).
- **Significance:**
    - Strengthens rural healthcare & emergency response.
    - Supports *Digital India* & *Atmanirbhar Bharat*.
    - Potential for global med-tech export.
- **TBI (Traumatic Brain Injury):**
    - Brain injury due to external force (accident, fall, etc.).
    - Mild: Temporary effect on movement/behavior.
    - Severe: Can cause disability or death.

Gastrochilus pechei

- **Latest Discovery:** Found in Vijoynagar, Arunachal Pradesh.
- **Genus:** *Gastrochilus* (monopodial orchid genus).
- **Habitat:**
    - Moist, evergreen rainforest.
    - Grows on small trees near riverbanks & flowers in Sept–Oct.
- **Distribution:**
    - Earlier recorded only in Myanmar.
    - Now found in India (Arunachal Pradesh).
- **India's Orchid Diversity:**

- o Before this, 22 species of *Gastrochilus* known in India; 15 from Arunachal Pradesh.
    - o **Arunachal = "Orchid State of India" (≈60% of India's orchid species).**
- **Genus Facts:**
    - o **First recorded: 1825.**
    - o **Key traits:** short axillary inflorescence, brightly coloured flowers, distinct epichile on saccate hypochile, 2 porate globose pollinia on slender stipe.

Painted Stork

- **Latest News:** Carcass of a **migratory painted stork** found in Delhi Zoo; biosecurity tightened.
- **Scientific Name:** *Mycteria leucocephala*
- **Family:** Stork family (*Ciconiidae*).

Distribution & Habitat

- Found across **tropical Asia** – Indian subcontinent & Southeast Asia (south of Himalayas).
- Prefer **freshwater wetlands, irrigation canals, flooded rice fields** (esp. during monsoon).
- Absent from **arid zones, dense forests, higher hills**.
- Mostly **non-migratory**, but local seasonal movements occur.

Key Features

- Height: **93–102 cm**; Weight: **2–5 kg**.
- **Yellow heavy bill** with down-curved tip.
- **White plumage** with **rose tint near tail**.
- **Black pectoral band** (unique within *Mycteria* genus).
- Legs: yellow–red, often appear white due to **urohidrosis** (defecating on legs to cool body).
- **No sexual dimorphism**, but males slightly larger.

Conservation

- **IUCN:** Least Concern (LC).

Indian Rosewood (*Dalbergia latifolia / sissoo*)

Latest News: IWST (Bengaluru) habitat modelling shows only 17.2% of suitable habitat lies in protected areas.

About the Species:

- Commonly called "Ivory of the Forests."
- **Type:** Fast-growing, hardy, deciduous rosewood.

- **Distribution:** Native to Himalayan foothills (Afghanistan → Bihar), grows along riverbanks at 200–1,400 m.
- **Features:** Long leathery leaves, whitish/pink flowers, durable deep-coloured timber.
- **Uses:** Furniture, handicrafts, musical instruments, veneers.

Ecological Role:

- Improves soil fertility (nitrogen fixation).
- Supports birds and insects.
- Serves as long-term carbon sink.

Concerns:

- Populations dominated by ageing trees.
- Almost no natural regeneration; seedlings scarce.

Conservation Status:

- **IUCN: Vulnerable; CITES: Appendix II.**

Vultures in India

- **Species (9 in India):**
    - *Critically Endangered:* White-rumped, Slender-billed, Red-headed, Indian Vulture.
    - *Endangered:* Egyptian Vulture.
- **Role**: Nature's scavengers → prevent disease spread.
- **Decline**: 95–99% since 1990s; cause → **Diclofenac** (toxic NSAID).
- **Conservation Measures**:
    - Ban on Diclofenac (2006); **Meloxicam** = safe alternative.
    - **Vulture Safe Zones (VSZs),** captive breeding centres (Pinjore, Assam, MP, WB).
    - **SAVE Consortium, Action Plan for Vulture Conservation (2020–25).**
- **New Initiative (2024): India's 1st Vulture Conservation Portal**, launched in **Assam** by We Foundation India + Gauhati University; shares info in local languages (starting Assamese).
- **Cultural Link**: Important for **Parsis' Towers of Silence**.

Jarosite

What is it?

- o Yellow-brown **sulphate mineral** of potassium, iron & sulphur.
- o Forms in **arid, saline, volcanic environments** in presence of water.
- **Earth Locations:**
  - o **India**: Matanomadh (Kutch, Gujarat, ~55 million years old, Paleocene), Varkala cliffs (Kerala).
  - o Global: Mexico, Canada, Japan, Spain, Utah & California (USA).
- **Mars Connection:**
  - o Discovered by **NASA's Opportunity Rover (2004)** at Meridiani Planum.
  - o Strongest evidence of **past water** on Mars.
- **Scientific Significance:**
  - o Indicates **extreme geochemical conditions**.
  - o Helps study **palaeo-evolution** of Martian geology.
  - o Sulphates like jarosite can **trap organic molecules** → useful in life-detection missions.

Coconut Development Board (CDB)

- **Established:** 12 Jan 1981
- **Nature:** Statutory body under **Ministry of Agriculture & Farmers Welfare**
- **HQ:** Kochi, Kerala
- **Regional Offices:** Bengaluru (Karnataka), Chennai (Tamil Nadu), Guwahati (Assam), Patna (Bihar)

Functions:

- Promote integrated development of coconut production & utilization.
- Provide technical, financial & extension support to cultivators/industry.
- Encourage modern processing & product diversification.
- Recommend marketing, import/export regulation, price incentives.
- Fix standards & grades for coconut products.

Latest Update: Celebrated **World Coconut Day (2nd Sept 2025)** by launching **revised schemes** for productivity & diversification.

Exercise MAITREE

- **Type:** Bilateral Army exercise between **India & Thailand**.
- **Started: 2006**.
- **Aim:** Enhance **interoperability, counter-terrorism training, and defence cooperation**.
- **Latest Edition: 14th edition (2025)** – at **Joint Training Node (JTN), Umroi, Meghalaya**.
- **Previous Edition: 13th (2023)** – Fort Vachiraprakan, Tak Province, Thailand.
- **Indian Contingent: Madras Regiment Battalion**.
- **Focus:**
    - **Company-level counter-terrorist ops** in semi-urban terrain.
    - Under **UN Charter Chapter VII** (peace & security).
    - Includes **tactical drills, joint planning, arms skills, raids, validation exercise (48 hrs)**.

Vikram 3201

- **Latest:** Unveiled at **Semicon India 2025**.
- **Developer:** Designed by **VSSC (ISRO)**, fabricated at **SCL, Chandigarh**.
- **Type:** India's **first fully indigenous 32-bit microprocessor**.
- **Predecessor: Vikram 1601** (16-bit, in use since 2009).
- **Use:** For **rockets & satellites** – not general devices.

Functions:

- Handles **navigation, control & mission management** in launch vehicles.
- Performs **split-second calculations** to keep rockets stable & on course.

Special Features:

- **Military-grade**; works in extreme conditions (**–55°C to +125°C**, vibration, radiation).
- Supports **64-bit floating-point ops**, **Ada language**, **on-chip 1553B bus interfaces**.
- Enhanced **memory handling** & **complex instruction execution**.

Significance: First time India has **indigenously designed & fabricated** a processor of this scale for **space avionics**.
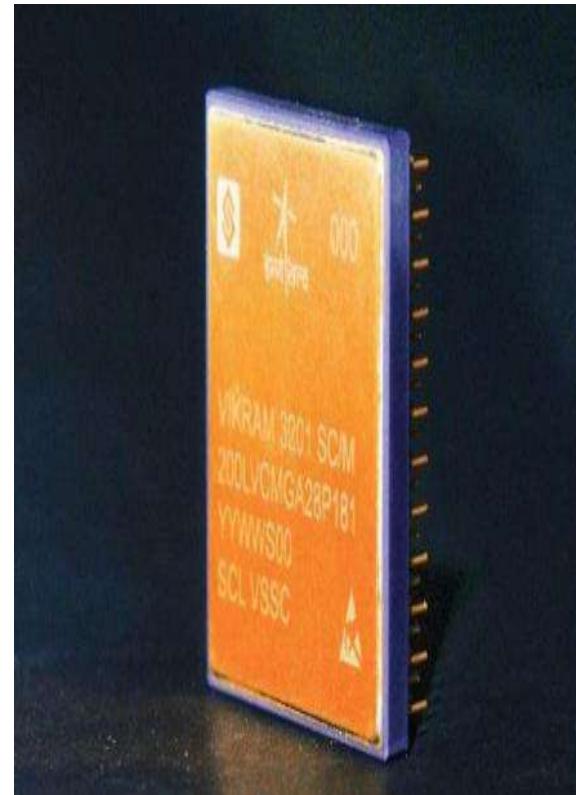
Particularly Vulnerable Tribal Groups (PVTGs):

- **Definition:** Sub-category of Scheduled Tribes with *lowest development indicators*.
- **Criteria (by Dhebar Commission, 1973):**
    1. Pre-agricultural level of technology
    2. Low literacy
    3. Declining or stagnant population
    4. Subsistence economy
- **Number:** 75 PVTGs identified in India (across 18 States & 1 UT).
- **Largest number:** Odisha (13 groups).
- **Schemes:**
    - *Pradhan Mantri PVTG Development Mission* (Budget 2023–24, ₹15,000 cr for 3 years).
    - Focus: housing, health, education, livelihood.
- **Examples:** Jarawas (A&N Islands), Cholanaikans (Kerala), Sahariyas (MP & Rajasthan), Birhor (Jharkhand).

Acanthamoeba:

- **Type:** Free-living amoeba (unicellular).
- **Habitat:** Water, soil, dust, swimming pools, hot tubs, drinking water systems, HVAC.
- **Entry:** Cuts/wounds, inhalation (lungs/nose), eyes (esp. contact lenses).
- **Diseases:**
    - *Granulomatous Amebic Encephalitis (GAE)* – brain, mostly fatal.
    - *Acanthamoeba Keratitis* – eye, vision loss risk.
    - *Cutaneous Acanthamoebiasis* – skin.
    - *Acanthamoeba Rhinosinusitis* – nasal/sinuses.
- **Current Affairs:** Recently found widespread in Kerala waterbodies

Debrigarh WLS:

- **Location:** Bargarh district, Odisha.
- **River/Dam:** Near Hirakud Dam on Mahanadi.
- **Declared:** Wildlife Sanctuary in 1985.
- **Upcoming:** To be India's newest Tiger Reserve.
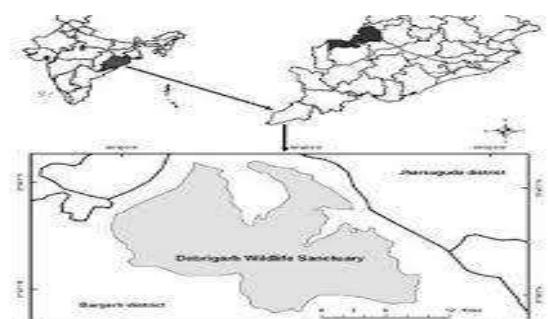
- **Historical link:** Veer Surendra Sai's rebellion base at Barapathara.
- **Vegetation:** Mixed & dry deciduous forest.
- **Flora:** Sal, Asana, Bija, Dhaura, Aanla.
- **Fauna:** Leopard, sloth bear, chousingha, sambar, gaur, wild boar, dhole.
- **Avifauna:** Migratory birds – crested serpent eagle, drongo, oriental white-eye.

Sudan:

Latest News - A landslide buried a remote mountain village in Darfur region, highlighting Sudan's fragile geography and humanitarian challenges.

Key Facts

- **Location:** Northeastern Africa.
- **Rank:** 3rd largest country in Africa.
- **Borders:** South Sudan, Ethiopia, Eritrea, Egypt, Libya, Chad, Central African Republic.
- **Seas:** Coastline along the Red Sea.
- **Relief:** Vast plains & plateaus, drained by Nile River & tributaries.
- **Highest Point:** Jabal Marrah (Darfur).
- **Vegetation:** Predominantly deserts & arid grasslands.
- **Natural Resources:** Petroleum, gold, copper, zinc, chromium, mica, silver, hydropower.
- **Capital:** Khartoum – at the confluence of *Blue Nile & White Nile*.

Voyager 1:

- **Launched by:** NASA in **1977** (along with Voyager 2).
- **Objective:** Study outer planets (Jupiter, Saturn) and interstellar space.
- **Milestones:**
    - 1979 → Jupiter flyby (discovered its faint rings).
    - 1980 → Saturn flyby (studied Titan's atmosphere).
    - 1990 → Famous **"Pale Blue Dot"** photograph of Earth.
    - 2012 → Became the **first human-made object to enter interstellar space**.
- **Current status:** Still operational (as of 2025), ~24 billion km from Earth.

- **Instruments:** Designed to study plasma, magnetic fields, cosmic rays, interstellar medium.
- **Communication:** Uses NASA's **Deep Space Network (DSN)**; signal takes over 22 hours one way.
- **Golden Record:** Carries **phonograph record** with sounds, images, music, greetings from Earth – a message to potential extraterrestrial life.

SPG & Z+ Security

- **SPG (Special Protection Group):**
  - Set up in **1985**, statutory backing via **SPG Act, 1988**.
  - Provides security to **Prime Minister and immediate family** (current & former for 5 yrs after office).
  - Elite force under **Cabinet Secretariat**.
- **Z+ Security:**
  - Highest category (after SPG) under **Central Armed Police Forces** like NSG/CRPF.
  - Covers **38 commandos + escorts**.
  - Granted based on **threat perception** by IB/MHA, not automatic.

SIX LEVELS OF SECURITY OFFERED IN INDIA

X SECURITY — Only 2 armed personnels, no commandos

SPG SECURITY — Only provided to Prime Minister. Strength unknown.

Y SECURITY — 11 personnels, including 1-2 Commandos. One personnel for mobile security, rest static

Y+ SECURITY — 11+ personnels, including 1-2 Commandos. Two personnels for mobile security, others static

Z SECURITY — 22 personnels, including 4-5 Commandos. Six personnels for mobile security, rest static

Z+ SECURITY — 55 personnels, including 10+ Commandos. Ten personnels for mobile security, rest static.

Key difference: SPG = PM & family only (statutory); Z+ = threat-based, extendable to VIPs.

Look Out Circular (LOC):

- **LOC:** Issued by the **Bureau of Immigration** (MHA) at request of police/ED/CBI/other agencies.
- Purpose: To **prevent absconding accused/suspects** from leaving India.
- Contains: Name, passport details, case info.
- Valid for **1 year**, renewable.
- Not a court order, but an **executive measure** based on *threat perception to law/order or investigation*.
- Often seen in cases of **economic offenders & high-profile fugitives**.

PASSPORT LOC LOOK OUT CIRCULAR

Kuki-Zo:

- **Ethnic group** in **Northeast India (mainly Manipur, Mizoram, Nagaland)** and adjoining Myanmar.
- Part of the larger **Zo/Chin-Mizo-Kuki ethnolinguistic family**.
- Mostly **Christian, Tibeto-Burman language speakers**.
- Traditionally settled in **hills**, engaged in shifting cultivation.
- Recent prominence due to **ethnic clashes in Manipur (2023–24)** with Meiteis.

Kuki - Zo tribes

Beas River:

- **Origin:** Beas Kund, Rohtang Pass (Himachal Pradesh).
- **Course:** Flows through Kullu, Mandi, Kangra → enters Punjab → joins **Sutlej** at Harike.
- **Tributary:** Only tributary of **Indus River System** entirely in India.
- **Projects:** Pong Dam (Maharana Pratap Sagar), Beas–Sutlej link.

History: Known as **Vipasha** in Rigveda; eastern limit of **Alexander's campaign**.
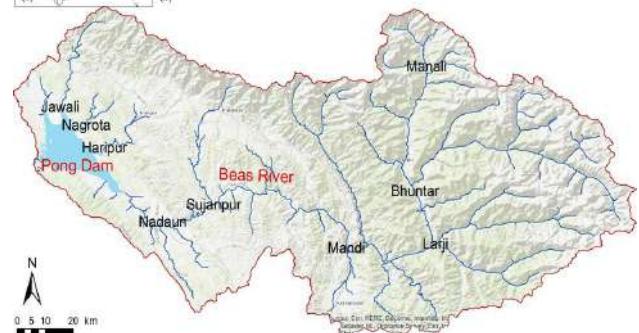
Mali:

- **Landlocked country** in **West Africa**.
- **Capital:** Bamako.
- **Rivers:** Niger & Senegal.
- **Borders:** Algeria, Niger, Burkina Faso, Côte d'Ivoire, Guinea, Senegal, Mauritania.
- Part of **Sahel region**; faces desertification & Islamist insurgency.
- Major producer of **gold & cotton**.
- Member of **African Union (AU), ECOWAS (suspended), G5 Sahel (suspended)**.

Interpol Silver Notice

- Introduced in **2018** as part of Interpol's colour-coded notice system.
- Purpose: Identification and tracing of Criminal Assets.
- Shared globally with **member countries' law enforcement agencies, forensic experts, and disaster victim identification units**.
- Complements the **Yellow Notice** (for missing persons) – Silver is for *deceased but unidentified individuals*.
- Helps in **humanitarian closure for families** and in **criminal investigations**.

Inverted Duty Structure (IDS)

- Situation where **import duty on finished goods is lower** than the **import duty on raw materials / intermediates**.
- Makes **domestic manufacturing uncompetitive**, as it is cheaper to import finished products than to produce in India.
- Example: Higher duty on smartphone components vs. lower duty on imported smartphones.
- Leads to issues like:
  - o Discouragement of *Make in India*
  - o Increased import dependence
  - o Reduced value addition in domestic industry

Red Sea

- Narrow inlet of the **Indian Ocean**, lying between **northeastern Africa and the Arabian Peninsula**.
- Connected to:
  - o **Mediterranean Sea** via *Suez Canal → Gulf of Suez*.
  - o **Gulf of Aden / Arabian Sea** via *Bab-el-Mandeb Strait*.
- Borders: Egypt, Sudan, Eritrea (west) and Djibouti, Saudi Arabia, Yemen (east).
- Strategic importance: Major global **shipping route** (esp. oil & container trade).
- Known for **high salinity** and rich **marine biodiversity (coral reefs)**.

Blood Moon

- Refers to the **reddish appearance of the Moon** during a **total lunar eclipse**.
- Cause: Earth comes between Sun and Moon → Earth's atmosphere scatters shorter blue wavelengths and allows longer red wavelengths to pass → red light falls on the Moon.
- This atmospheric filtering is called **Rayleigh Scattering**.
- No scientific connection with disasters or myths (purely astronomical).
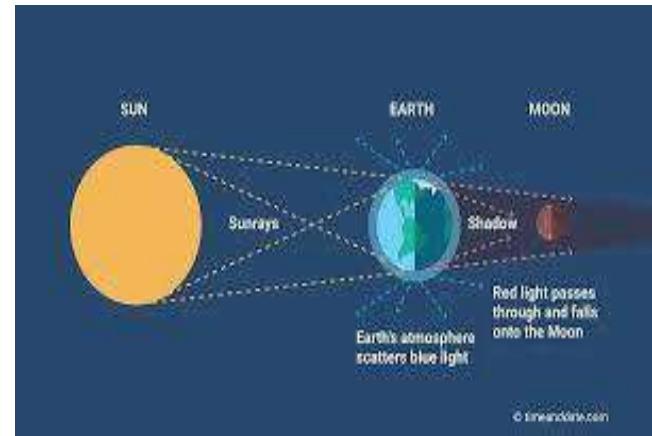
Pulikkali

- **Meaning:** Literally "Tiger Play" – a folk art form of Kerala.
- **Occasion:** Performed during **Onam** festival, mainly in **Thrissur** district.
- **Features:**
    - Performers paint their bodies with bright yellow, red, and black to resemble tigers & hunters.
    - Accompanied by traditional percussion instruments like **Chenda** and **Thakil**.
- **Cultural Significance:** Symbolises joy, celebration, and community spirit; attracts large crowds and tourists.
- **Recognition:** Listed among Kerala's major cultural folk performances and promoted under **Kerala Tourism** initiatives.

Bhil Community

- **Location:** Predominantly found in **Madhya Pradesh, Rajasthan, Gujarat, and Maharashtra**.
- **Status:** Classified as a **Scheduled Tribe (ST)** under the Constitution.
- **Etymology:** The word *Bhil* comes from *"Bhil"* meaning **bow**, as they are traditionally skilled archers.
- **Culture:**

- o Known for **Pithora paintings**, folk songs, and dances.
- o Celebrate festivals like **Gavari** and **Holi** with unique tribal traditions.
- **Livelihood:** Traditionally hunter-gatherers, shifting cultivators; now also agricultural and wage laborers.
- **Demographics:** One of the **largest tribal groups in India**.
  - o **Political Significance:** Influence in tribal politics; Bhil-majority areas are part of the proposed demand for **Bhil Pradesh** (separate tribal state).

Papua New Guinea (PNG)

- **Location:** Island nation, SW Pacific; neighbors – Indonesia (W), Australia (S), Solomon Is. (SE)
- **Capital:** Port Moresby
- **Geography:** Mountainous, tropical rainforests; **Highest:** Mount Wilhelm 4,509 m; **Rivers:** Sepik, Fly; **Volcano:** Rabaul Caldera; prone to earthquakes & tsunamis
- **Biodiversity:** Birds of paradise, tree kangaroo, Queen Alexandra's birdwing butterfly

- **Government:** Constitutional monarchy, Commonwealth; **Head of State:** British Monarch (Gov.-Gen.), **PM:** Head of Govt.
- **Recent News:** Indian Navy Band at PNG 50th Independence Military Tattoo

Yedshi Ramling Ghat Wildlife Sanctuary

- **Location:** Osmanabad District, Maharashtra; **Range:** Balaghat mountains, Sahyadri hills
- **Area:** 22.38 sq.km; **Established:** 23 May 1997
- **Vegetation:** South Deccan Plateau dry deciduous forests & thorny scrublands
- **Flora:** Teak, Sandalwood, Neem, Acacia; Shrubs – Lantana, Carissa
- **Fauna:** Tigers, leopards, sloth bears, blackbucks, jackals, wolves, foxes, monitor lizards, porcupines, barking deer, hares

- **Cultural Spot:** Ramling Temple (Lord Shiva); nearby waterfall & cave linked to Ramayana legends (Ravana, Jatayu)
- **Recent News:** Male tiger travelled 450 km from Vidarbha to settle here after decades.

Harappan Script

- **Discovered:** 1920s (Sir John Marshall's team).
- **Nature:** Undeciphered; found on seals, terracotta, metals; pictograms with animal/human motifs.
- **Signs:** Estimates vary → 62 (S.R. Rao, 1982), 425 (Parpola, 1994), 676 (Bryan Wells, 2016).
- **Linguistic Debates:**
  - Linked to **Brahmi** (Cunningham) – disputed.
  - **Proto-Dravidian/Gondi** theory (90% claimed deciphered).
  - **Santali** link (Parpola).
  - **Sanskrit/Vedic** theory (Rig Vedic mantras, Ghaggar-Hakra = Saraswati).
- **Challenges:** No bilingual texts; vast geographical spread; multi-lingual civilisation likely.
- **Latest:** IGNCA conference (Sep 2025) – multiple competing theories; no credible breakthrough yet.

Tiwa Tribe & Langkhun Festival

- **Community**: Tiwa tribe, Assam (Karbi Anglong).
- **Festival**: Langkhun – marks cultural significance and **prayers for good harvest**.
- **Nature**: Agrarian, community-based, tribal festival.

Giant African Snail (Lissachatina fulica)

- Native: East Africa; invasive worldwide.
- Habitat: Thrives in warm, humid tropical regions.
- Impact: Eats **500+ crops**, major agricultural pest.
- Human Risk: Vector of **rat lungworm (Angiostrongylus spp.),** causing brain and abdominal infections.
- Status: Among world's **worst invasive species**.

Himalayan Brown Bear (Ursus arctos isabellinus)

- Largest mammal in high-altitude Himalayas (3,000–5,500 m).
- Distribution: J&K, Himachal Pradesh, Uttarakhand; also in Nepal, Bhutan, Tibet, Pakistan.
- Features: Sandy/reddish-brown fur, omnivorous, hibernates in winter; linked to **Yeti legend**.
- Conservation: **IUCN – Critically Endangered**, **WPA 1972 – Schedule I**, **CITES – Appendix I**.

Ethiopia & GERD (Africa's Biggest Dam)

- **Ethiopia**: Landlocked, Horn of Africa; capital – Addis Ababa.
- **Grand Ethiopian Renaissance Dam (GERD)**: On **Blue Nile**, capacity **6,450 MW**; Africa's largest hydropower project.
- **Purpose**: Electricity for Ethiopia + export.
- **Dispute**: Egypt & Sudan fear reduced Nile flow; Ethiopia cites development rights.

Sariska Tiger Reserve

- Location: **Alwar district, Rajasthan** (Aravalli Hills).
- Declared a **tiger reserve in 1978** under **Project Tiger**.
- Mixed vegetation: **tropical dry deciduous forests, grasslands, scrub-thorn**.
- Famous for: **Relocation of tigers from Ranthambore (2008)** after local extinction.
- Fauna: Leopard, striped hyena, caracal, wild dog, sambar, chital.
- Also houses **Siliserh Lake** and **Kankwari Fort**.

Bandipur Tiger Reserve

- Location: **Karnataka**, part of the **Nilgiri Biosphere Reserve**.
- Established as a **tiger reserve in 1973** under **Project Tiger**.
- Borders: **Wayanad (Kerala), Mudumalai (Tamil Nadu), Nagarhole (Karnataka)** – forms largest tiger habitat in India.
- Vegetation: **Tropical dry deciduous and moist deciduous forests**.
- Fauna: Tiger, elephant, leopard, wild dog, gaur, four-horned antelope.

Bandipur National Park

Adi Sanskriti

- Launched by: **Union Tribal Affairs Ministry (2025, beta version)**.
- Aim: Digital platform to preserve and promote **tribal artforms, culture, and heritage**.
- Vision: "**World's first Digital University**" for tribal knowledge and culture.
- Components:
    1. **Adi Vishwavidyalaya** – Digital Tribal Art Academy.
    2. **Adi Sampada** – Socio-cultural repository.
    3. **Adi Haat** – Online marketplace for tribal artisans' products.

Israel

- **Location:** West Asia, eastern Mediterranean coast.
- **Borders:** Lebanon (N), Syria (NE), Jordan (E), Egypt (SW), Mediterranean Sea (W).
- **Capital:** Jerusalem (disputed; many embassies in Tel Aviv).
- **Features:** "Start-up Nation"; Dead Sea on eastern border; ongoing Israel–Palestine conflict.
- **Strategic Importance:** Key US ally; influential in West Asian geopolitics.

Hellfire Missile

AGM-114 Hellfire Missile

- **Type:** Air-to-ground, laser-guided, subsonic tactical missile.
- **Origin:** USA, 1970s; in service with US & ~30 allies.
- **Role:** Anti-tank, precision strikes on bunkers/structures; limited air-to-air use.
- **Platforms:** Helicopters, UAVs (Predator, MQ-9 Reaper), aircraft, ships, ground vehicles.
- **Specs:** Range 7–11 km; Speed up to Mach 1.3; Weight ~45–48.5 kg.

- **Latest Variant:** AGM-114R (Hellfire Romeo) – multipurpose, semi-active laser guidance, blast-fragmentation warhead.

Amoebic Meningoencephalitis (AME)

- **Why in News**: Recent deaths reported in **Kerala (2025)** due to AME.
- **Causative Agent**: *Naegleria fowleri* (free-living amoeba).
- **Mode of Entry**: Through **nasal passages** → travels via olfactory nerve to brain.
- **Habitat**: Warm freshwater bodies – lakes, ponds, rivers, untreated swimming pools.
- **Transmission**: **Not person-to-person**.
- **Symptoms**: Headache, fever, nausea, stiff neck, seizures, coma.
- **Fatality Rate**: >95% despite treatment.
- **Prevention**: Avoid swimming in stagnant warm water; use **boiled/sterile water** for nasal cleansing.

Red Ivy Plant (Hemigraphis colorata / Strobilanthes alternata)

- **Botanical Profile**: Perennial herb in Acanthaceae family; local names: Murikooti pacha (Kerala), Red flame ivy; native to tropical regions like India/Malaysia.
- **Medicinal Use**: Traditionally applied for wound healing, cuts, anemia, hemorrhage due to antibacterial/anti-inflammatory properties; key compound: acteoside (phenylethanoid glycoside).
- **Recent Innovation**: JNTBGRI (Kerala) developed multi-layered electrospun nanofiber wound pad (2025) incorporating 0.2% acteoside + neomycin sulfate; biodegradable, breathable, patented for enhanced efficacy.

Vembanad Lake

- **Location:** Kerala; longest lake in India, largest in Kerala.
- **Other Names:** Vembanad Kayal, Vembanad Kol, Punnamada Lake (Kuttanad), Kochi Lake (Kochi).
- **Source Rivers:** Meenachil, Achankovil, Pampa, Manimala.

- **Geography:** Separated from Arabian Sea by a narrow barrier island; famous backwater stretch.
- **Famous Event:** Vallam Kali (Nehru Trophy Snake Boat Race) – August annually.
- **Ecological Status:** Ramsar Wetland (2002); under National Wetlands Conservation Programme; facing ecological stress due to tourism, houseboats, encroachment.
- **Wildlife:** Kumarakom Bird Sanctuary on east coast.

Melioidosis

- **Cause:** *Burkholderia pseudomallei* (Gram-negative bacterium).
- **Transmission:** Contaminated soil/water, inhalation of dust/water droplets, cuts in skin; worsened by monsoon or cyclones.
- **High-Risk Groups:** Diabetes, alcohol use disorder, chronic kidney/lung disease.
- **Symptoms:** Fever, headache, breathing difficulty, stomach/chest pain.
- **Epidemiology:** Endemic in Southeast Asia, northern Australia, Indian subcontinent, southern China, Hong Kong, Taiwan.
- **Case Fatality Rate:** 16–50%.
- **Treatment/Prevention:** No vaccine; early antibiotics essential.
- **Recent News:** Case reported in Turakapalem, Andhra Pradesh.
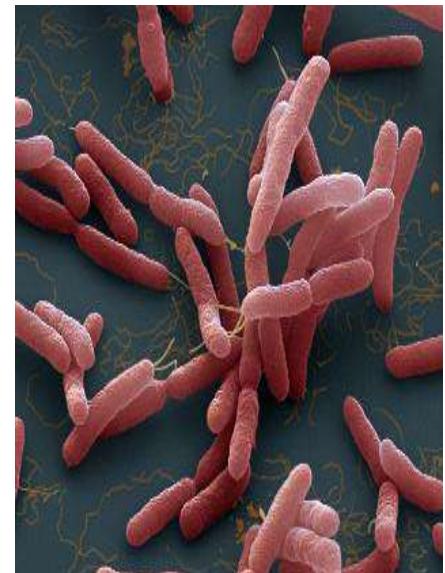
Aedes Mosquito

- **Species:** *Aedes aegypti* and *Aedes albopictus*.
- **Diseases Transmitted:** Dengue, Chikungunya, Zika, Yellow Fever.
- **Breeding:** Stagnant water in containers, tires, pots, drains.
- **Active Time:** Daytime biter, peak in early morning & late afternoon.
- **Control:** Source reduction, insecticides, personal protection (nets, repellents).
- **Why in News:** Outbreaks of dengue/chikungunya/Zika in India & globally.
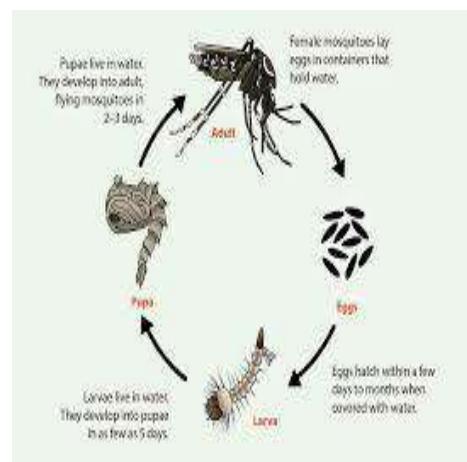
Atomic Minerals

- **Definition**: Minerals used in nuclear energy production and strategic sectors due to their radioactive/rare earth content.
- **Examples (First Schedule of MMDR Act, 1957)**: Uranium, Thorium, Lithium, Beryllium, Zirconium, Niobium, Tantalum, Rare Earth Elements (Monazite, Ilmenite, etc.).
- **Occurrence in India**: Coastal beach sands of Tamil Nadu, Kerala, Odisha, Andhra Pradesh; also Jharkhand, Rajasthan.
- **Importance**: Nuclear power, defense, space, electronics, renewable energy.
- **Regulation**: Central Government controls exploration and mining under **Atomic Energy Act, 1962** and **MMDR Act, 1957**.
- **EIA Norms**: Public consultation made mandatory (1994, 2006), but recent exemption proposals are debated.
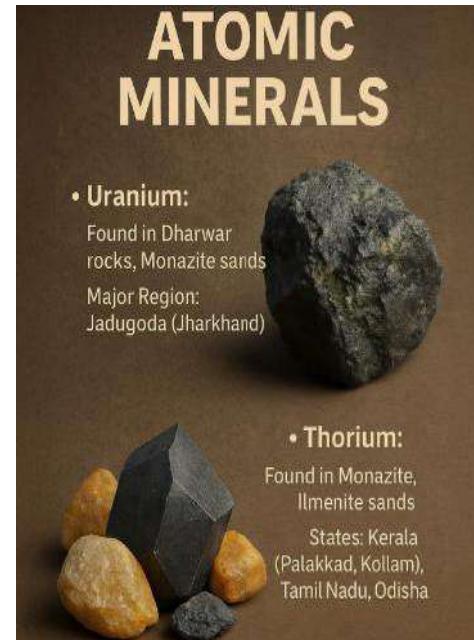
INS Aravali

- Newest **Indian Navy base** commissioned at **Gurugram (Haryana)**.
- Focus: **Information & Communication Infrastructure**, technology hub.
- Enhances Navy's **readiness, maritime security, and global linkages**.

Coal Gasification

- **Process**: Converts coal into syngas (H_2, CO, CO_2, CH_4) → used for power, fuels, fertilizers, chemicals.
- **Benefits**: Reduces import dependence (oil, gas, fertilizers, petrochemicals), enables use of deep/unmineable coal, cleaner energy option vs. direct burning.
- **India's Reserves**: ~400 billion tonnes; ~40% deep & untapped.
- **Why in News**: Govt. promoting coal gasification with **₹8,500 crore incentive scheme**, investor-friendly policies, to achieve energy security, self-reliance & clean energy.
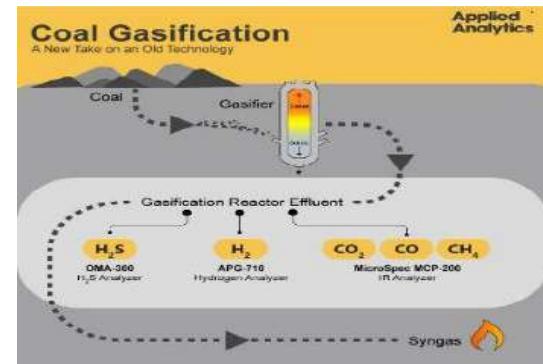
Tiger Reserves

Why in News: MoEFCC cleared **translocation of 8 tigers** from Tadoba & Pench to Sahyadri TR to revive tiger population in Western Ghats.

- **Tadoba–Andhari TR (Maharashtra)**
  - Oldest & largest TR of the state.
  - Named after **Tadoba Lake** & **Andhari River** (tributary of Wainganga).
  - Rich in bamboo, teak; high tiger density.
- **Pench TR (Maharashtra–Madhya Pradesh)**
  - Named after **Pench River** (tributary of Kanhan, Godavari basin).
  - Famous as inspiration for Kipling's *"The Jungle Book"*.
- **Sahyadri TR (Maharashtra, Western Ghats)**
  - Formed in 2010 (Chandoli NP + Koyna WLS).
  - Lies in **Krishna River basin**; **Koyna River** (major tributary of Krishna) flows here.
  - Straddles Kolhapur, Sangli, Satara, Ratnagiri districts.

REVIVING POPULATION IN WESTERN GHATS
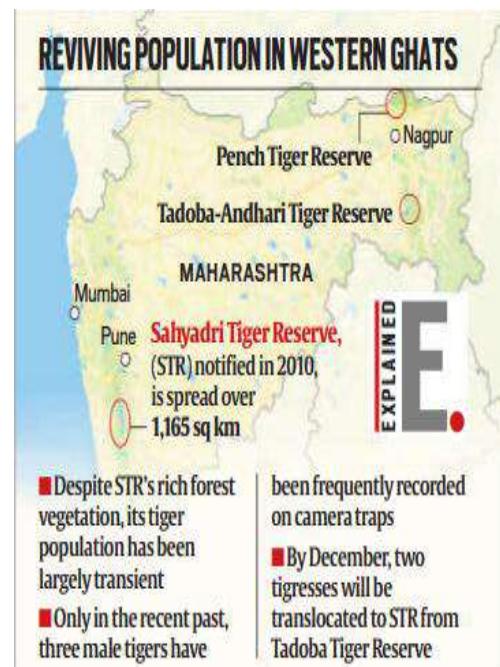
UNGA (United Nations General Assembly)

- **Why in News**: India votes in favour of UNGA resolution on Palestine state
- **Full Form:** United Nations General Assembly
- **Composition:** All 193 UN member states; each has **one vote**.
- **Function:** Deliberative body; discusses global issues like peace, security, development, human rights.
- **Resolutions: Non-binding** (except budgetary matters).
- **Presidency:** Rotates **annually** among **regional groups**.
- **Sessions:** Regular session starts **every September**; special/emergency sessions can be called.
- **Key Role:** Forum for **global diplomacy**, adoption of **declarations**, election of **non-permanent UNSC members**.

Border Wing Home Guards (BWHG):

- **Setup**: Raised under State/UT *Home Guards Act & Rules*.
- **Role**: Auxiliary to Army & Police – guard borders, vital points, aid in disasters & internal security.

- **States authorised**: Meghalaya, Tripura, Assam, West Bengal, Punjab, Rajasthan, Gujarat.
- **Currently active**: Only Rajasthan has BWHGs.
- **Service**: Enlisted for 3–4 years; duties similar to a Constable.
- **Funding**: 25% training & financial support from GoI.
- **Recruitment**: Open to all classes; voluntary service for community.

Scarlet Dragonfly:

- **Family**: Libellulidae; also called **Broad Scarlet / Scarlet Darter.**
- **Range:** Southern Europe, Africa, W. Asia to S. China; rare in India (Kerala, Western Ghats).
- **Habitat:** Sunny areas near rivers, streams, ponds.
- **Features:** 33–44 mm; males bright scarlet with amber wing patches; females yellow-brown with thorax stripe.
- **IUCN:** Least Concern.

Katchatheevu & Palk Strait:

- **Palk Strait**: Separates Tamil Nadu (India) and Northern Sri Lanka; connects **Palk Bay with Bay of Bengal**.
- **Katchatheevu**: 285-acre uninhabited islet ceded to Sri Lanka in **1974 India-Sri Lanka Maritime Boundary Agreement**; India retains limited pilgrim and fishing rights.
- **Fishing Dispute**: Indian trawlers often enter Sri Lankan waters; **bottom trawling** damages reefs and stocks; Sri Lanka banned it in 2017; conflict between **artisanal fishers and trawler operators**.
- **International Law**: Governed by **UNCLOS (1982)**; **Article 123** urges cooperation in semi-enclosed seas.

Erra Matti Dibbalu (Red Sand Dunes):

- Location: Near Visakhapatnam–
Bheemunipatnam Beach Road, Andhra
Pradesh.
- Unique geological formations of red sand
dunes, ~12,000 years old.
- Declared a National Geo-heritage site by
GSI.
- Recently added to UNESCO's **Tentative
List of Natural Heritage Sites**.

Scarborough Shoal (South China Sea):

- Chain of reefs, ~200 km off the Philippines,
inside its EEZ.
- Claimed by **Philippines (Panatag/Bajo de
Masinloc)** and **China (Huangyan Dao)**.
- Seized by China in 2012; major flashpoint
for sovereignty & fishing rights.
- Strategic location near shipping lanes worth
$3 trillion annual trade.
- 2016 Permanent Court of Arbitration ruling
favored Philippines, but China rejected it.

Similipal Tiger Reserve (Odisha – Mayurbhanj district)

- **2nd NP of Odisha** (after Bhitarkanika)**, 107th in
India.**
- **Core NP:** 845.7 sq km (rights-free); **Buffer WLS:**
2750 sq km.
- Only home to **wild melanistic tigers;** also ~40
tigers, 25% of Odisha's elephants, 104 orchid
species.
- **Biogeography:** Deccan Peninsula → Chhotanagpur
→ Mahanadian Region.
- Key features: **Barehipani & Joranda waterfalls,
Khairiburu & Meghashini peaks.**
- **Forests:** Sal, moist deciduous, semi-evergreen.
- **Fauna:** Sambar, chital, barking deer, gaur, mouse
deer.
- **Rivers:** Budhabalanga, Salandi, Deo, Khairi, tributaries of Baitarani.
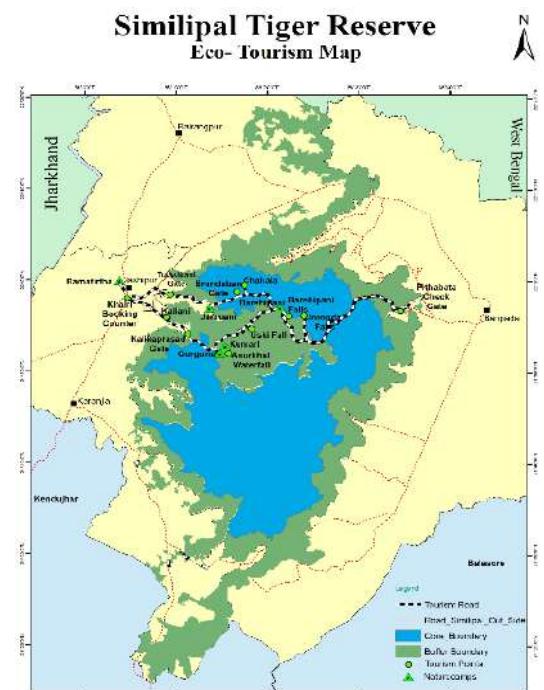
Carlsberg Ridge

- **Type:** Mid-oceanic ridge (divergent boundary) in the **Indian Ocean.**
- **Location: From African–Indian–Australian plate triple junction** to the **Gulf of Aden.**
- **Separates: Arabian Sea (NE)** from **Somali Basin (SW).**
- **Plates:** Boundary between **Somali Plate & Indian Plate.**
- **Depth & Elevation:** ~6,000–12,000 ft deep; rises ~7,000 ft above seafloor.
- **Geological link:** Turns near **Socotra,** connects to **East African Rift via Gulf of Aden.**
- **Significance:** Prominent ridge with many **earthquake epicenters;** India signed **ISA contract** to explore **polymetallic sulphur nodules here.**
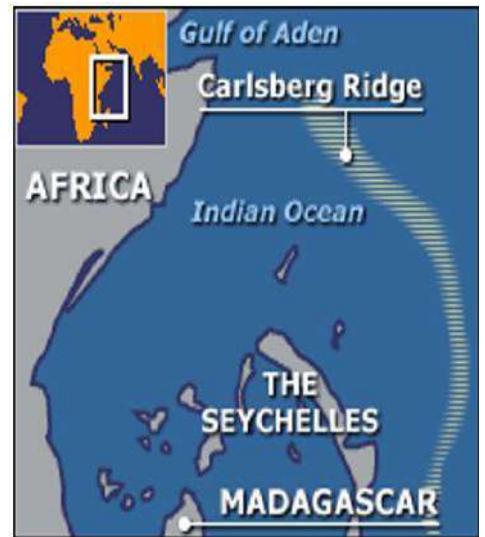
Pink Tax

- **Not a real tax**; term for **extra cost on women-targeted products/services** vs. men's versions.
- Origin: **California, 1994 (U.S.)**; studies show women's personal care products **~13% costlier**.
- Examples: **Razors, shampoos, clothing, salon services, dry cleaning**.
- **India**: No law prohibiting Pink Tax; prices based on market demand.
- **National Consumer Disputes Redressal Commission (NCDRC) ruling**: Companies must ensure **fair pricing**; avoid **gender-based discrimination**.

Koala

- **Latest**: Australia approved **world's first koala chlamydia vaccine**.
- **Species**: *Phascolarctos cinereus*; arboreal, herbivorous **marsupial**, native to **Australia**.
- **Closest relatives**: Wombats (family Phascolarctidae).
- **Distribution**: Eastern & southeastern Australia (Queensland, NSW, Victoria, South Australia).
- **Habitat**: Open forests, woodlands; climates from tropical to temperate.
- **Diet**: Primarily **eucalyptus leaves**.
- **Traits**: Asocial, sleep & feed in eucalyptus; paws with **two opposing thumbs**.
- **IUCN status**: **Vulnerable**.
- **Threats**: Habitat loss, climate change, road kills, **chlamydia infection**.

Ho Tribe

- **Ethnic group**: Austroasiatic **Munda** group; call themselves **Ho/Hodoko/Horo** ("human").
- **Distribution**: Mainly **Kolhan region (Jharkhand)**; also Odisha, WB, Bihar.
- **Language**: **Ho language** (Austroasiatic, related to Mundari).
- **Occupation**: Predominantly agriculture; also mining. **Women enjoy higher status**.
- **Culture**: Village **akhra** (dance ground); instruments – dama, dholak, dumeng, rutu.
- **Religion**: Mostly **Sarnaism**; sacred grove worship; **deuri** (priest), **deowa** (spirit doctor).
- **Manki–Munda system**: Traditional self-governance; **Munda (village head)** handles disputes; **Manki** leads cluster (8–15 villages). No tax/revenue role, purely socio-political governance.

Sabarimala Temple

- **Location:** Pathanamthitta, Kerala (Western Ghats, within the dense forests of the Periyar Tiger Reserve).
- **Deity:** Lord Ayyappa (Hariharaputra).
- **River:** On banks of **Pamba River (drains** into the **Vembanad Lake)**.
- **Tradition:** Open to all castes and religions; traditionally barred entry of women aged **10–50 years** (reproductive age) – struck down by **Supreme Court in 2018** (Indian Young Lawyers Association v. State of Kerala).
- **Significance:** Declared a **'Global Pilgrimage Centre'** by TDB; attracts devotees from across India.
- **Recent Issue:** Political controversies on women's entry, communal mobilisation, and temple development (Sabarimala Master Plan).

Raj Gonds

- **Community:** Sub-group of **Gonds**, one of the largest tribal groups.
- **Location:** Concentrated in **Madhya Pradesh**, also in Chhattisgarh, Maharashtra, Telangana, etc.
- **Language:** Speak **Gondi** (Dravidian family, mostly unwritten).
- **Food:** Staples – **kodo & kutki millet**; rice during festivals.
- **Belief System:** Worship nature (earth, water, air ruled by Gods).
- **Status:** Recognized as **Scheduled Tribe (ST).**

Almatti Dam

- **River:** Built across **Krishna River**.
- **Location: Bagalkot district, Karnataka.**
- **Project:** Part of **Upper Krishna Project (UKP)**.
- **Height:** Being raised from **519.6 m to 524.256 m**.
- **Purpose:** Irrigation (UKP Phase-III to irrigate ~5.94 lakh ha in North Karnataka).
- **Dispute:** Linked to **Krishna Water Disputes Tribunal** allocations.
- **Impact:** Submergence of land, compensation issues for displaced farmers.

Khajuraho Temples

- **Location:** Madhya Pradesh, **Vindhya Range**.
- **Period:** Built **950–1050 AD** by **Chandela Dynasty**.
- **Faiths: Hindu & Jain** temples.
- **Architecture: Nagara style**; known for erotic & symbolic sculptures.
- **UNESCO Status:** World Heritage Site (since **1986**).
- **First Mentions: Al Biruni (1022 AD), Ibn Battuta (1335 AD).**
- **Primary river near Khajuraho Temples: Ken River** (Yamuna tributary), famous for **Raneh Falls** with granite canyons.


Sarnath

- **Location:** ~10 km from Varanasi, Uttar Pradesh.
- **Importance:** Site of Buddha's **first sermon (Dharmachakra Pravartana)** around **528 BCE** → beginning of **Buddhist Sangha**.
- **Mauryan Patronage:** Ashoka built **stupas, monasteries, Ashokan Pillar** with **Lion Capital** (India's National Emblem).
- **Key Monuments:**
  - **Dhamek Stupa** – marks sermon site.
  - **Chaukhandi Stupa** – meeting with first disciples.
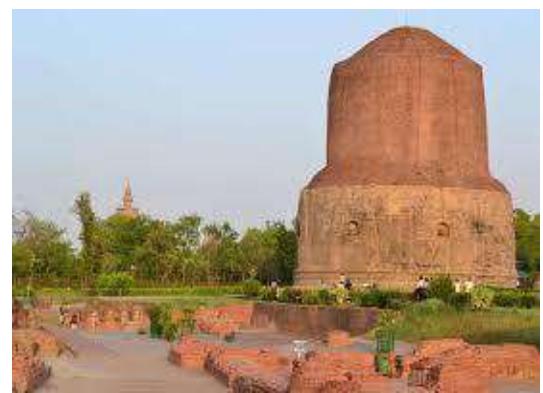
- o **Ashokan Pillar** – Lion Capital.
- o **Mulagandha Kuti Vihar** – modern monastery (1931).
- **Flourishing:** Gupta era → Buddhist art & monasteries.
- **Decline:** Post-12th century invasions; rediscovered in 18th century.
- **Recent Update (2024–25):** ASI revising plaque → crediting **Jagat Singh (1787–88 excavation)** instead of British; aligns with **decolonising narratives**.
- **UNESCO:** On tentative list; strong contender for inscription.

Periyar Tiger Reserve:

- **Location**: Western Ghats, Kerala.
- **River**: Named after River Periyar; drained by Periyar & Pamba rivers.
- **Tribes**: Mannans, Palians.
- **Vegetation**: Tropical evergreen, semi-evergreen, moist deciduous forests.
- **Flora**: Teak, rosewood, jamun, mango, bamboo, jacaranda, tamarind, terminalia.
- **Fauna**: Elephants, tiger, gaur, sambar, wild pig, barking deer, wild dog, mouse deer.
- **Primates**: Lion-tailed macaque, Nilgiri langur, Bonnet macaque, Common langur.
- **Others**: Habitat for Nilgiri Tahr (reported).
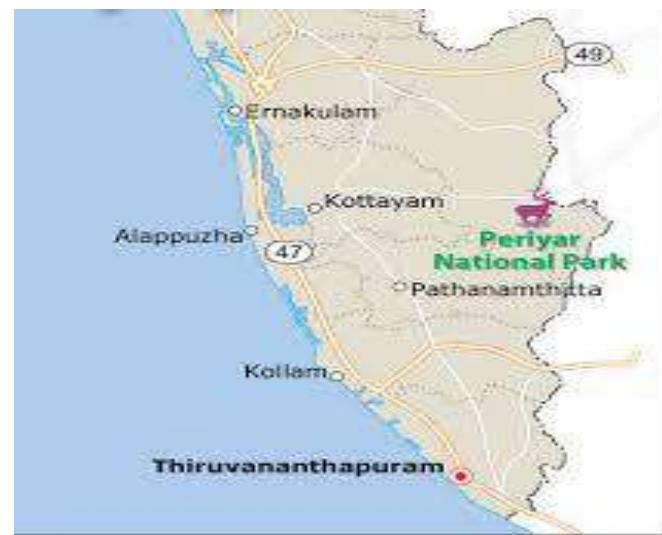
Kuno National Park (Madhya Pradesh)

- Location: Sheopur district, MP; part of the Vindhyan hills.
- River: Kuno River flows through it.
- Ecosystem: Dry deciduous forest & savanna grasslands.
- Fauna: Reintroduced African Cheetahs (since 2022), Asiatic lion relocation plan (pending), leopards, wolves, hyenas, chinkara, nilgai.
- Importance: Core site for India's **Cheetah Reintroduction Project**.

Gandhi Sagar Wildlife Sanctuary (Madhya Pradesh)

- Location: Northwestern MP (Mandsaur & Neemuch), borders Rajasthan; ~368 sq km.
- River: Chambal River bifurcates it; **Gandhi Sagar Dam** inside.
- Vegetation: Khathiar–Gir dry deciduous forests; savanna, open grasslands, riverine tracts.
- Tag: Important Bird & Biodiversity Area (IBA).
- Uniqueness: Ecosystem resembles **Maasai Mara (Kenya)** → suitable for cheetah.
- Role: Part of **metapopulation strategy** (60–70 cheetahs across Kuno–Gandhi Sagar landscape).

Asiatic vs African Cheetah

| Feature	Asiatic Cheetah	African Cheetah
Distribution	Only in Iran	Widely in Africa
Physical Traits	Smaller, paler, denser fur, longer mane	Larger, sturdier legs, shorter mane
Habitat & Prey	Arid Iran, small prey base	Diverse habitats, broad prey base
IUCN Status	Critically Endangered	Vulnerable
India Context	Native but extinct in India	Reintroduced under *Project Cheetah*

Frontier 50 Initiative:

- **Launched by:** NITI Aayog under **Frontier Tech Hub**.
- **Purpose:** Amplify grassroots adoption of frontier technologies and scale impact.
- **Coverage: 50 Aspirational Districts/Blocks**; deploy tech use cases from the **Frontier Tech Repository**.
- **Frontier Tech Repository:** 200+ impact stories in **Agriculture, Healthcare, Education, National Security**.
- **Objective:** Transform livelihoods and accelerate service delivery under ADP/ABP themes.

- **Frontier Tech Hub Role:** Anticipates mega tech shifts (AI, quantum, biotech), evaluates opportunities/risks, designs strategies for **Viksit Bharat@2047**.

Fentanyl:

- **Type**: Synthetic opioid, lab-made, no natural ingredients.
- **Potency**: ~100× stronger than morphine, ~50× stronger than heroin.
- **Medical use**: Severe pain (post-surgery, cancer, chronic pain), anesthesia support.
- **Addiction**: Highly addictive; alters brain activity → dependence.
- **Illicit use**: Cheap, lethal in micro doses → major cause of overdose deaths.
- **Global concern**: Leading opioid crisis drug in U.S.
- **India angle**: Recent U.S. visa revocations over trafficking of fentanyl precursors by Indian firms.
- **Regulation**: Controlled under NDPS Act; monitored by INCB.
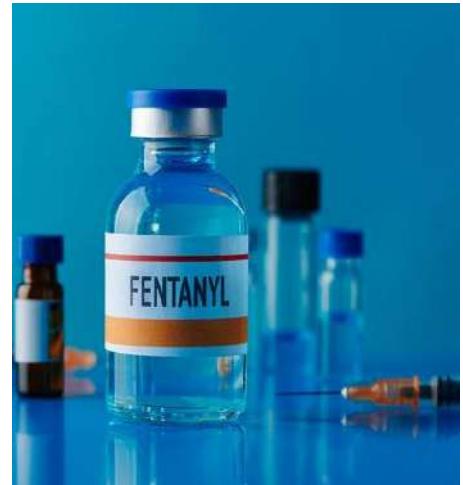
Lothal:

- **Location**: Gujarat, near Ahmedabad district.
- **Civilisation**: Important site of **Indus Valley Civilisation (IVC)**.
- **Speciality**: Known for one of the world's earliest **docked ports**.
- **Economy**: Thriving trade hub ~5,000 years ago; linked to Mesopotamia.
- **Crafts**: Famous for **bead-making, jewelry, seals, and shell objects**.
- **Architecture**: Advanced town planning, warehouses, and drainage.
- **Present project**: **National Maritime Heritage Complex (NMHC)** being developed to showcase India's maritime legacy.

Moran Community:

- **Location**: Mainly in **Tinsukia district, Assam**; also in Arunachal Pradesh.
- **History**: Had an independent kingdom at **Bengmara (present-day Tinsukia)** before Ahoms.

- **Language**: Originally a dialect of **Bodo (Tibeto-Burman family)**; later adopted **Assamese**.
- **Religion**:
  - Initially **Shakta** (Kechaikhati Than – Mother Goddess).
  - Later became **Vaishnava (Moamoria Sect)** under Sri Aniruddha Deva.
- **Festivals**: **Gasar Talar Bihu** (dance under tree), **Kheri**.

Hathei Chilli (Sirarakhong Chilli)

- **Location:** Sirarakhong village, ~66 km from Imphal, Manipur.
- **Cultivation:** Indigenous variety grown under **jhum system** on slopes; thrives only in local climatic conditions.
- **GI Tag:** Received **Geographical Indication (GI) in 2021**.
- **Features:** Deep red colour, unique taste, size & shape; **ASTA colour value 164** (very high).
- **Economic Importance:** Major income source for Tangkhul Naga community of Sirarakhong.
- **Health Benefits:** Rich in **antioxidants, calcium, Vitamin C**.

Hand, Foot, and Mouth Disease (HFMD)

- **Nature:** Highly contagious **viral infection** affecting mainly children <5 years.
- **Symptoms:** Fever, sore throat, painful **mouth sores**, **blister-like rash** on hands, feet, sometimes body.
- **Transmission:** Through **saliva, mucus, feces, unwashed hands, or blister fluid**.
- **Complications:** Rare; self-limiting in **7–10 days**.
- **Prevention/Treatment:** No **vaccine**; supportive care only.
- **Note:** Different from **foot-and-mouth disease of animals**; humans do not transmit to livestock.
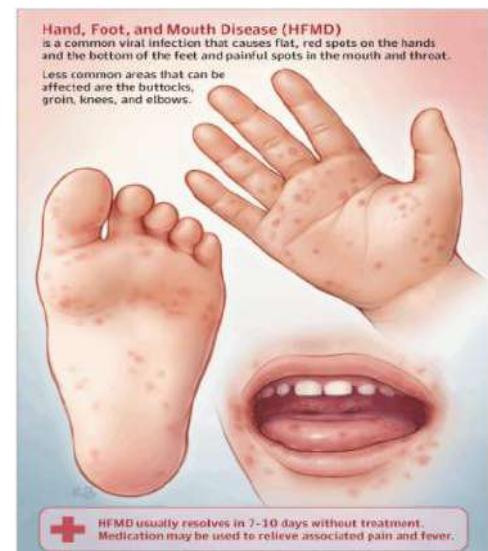
Javari Temple

- **Why in News:** Headless Vishnu idol recently highlighted during a petition hearing on its restoration; Chief Justice of India remarked on the need to preserve it
- **Location:** Khajuraho, Madhya Pradesh (UNESCO World Heritage Site)

- **Dynasty & Period:** Chandella dynasty; temples built between 950–1050 AD, Javari Temple specifically 1075–1100 AD
- **Deity:** Lord Vishnu (four-armed idol; currently headless)
- **Architecture:** Nagara style; includes sanctum, vestibule, mandapa, portico; features Makara Torana (Capricorn Arch), shikhara, images of men, women, Hindu gods, and navagrahas
- **Art & Sculpture:** Erotic and symbolic carvings typical of Khajuraho temples
- **Significance:** Part of the Khajuraho Group of Monuments, highlighting medieval Indian temple architecture

Aflatoxin

- **Nature:** Toxic chemical (mycotoxin) produced by fungi, mainly *Aspergillus flavus* and *Aspergillus parasiticus*.
- **Occurrence:** Contaminates crops like groundnuts, maize, rice, tree nuts, spices, and cocoa under warm, humid conditions; can affect soil and stored food.
- **Health Impact:** Genotoxic, carcinogenic; harmful to humans and animals.
- **Exposure:**
    - Ingesting contaminated plant foods or animal products (meat, milk)
    - Inhalation of dust by farmers or agricultural workers during handling
- **Recent News:** Indonesia delayed notification of aflatoxin presence in Indian groundnut exports, leading to trade disputes.
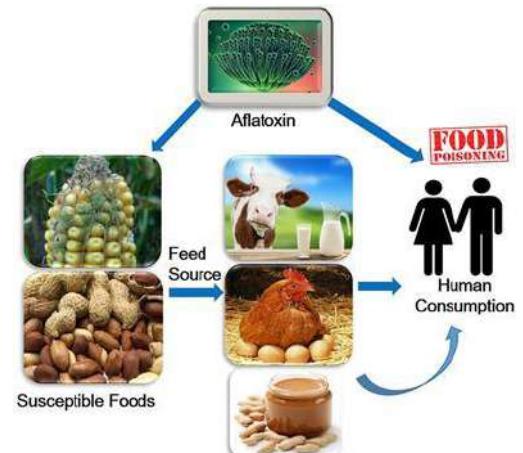
NE-SPARKS Programme

- **Full Form:** North East Students' Programme for Awareness, Reach, and Knowledge on Space
- **Objective:** Promote space science awareness and STEM interest among North Eastern students
- **Coverage:** 8 North Eastern States; 100 meritorious science students per state (total 800)
- **Activities:** Exposure visits to ISRO Centres, Bengaluru; hands-on experience with space technology

- **Funding:** Ministry of Development of North Eastern Region (MDoNER) 60%, State Governments 40%

Kurmi Community

- **Region:** Lower Gangetic plains – Eastern Uttar Pradesh, Bihar, Awadh; also in Odisha, West Bengal, Jharkhand
- **Occupation:** Traditionally non-elite tillers; known for superior farming skills and manuring practices
- **Culture:** Gender-neutral, praised historically by Mughal & British administrators
- **Current Classification:**
  - OBC in Odisha, West Bengal, Jharkhand
  - Odisha: Also under Socially & Educationally Backward Classes (SEBC)
  - Some states (Jharkhand, West Bengal) recommend ST inclusion

Global Innovation Index (GII) 2025

- **Purpose:** Ranks countries based on innovation capacity, performance, and STI ecosystem.
- **Publisher:** World Intellectual Property Organization (WIPO), annually since 2007.
- **Recognition:** UNGA acknowledges it as authoritative reference for Science, Technology, and Innovation policies.
- **Key Metrics:** Investment patterns, technological progress, adoption rates, and socioeconomic impact.
- **2025 Highlights:**
  - **Top 5:** Switzerland, Sweden, USA, South Korea, Singapore
  - **Notable Rise:** China (10th, first time in top 10), India (38th, up from 81st in 2015)
  - **Global R&D Growth:** Fell to 2.9% in 2024, projected 2.3% in 2025

Bagram Air Base

- **Location & Significance:** Largest airbase in Afghanistan, north of Kabul; strategic crossroads near Iran, Pakistan, China (Xinjiang), and Central Asia.
- **History:** Built by USSR (Cold War); later revamped by US; key hub in US war against Taliban & Al Qaeda (2001–2021).
- **Features:** Long runways, hardened shelters, hospital, fuel depots, fast-food outlets, shops, and a prison complex.

- **US Presence:** Peak 2012 – 100,000+ US troops; vacated July 2021, marking end of 20-year US military presence.
- **Current Status:** Under Taliban control; US bid to retake rejected.

Baltic Sea

- **Location & Type:** Semi-enclosed inland sea of the Atlantic, Northern Europe; separates Scandinavian Peninsula from continental Europe.
- **Size & Shape:** ~1,600 km long, 193 km wide, area ~377,000 sq.km; youngest sea (~10,000–15,000 years old).
- **Branches & Connections:** Gulf of Bothnia, Gulf of Finland, Gulf of Riga, Baltic Proper; connected to North Sea via Danish straits (Kattegat, Skagerrak) and Kiel Canal; linked to White Sea via White Sea-Baltic Canal.
- **Surrounding Countries:** Sweden, Poland, Lithuania, Latvia, Finland, Estonia, Germany, Denmark, Russia.
- **Water Characteristics:** Largest brackish inland water body; low salinity due to river inflows (Neva largest).
- **Islands:** 20+ islands; Gotland largest.
- **Environmental Issues:** Algal blooms, pollution.
- **Recent News:** German air force intercepted a Russian IL-20M entering neutral airspace, handed over escort to Sweden (NATO partner).

Sawalkote Hydropower Project

- **Location & Type:** 2,185 MW run-of-the-river hydroelectric project on the Chenab River, Ramban District, Jammu & Kashmir.
- **Significance:** Largest hydro project in J&K; potential to make the region power-surplus and export electricity to the national grid.
- **Key Features:** 192.5 m roller-compacted concrete gravity dam; annual generation ~7,000 million units; cost ~₹22,704 crore.
- **Benefits:** Flood mitigation, improved water management for agriculture and domestic use.
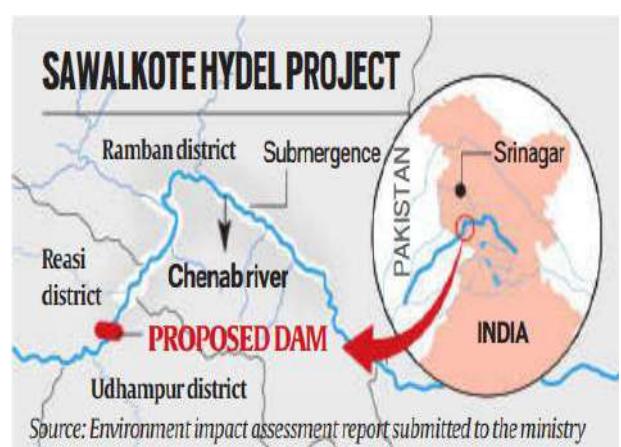
- **History & Context:** Conceptualised in 1980s; stalled due to Indus Waters Treaty constraints; now revived post-IWT hold.

Lactifluus khasianus

- **Discovery:** New edible mushroom species, named *Lactifluus khasianus*.
- **Location:** East Khasi Hills, Meghalaya; grows with Khasi pine (*Pinus kesiya*) at ~1,600 m altitude.
- **Tribal Knowledge:** Known locally to Khasi communities as "Tit iongnah"; consumed as a seasonal delicacy.
- **Distinct Features:** Chocolate-brown cap, larger cystidia, unique DNA markers; differs from *Lactifluus gerardii*.
- **Significance:** Fifth confirmed species in India's *Lactifluus* sect. Gerardii; first reported edible species in this section.

Mozambique

- **Recent News:** Indian Navy's First Training Squadron visited Maputo port
- **Location:** Southern Africa; eastern coastline on the Indian Ocean; separated from Madagascar, Comoros, Mayotte by Mozambique Channel.
- **Borders:** Zimbabwe (W), Eswatini & South Africa (S/SW), Zambia & Malawi (NW), Tanzania (N).
- **Capital & Major City:** Maputo (capital), Matola (largest city).
- **Geography:** Rivers – Zambezi (largest), Limpopo, Licungo, Lurio, Rovuma; Major lake – Lake Malawi (Nyasa); Highest peak – Mount Binga.
- **Natural Resources:** Natural gas, coal, minerals, sand, hydropower, potential oil.

Bonnet Macaque (Macaca radiata)

- **Region & Habitat:** Native to southern India; Western Ghats forests, urban, suburban, and agricultural areas.
- **Appearance:** Named for the bonnet-like whorl of hair on the head.
- **Behavior:** Diurnal, arboreal and terrestrial quadruped; lives in troops of ~30; multi-male, multi-female groups.

- **Reproduction:** Females mature by 3 years; birth at 4 years; gestation ~24 weeks; infants nurse 6–7 months.
- **Communication:** Visual (grinning, clicking), tactile, vocal; alarm calls for predators; can recognize calls of Hanuman langurs and lion-tailed macaques.
- **Diet:** Omnivorous – fruits, leaves, insects, bird eggs, lizards; raids human food near settlements.
- **Conservation:**
  1. **Wildlife Protection Act, 1972:** Schedule I
- **IUCN Status:** Vulnerable

Fishing Cat (*Prionailurus viverrinus*)

- **Distribution:** South & Southeast Asia – India, Sri Lanka, Malaysia, Thailand, Java, Pakistan.
  - In India: Sundarbans mangroves, Ganga & Brahmaputra valleys, Western Ghats.
- **State Symbol:** West Bengal – state animal.
- **Habitat:** Wetlands – mangroves, swamps, marshes; tolerates freshwater and saltwater; tropical to temperate regions.
- **Behavior:** Nocturnal, strong sexual dimorphism (males larger), excellent swimmer, dives to catch fish.
- **Size:** Height 15–16 inches, length 38–47 inches.
- **Diet:** Fish, small aquatic animals.
- **Conservation Status:** IUCN – Vulnerable; protected under Wildlife laws.

Barren Island (Andaman & Nicobar Islands)

- **Location:** Andaman Sea; ~138 km northeast of Port Blair, Andaman & Nicobar Islands.
- **Type:** Active **volcanic island; submarine emergent volcano**.
- **Geology:** Stratovolcano – composed of lava, rocks, and volcanic ash.
- **Plate Tectonics:** Lies above the **subduction zone of India and Burmese plates**.
- **Significance: Only active volcano in the Indian subcontinent**; part of volcanic chain from Sumatra to Myanmar.

- **Eruption History:** Multiple eruptions; latest minor eruptions observed in **2025**; major eruption in **2017**.
- **Flora & Fauna:** Small populations of **goats, birds, bats, and rats**; harsh environment.
- **Human Presence:** No permanent settlements.

Project Vijayak (Border Roads Organisation)

- **Launch:** 2010 by **Border Roads Organisation (BRO)**.
- **Name Origin:** Derived from **Operation Vijay**, reflecting strategic alignment with battle theatre.
- **Objective:** Provide **road connectivity** in Kargil and Zanskar regions (previously under Project Himank).
- **Strategic Axes Covered:**
  - **Zojila – Kargil – Leh axis**
  - **Nimmu – Padam – Darcha axis**
- **Significance:**
  - Enhances **security infrastructure** along **Line of Control (LC)**.
  - Boosts **socio-economic development** in Ladakh.
- **Welfare Initiatives:**
  - Insulated shelters, sanitation, protective gear, winter clothing.
  - Regular **health camps** for Casual Paid Labourers.

Recent Update: Celebrated **15th Raising Day in Kargil, Ladakh**.

National Archives of India (NAI)

- **Establishment:** 11 March 1891 as **Imperial Record Department** in Kolkata; shifted to **New Delhi in 1911**.
- **Role:** Custodian of **records of enduring value** of the Government of India; preserves historical and administrative documents.
- **Nodal Agency:** Implements **Public Records Act, 1993** and **Public Records Rules, 1997**.
- **Languages of Records:** Sanskrit, Persian, Odia, and other regional/oriental languages.
- **Access:** Governed by **Public Records Rules, 1997**; does **not hold classified documents**.
- **Administration:** Headed by **Director General of Archives**; under **Ministry of Culture**.
- **Locations:**
  - Headquarters: **New Delhi**
  - Regional office: **Bhopal**
  - Record Centers: **Bhubaneswar, Jaipur, Puducherry**
- **Recent Update: 50th Golden Jubilee Meeting** of the **National Committee of Archivists (NCA)**.

Indian Rock Python (Python molurus)

- **Common Names:** Indian Rock Python, Black-tailed Python, Asian Rock Python
- **Size & Appearance:** One of India's largest snakes (7–12 ft); thick body with yellowish-white/tan color and dark brown blotches.
- **Behavior:** Non-venomous, nocturnal, slow-moving, strong climber and swimmer; kills prey by constriction.
- **Habitat & Distribution:** Grasslands, forests, swamps, rocky foothills, river valleys; found in India, Nepal, Pakistan, Sri Lanka, Bhutan, Bangladesh, and northern Myanmar.
- **Conservation Status:** IUCN – Near Threatened; CITES – Appendix II; Wildlife (Protection) Act, 1972 – Schedule I.
- **Threats:** Habitat loss due to human activities and hunting for skin and meat.
- **Conservation Efforts:** Protected areas like Moyar Valley in Tamil Nadu support population recovery.
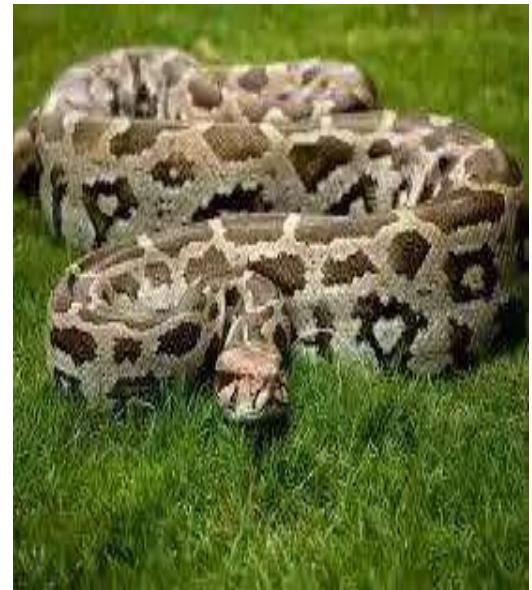
Betla National Park

- **Location:** Latehar district, Jharkhand; part of Chota Nagpur Plateau.
- **Establishment:** Notified in 1986; only national park in Jharkhand.
- **Significance:** Core area of Palamau Tiger Reserve; one of India's first tiger reserves under Project Tiger. Includes Mahuadanr Wolf Sanctuary.
- **Vegetation:** Tropical wet evergreen, temperate alpine, and mixed deciduous forests (moist & dry). Key species include sal, bamboo, mahua, semal, and medicinal plants.
- **Fauna:** Tigers, leopards, wolves, wild dogs, jungle cats, chital, deer, bison. Rare/endemic birds: Malabar pied hornbill, Indian pitta.
- **Rivers & Scenery:** North Koel River flows through the park, forming waterfalls during monsoon.
- **Cultural Aspect:** Inhabited by indigenous tribes like Oraon and Munda.
- **Latest Development:** First AI-enabled nature experience centre planned to enhance wildlife tourism.

Impatiens selvasinghii

- **Discovery:** Newly identified flowering plant species in the **Kudremukh range, Western Ghats, Karnataka** at 1,630 m altitude.
- **Naming:** Named after a botany professor from **Madras Christian College**.
- **Unique Features:** Exceptionally **small flowers** with **prominently-lobed wing petals**; supports small insect pollinators.
- **Genus Info (Impatiens):** Over **280 taxa in India**, mainly in **Eastern Himalayas and Western Ghats**.
- **Endemism & Conservation:**
  - 210+ taxa are **endemic to India**.
  - 130 taxa **endemic to Western Ghats**.
  - **80% of Western Ghats Impatiens taxa are endangered**.

Adi Yuva Fellowship

- **Launched by:** Ministry of Tribal Affairs in partnership with **United Nations India**.
- **Purpose:** Empower **tribal youth** via structured learning, mentorship, and career development.
- **Duration & Benefits:** 12-month **paid fellowship**; monthly allowances, health & life insurance, access to UN/commercial learning platforms.
- **Integration with Schemes:** Links with **PMKVY 4.0, NAPS, PM Viksit Bharat Rozgar Yojana**.
- **Selection & Placement:** Competitive selection; placement with **UN agencies** at national, state, and district levels.

Adi Karmayogi Volunteers Programme

- **Supported by: UNFPA**.
- **Objective:** Equip tribal youth as **catalysts for grassroots change**, strengthen last-mile service delivery.
- **Deployment:** 82 volunteers in **82 blocks** across 13 districts of **Madhya Pradesh and Rajasthan**.
- **Engagement:** Two-month intensive grassroots work; supporting **Village Vision 2030, awareness drives, outreach, and improved scheme access**.

Cloud Seeding:

- **Definition**: Artificially inducing rain by introducing substances into clouds to act as condensation/ice nuclei.
- **Origin**: First experiment in **1946** by **Vincent J. Schaefer** (USA).
- **Methods**: Seeding from aircraft, rockets, cannons, and ground generators.
- **Common Agents**:
  - **Silver iodide** & **dry ice (solid CO_2)** → effective in *supercooled clouds*.
  - **Calcium chloride** → effective in *warm clouds*.
- **Working Principle**:
  - In supercooled clouds → agents help form ice crystals → droplets attach → precipitation.
  - In warm clouds → particles act as condensation nuclei → raindrops form.
- **Applications**: Drought mitigation, enhancing water supply, reducing hail, clearing fog.
- **Concerns**: High cost, uncertain effectiveness, environmental risks (esp. silver iodide).
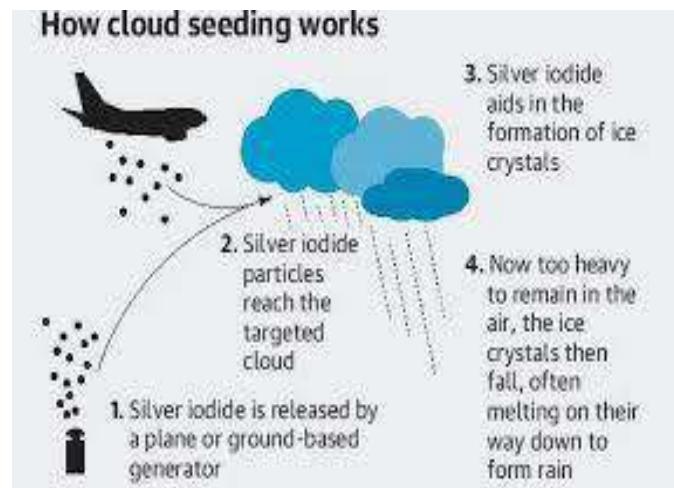
Direct Broadcast Network (DBNet):

- **DBNet**: Global framework for **real-time acquisition** of data from **Low Earth Orbit (LEO) satellites**.
- **India Update**: National Centre for Medium Range Weather Forecasting (NCMRWF) + New Space India Limited (NSIL)to set up **two DBNet stations** (Delhi/NCR & Chennai).
- **Satellites Covered**: Oceansat, NOAA, MetOp & other EOS satellites.
- **Key Role**: Supports **Numerical Weather Prediction (NWP)**, cyclone monitoring, climate research.
- **Benefits**:
  - Near real-time data → better short- & medium-range forecasts.
  - **Reduced latency** (direct overhead capture).
  - **Rapid processing**: full data chain completed within **5 minutes** of satellite pass.
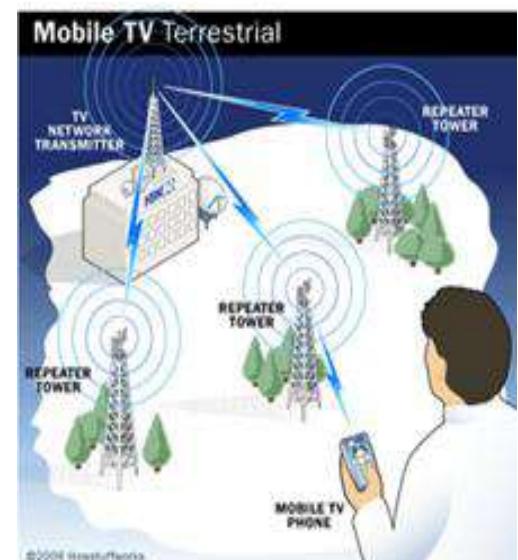
SPARSH Pension System:

- **SPARSH** = *System for Pension Administration – Raksha*.
- **Ministry**: Defence (administered by **Defence Accounts Dept., PCDA(P), Prayagraj**).
- **World's largest defence pension system** – covers Army, Navy, Air Force, Defence Civilians.
- **Recent update**: Resolved **5.6 lakh of 6.43 lakh legacy cases (87%)**.
- **Key Features**:
  - Web-based, direct pension disbursal (no intermediaries).
  - **Centralised sanction + disbursement + revision + grievance management**.
  - **Digital identification & self-verification** → less physical visits.
  - Pensioners get **transparent account view** & complete event history.

Subansiri River & Oju Project:

- **Subansiri River**:
  - *Origin*: Mount Porom (5059 m), Kangig glacier range, Tibet. *Type*: **Right-bank tributary** of Brahmaputra.
  - *Nicknamed*: **Gold River** (famous for gold dust).
  - *Entry into India*: Through **Gerukamukh gorge**.
  - *States/Region*: Tibet → Arunachal Pradesh → Assam.
  - *Joins Brahmaputra*: Lakhimpur district (Assam).
  - *Tributaries*: Laro, Nye, Yume, Tsari, Kamla, Jiyadhol, Ranganadi, Dikrong.
- **Oju Hydroelectric Project**:
  - Location: **Upper Subansiri district** (near China border).
  - Developer: **Oju Subansiri Hydro Power Corporation Pvt. Ltd.**
  - Capacity: **2,220 MW** (2,100 MW main + 120 MW dam-toe).
  - Cleared by: **Expert panel of MoEFCC** (Environmental clearance).

Tripura Sundari Temple

- **Location:** Udaipur, Tripura (NE India)
- **Established:** 1501 A.D. by Maharaja Dhanya Manikya (Tripura Kingdom)
- **Religious Significance:** One of the 51 **Shakti Peethas**; also called **Matabari**; revered as **Kurma Pith** (base shaped like tortoise hump)
- **Deities:**

- o **Main:** Goddess Tripura Sundari
- o **Secondary:** Chhoto-Ma / Goddess Chandi (historically carried by kings during hunts/battles)
- **Architecture:** Square plan, sloping roof; inspired by rural Bengal huts
- **Cultural Significance:** Symbol of **syncretism**; rituals involve Hindus, Muslims, and tribal communities
- **Recent News:** PM inaugurated newly developed infrastructure and beautification works.

HPV (Human Papillomavirus) :

- **Definition:** Group of >200 viruses; >40 sexually transmitted; 2 cause genital warts, ~12 linked to cancers.
- **Cervical Cancer:** >95% cases caused by HPV.
- **Transmission:** Sexual contact, skin-to-skin; often asymptomatic; body may clear infection naturally.
- **Risk:** Persistent infection can lead to cancer.
- **HPV Vaccination:** Protects against HPV infections causing cancer/genital warts; most effective at **ages 9–26**; not given during pregnancy; less effective after infection.
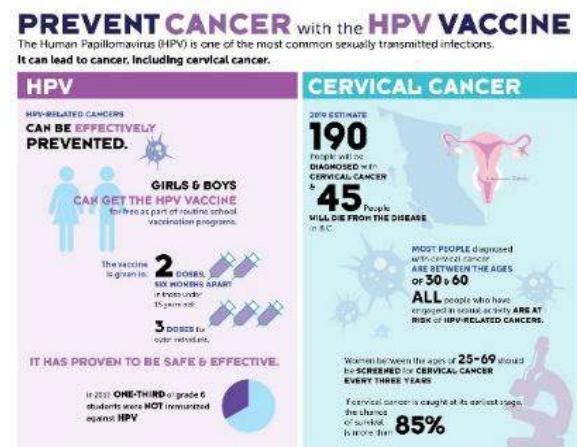
Agni-Prime Missile (Agni-P):

- **Type:** Next-generation, two-stage, solid-fuel ballistic missile; nuclear-capable.
- **Range:** 1,000–2,000 km; payload: high explosive, thermobaric, or nuclear warheads.
- **Weight:** 11,000 kg; combines Agni-IV and Agni-V technologies.
- **Mobility:** Canisterised, rail- and road-mobile; enhances **second-strike capability**.
- **Strategic Significance:** Supports India's **No First Use (NFU)** nuclear doctrine; survivable against preemptive strikes.
- **Rail-Based Advantage:** Nationwide mobility via 70,000 km rail network, tunnels provide concealment; cheaper than SLBMs.

- **Global Context:** India joins Russia, US, China, and North Korea in rail-based missile capability.
- **Agni Series Overview:**
  - Agni-I: 700–1,000 km, MRBM
  - Agni-II: 2,000–3,000 km, MRBM
  - Agni-III: 3,500–5,000 km, IRBM
  - Agni-IV: 3,500–4,000 km, improved accuracy
  - Agni-V: 5,000–8,000 km, ICBM
  - Agni-P: 1,000–2,000 km, next-gen MRBM/IRBM

Agni-VI: 8,000–10,000 km (under development, potential MIRV)

Nightmare Bacteria:

- **Definition:** Carbapenem-resistant Enterobacteriaceae (CRE), includes *Klebsiella pneumoniae* and *E. coli*.
- **Resistance Mechanism:** Driven by **NDM-1 gene** (New Delhi Metallo-beta-lactamase-1); produces carbapenemase enzymes making bacteria resistant to "last-resort" antibiotics.
- **Why "Nightmare":** Easily spreads resistance genes; causes deadly bloodstream, lung, and urinary infections; treatment options are limited.

- **Symptoms:**
  - Urinary tract infections: burning, frequent urination, cloudy urine
  - Bloodstream infections: high fever, rapid heartbeat, low BP
  - Pneumonia/lung infections: cough, shortness of breath, chest pain
- **Global Concern:** Rapidly spreading antibiotic resistance; difficult to treat, high mortality risk.

Mahendragiri Hills:

- **Location:** Gajapati district, Odisha; part of Eastern Ghats; elevation 1,501 m.
- **Status:** Declared **Biodiversity Heritage Site (2022)** for rich flora and fauna.
- **Tribal Communities:** Inhabited by **Saora (Saura)** and **Kondh** tribes.
- **Biodiversity:** ~1,348 plant species; 388 animal species, many endemic/threatened.

- **Rivers: Mahendra Tanaya** originates from Mahendragiri.
- **Vegetation:** Tropical dry and wet deciduous forests.
- **Geology:** Granite, charnokite, khondalite; veins of chert, chalcedony, quartz.
- **Cultural Significance:** Panchpandava temples attract pilgrims.

Pallikaranai Marshland:

- **Location:** Freshwater and partly saline wetland, ~20 km south of Chennai, Tamil Nadu; buffer for flood- prone Chennai & Chengalpattu districts.
- **Wetlands & Outlets:** Comprises 65 wetlands; outlets – **Okkiyam Madavu** and **Kovalam Creek**; flows into Bay of Bengal; bordered by Buckingham Canal.
- **International Status: Ramsar Site** in India.
- **Fauna:**
  - Birds: 115 species (e.g., Glossy ibis, Grey-headed lapwing, Pheasant-tailed jacana)
  - Mammals: 10 species
  - Reptiles: 21 species (e.g., Russell's viper)
  - Amphibians: 10 species
  - Fish: 46 species; Molluscs: 9; Crustaceans: 5; Butterflies: 7
- **Threats:** Encroachments, sewage discharge, urban pressures.
- **Recent Action:** NGT halted construction within 1 km until scientific study is conducted.

BRICS Grouping

- **Members:** Brazil, Russia, India, China, South Africa (original BRIC formed 2001; South Africa joined 2010).
- **New Members (Expansion 2025):** Egypt, Ethiopia, Iran, UAE, Indonesia.
- **Population & Economy:** ~3.5 billion people (45% of world), combined GDP ~$28.5tn (28% of global economy).
- **Objectives:**
  - Strengthen economic, political, social cooperation.
  - Boost Global South influence in UN, IMF, World Bank, WTO.
  - Promote sustainable development & social inclusion.
- **Annual Summits:** Action plans since 2010 guide cooperation.

- **New Development Bank (NDB):**
    - Established: 2014 (Summit in Fortaleza), operational from 2015.
    - Purpose: Fund infrastructure & sustainable development in EMDCs.
    - HQ: Shanghai; regional offices: South Africa, Brazil.
    - Voting: Based on subscribed shares; BRICS share ≥55%; no veto power.
- **Current News:** Trump threatens 10% tariffs on BRICS members (2025, Rio Summit).

MiG-21

- **Type:** Supersonic jet fighter; NATO name: *Fishbed*.
- **Origin:** Designed by Mikoyan-Gurevich Design Bureau, USSR; first inducted in IAF in 1963.
- **Production:** 657 built in India by HAL under Russian license; 2nd most produced jet in the world.
- **Nicknames:** *Balalaika* (planform), *Ołówek* ("pencil"), *Én Bạc* ("silver swallow").
- **Operational History:** Participated in 1965 & 1971 India-Pakistan wars, 1999 Kargil War, 2019 Balakot airstrikes, Operation Sindoor; retiring by September 2025.

Khoe-San

- **Who:** Indigenous peoples of Southern Africa – *San* (hunter-gatherers) and *Khoekhoe/Khoi* (pastoralists).
- **Significance:** One of the earliest divergent human lineages; very high genetic diversity.
- **Recent Findings:** European colonization altered ancestry; sex-biased migration—European men and Khoe-San women shaped present-day genetics.

- **Slave Trade Impact:** 1652–1808, VOC brought ~63,000 enslaved women from Africa & Asia to the Cape; Khoe-San also used as laborers.
- **Historical Interactions:**
    - ~2,000 yrs ago: Arrival of Eastern African pastoralists & Bantu-speaking agro-pastoralists.
    - Last 1,500 yrs: Bantu largely replaced/assimilated Khoe-San in eastern South Africa.
    - 1652 onwards: Dutch colonization via Cape Town reshaped demography and genetics.

National Initiative on Water Security

- **Launched Under:** MGNREGA Act, 2005; amended to make water conservation mandatory.
- **Objective:** Address groundwater depletion & ensure long-term rural water security.
- **Fund Allocation:** Over-exploited blocks – 65%; semi-critical – 40%; others – ≥30% for water works.
- **Approach:** Systematic water security planning; integrates campaigns like *Catch the Rain* & *Amrit Sarovar*.
- **Achievements:** 1.25 crore water assets (farm ponds, check dams); 68,000+ reservoirs created/rejuvenated under Mission Amrit Sarovar Phase I.

Qatar Adopts UPI

- **Partnership:** NPCI & Qatar National Bank (QNB) implement UPI in Qatar.
- **Global Expansion:** Qatar is 8th country to adopt UPI after Bhutan, France, Mauritius, Nepal, Singapore, Sri Lanka, UAE.
- **Benefits:** Eases payments for Indians visiting Qatar; reduces cash dependence & currency exchange hassles.
- **About UPI:** Developed by NPCI; enables real-time, secure, low-cost transactions; built on IMPS & AePS.
- **Significance:** World's top real-time payment system (~640 million daily transactions), powers 85% of India's digital payments.