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GREEN INDIA MISSION

Green India Mission, aiming to enhance forest restoration, combat climate change, and address land degradation and desertification challenges.

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GENERAL STUDIES - 1

Syllabus: Indian Culture-Salient aspects of Art Forms

SANT KABIR DAS

Context:

Sant Kabirdas Jayanti was celebrated on June 11, marking his 648th birth anniversary.

- This occasion honours the 15th-century poet-saint's timeless contribution to **spiritual unity** and **social reform**.



About Sant Kabir Das:

Who Was Sant Kabir Das?

- Sant Kabirdas was a **15th-century mystic poet, Bhakti saint, and social reformer** who lived in **Varanasi**, Uttar Pradesh.
- Believed to be born in **1440** and raised by a **Muslim weaver family**, Kabir's life symbolized **religious convergence** and **spiritual universality**.
- He authored *Bijak*, *Sakhi Granth*, *Kabir Granthavali*, *Anurag Sagar*, and many of his verses appear in the [Guru Granth Sahib](#).

Kabir and His Philosophy:

- God resides within:** Kabir taught that true divinity lies in self-realisation, not in temples or rituals. He urged seekers to introspect rather than perform empty ceremonial acts.
- Nirguna Bhakti:** He rejected anthropomorphic deities and propounded devotion to a formless, universal divine consciousness ([Nirguna Brahman](#)).
- Human dignity over ritual:** He opposed religious dogmas and caste-based discrimination, promoting ethical conduct as superior to ritual purity.
- Seva and Simplicity:** Kabir emphasized humility, charity, and remembrance of God's name (Nam-smaran) as the path to spiritual liberation.
- Social Equality:** He questioned hereditary hierarchy, upheld [non-violence](#) (Ahimsa), and declared all

beings equal in the eyes of the divine.

Kabir's Influence on Sects:

- Kabir Panth:** A spiritual order based on Kabir's teachings emerged, spreading his egalitarian philosophy across villages and towns in northern India.
- Influenced Sikhism:** Guru Nanak admired Kabir's thought; many of his verses are enshrined in the *Guru Granth Sahib*, shaping Sikh devotion and ethics.
- Dadu Panthis & others:** Kabir's inclusive and non-sectarian teachings inspired several movements that challenged orthodoxy and ritualism.
- Cross-religious following:** Hindus and Muslims alike revered him, seeing in him a figure that transcended religious divisions and embodied spiritual truth.

Relevance of Kabir's Philosophy in the Modern World:

- Religious Harmony:** In an age of rising intolerance, Kabir's teachings offer a bridge between communities through shared spiritual values.
- Social Justice:** His critique of caste and privilege aligns with today's constitutional ideals of equality and dignity for all.
- Minimalism and Sustainability:** His advocacy of contentment and simplicity provides philosophical grounding for sustainable living.
- Humanism over Ritualism:** Kabir's focus on inner purity and conduct resonates with modern ethical discourse beyond religious boundaries.
- Spiritual Inclusivity:** He legitimised multiple paths to truth, promoting tolerance for diverse beliefs in an increasingly pluralistic world.

Conclusion:

Sant Kabir Das remains a **beacon of moral courage**, [spiritual universality](#), and **social justice**. His couplets, rooted in simplicity, cut across time and still inspire unity, reflection, and reform. In an age of polarisation, Kabir's words echo as a call for compassion and conscience.

PYQ:

The Bhakti movement received a remarkable re-orientation with the advent of Sri Chaitanya Mahaprabhu. Discuss. (UPSC-2018)

Syllabus: Post-Independence-consolidation and Reorganisation

TOTAL REVOLUTION

Context:

The 51st anniversary of [Jayaprakash Narayan's](#) historic "Total Revolution" call (June 5, 1974) is being marked, highlighting its enduring influence on Indian politics.



About Total Revolution:

- **Concept:** A holistic non-violent movement for socio-political transformation based on Gandhian ideals.
- **Launched by:** Jayaprakash Narayan (JP).
- **Year:** Announced on June 5, 1974, at Gandhi Maidan, Patna.
- **Objective:** Achieve "[Sampoorna Kranti](#)" — a comprehensive change in economic, political, social, and cultural structures for a just and equitable society

Causes of Total Revolution:

- **Electoral Malpractice & Judicial Verdict:** The 1975 Allahabad HC judgment disqualifying Indira Gandhi for electoral malpractices delegitimised her authority, triggering mass protests.
- **Student-Led Unrest:** Widespread agitations in Gujarat's [Navnirman Movement](#) and Bihar's student protests exposed the growing youth frustration over unemployment and governance failures.
- **Economic Crisis:** Severe inflation (over 20%), unemployment, and food shortages in early 1970s aggravated public misery, fuelling disillusionment with the state.
- **Erosion of Democratic Norms:** Centralisation of power, use of draconian laws like MISA, and suppression of dissent alarmed the civil society and intelligentsia.
- **Inspirational Leadership:** JP's articulation of a 'party-less democracy' combined Gandhian ethics, [Sarvodaya ideals](#) and Marxist critique, galvanising a broad-based mass movement.

Components of Total Revolution:

- **Political Revolution:** Advocated bottom-up governance, participatory democracy, and accountability to counter bureaucratic centralism.
- **Economic Revolution:** Sought equitable land redistribution and people-centric development to tackle socio-economic disparities.
- **Social Revolution:** Championed eradication of casteism, gender discrimination and dowry to build an egalitarian society.
- **Educational Revolution:** Proposed ethics-based curriculum with focus on civic duties, rural development and vocational empowerment.
- **Cultural-Spiritual Revolution:** Aimed at fostering self-discipline, national unity and moral rejuvenation through individual transformation.

Impact of Total Revolution:

- **Impact on People:**
 - **Youth Political Mobilisation:** Catalysed entry of new political actors—Lalu Prasad, Nitish Kumar, Sushil Modi—who reshaped Bihar's polity for decades.
 - **Civic Consciousness:** Deepened citizen engagement in democratic processes, making public accountability a mainstream discourse.
 - **Non-Violent Resistance:** Reasserted the power of peaceful protest against authoritarianism, influencing movements like Anna [Hazare's anti-corruption](#) crusade.
- **Impact on Governance:**
 - **Rise of Non-Congress Coalition:** Unified Opposition during Emergency laid ground for the Janata Party's historic 1977 electoral victory.
 - **Constitutional Safeguards:** Triggered reforms through the 44th Amendment, ensuring checks on Emergency powers and restoring judicial oversight.
 - **Decentralisation Drive:** Influenced future Panchayati Raj reforms (73rd, 74th Amendments), enhancing grassroots democratic participation.

Significance of Total Revolution:

- **Revival of Dissent Tradition:** Reaffirmed dissent as a democratic right, legitimising protest in postcolonial India.
- **New Leadership Pipeline:** Created a fresh generation of leaders with mass roots—many of whom dominated Indian politics for decades.
- **Institutional Resilience:** Exposed systemic vulnerabilities, catalysing institutional reforms to safeguard democratic structures.

- **Expanded Public Sphere:** Widened space for [civil society](#) participation, influencing governance beyond electoral politics.
- **Contemporary Lessons:** Offers enduring relevance in tackling present-day issues like centralisation, youth alienation, and democratic erosion.

Conclusion:

JP's Total Revolution was more than a political upheaval—it envisioned ethical, social, and democratic regeneration. Though utopian in parts, it redefined public participation and governance in India. Its legacy continues to inspire movements for justice and democratic reform.

Syllabus: Urbanisation: Problems and Remedies

URBAN DRAINAGE CRISIS IN INDIA

Context:

Indian cities including Delhi and Mumbai are witnessing frequent urban flooding due to dysfunctional drainage systems, climate change, and rising concretisation, prompting renewed focus on urban flood management.



About Urban Drainage Crisis in India:

- **What it is?**
 - Urban drainage refers to the infrastructure and systems used to manage rainwater and prevent urban flooding. These systems are now failing across major Indian cities.
- **Recent Trends:**
 - As per MoHUA, over 70% of urban areas lack scientifically planned stormwater drains.
 - **Mumbai:** Stormwater drains built in 1860s handle only **25 mm/hour** rainfall and city now frequently experiences over **100 mm/hour**.
 - Has lost **80% of its [natural water](#)**

[bodies](#) in the past 40 years.

- **Delhi:** Drainage standards are based on **1976 norms**, designed for **50 mm/day** and May 2025 saw **185.9 mm rainfall in one day**, 9x above normal.
- **Bengaluru:** Lacks a natural river system; outdated and narrow **stormwater drains (SWDs)** are easily overwhelmed.
 - Over **65% of interlinked lakes** encroached; Bellandur and Varthur lakes now surrounded by concrete.

Reasons Behind Drainage Failures:

1. Natural Causes:

- **Intensifying Rainfall:** Climate change has increased frequency and intensity of short-duration, high-volume rainstorms.

E.g., IMD recorded 100mm+ rainfall in Delhi in less than an hour (2023).

- **Low-lying Topography:** Certain zones like Bengaluru and Mumbai are naturally prone to [waterlogging](#).

2. Man-made Issues:

- **Unplanned Urbanisation:** Encroachment on floodplains and concretisation has reduced ground permeability.
- **Poor Design Standards:** Drainage designed for 1-in-2-year events is insufficient for today's storm intensities.
- **Illegal Constructions:** Unauthorized covers on drains make desilting and maintenance difficult.
- **Infiltration of Sewage:** Lack of separate sewerage and drainage lines in cities like Patna and Bhopal.

Government Initiatives to Tackle the Drainage Crisis

- **Manual on Stormwater Drainage Systems (2019):** Recommends higher return periods (1-in-5 or 1-in-10 years) for new infrastructure.
- **AMRUT 2.0 Scheme:** Mandates creation of integrated stormwater networks and harvesting around clean water bodies.
- **Jal Shakti Abhiyan & Atal Bhujal Yojana:** Promotes groundwater recharge via check dams, recharge pits in urban areas.
- **Model Building Bye Laws (MBBL), 2016:** Rainwater harvesting made compulsory for plots over 100 sq. m.
- **Amrit Sarovar Mission:** Rejuvenation of urban waterbodies to aid stormwater retention.
- **GIS-Based Drainage Mapping:** Cities like Delhi are adopting simulation models to redesign drainage based on land-use dynamics.

Way Forward

- **Underground Storage:** Build rainwater retention tanks under public spaces to reduce surface runoff.
- **Enforce Building Codes:** Ensure mandatory compliance with MBBL and zoning laws.
- **Decentralised Solutions:** Promote rooftop gardens, permeable pavements, and bioswales.
- **Periodic Drain Maintenance:** Timely [desilting](#) and cleaning of both visible and covered drains.
- **Public Awareness:** Launch city-level campaigns on waste disposal and water conservation.

Conclusion:

The drainage challenge in India is a complex outcome of outdated infrastructure, haphazard development, and climate extremes. While solutions exist, their success hinges on multi-level coordination, robust enforcement, and proactive [urban planning](#). Transforming drainage from a reactive to a resilience-based approach is the need of the hour.

PYQ:

Does urbanization lead to more segregation and/or marginalization of the poor in Indian metropolises? (2023)

[Syllabus: Population & Associated Issues.](#)

STATE OF THE WORLD POPULATION 2025 REPORT

Context:

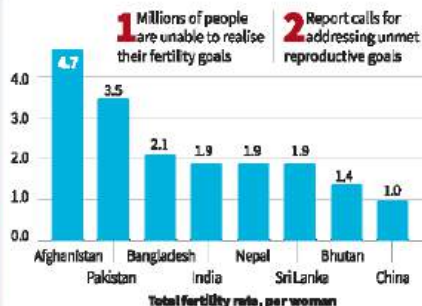
India's population has reached 146.39 crore in April 2025 as per the UNFPA's "State of the World Population 2025" report, with [Total Fertility Rate](#) (TFR) dropping to 1.9, below the replacement level of 2.1.

Below replacement

Indian women are having fewer children than needed to maintain the population size across generations



Source: UNFPA data for 2025



Key Highlights of UNFPA State of the World Population 2025:

1. **Global Population Trends:** World population stands at **8.2 billion**; growth has slowed but disparities remain between high-income and low-income countries.
2. **Fertility Crisis Redefined:** The real crisis is **unmet fertility goals**—not just overpopulation or

underpopulation, but denial of reproductive choice.

3. **Reproductive Agency:** Emphasis on **individual rights** to decide freely on reproduction, contraception, and timing of childbirth.
4. **Demographic Dividend:** Over **60% of the world's population is in the 15–64 age group**, offering a productivity window.
5. **Ageing Population Concern:** Global elderly population (65+) is growing rapidly, requiring focused health and pension reforms.
6. **Youth Bulge in LMICs:** **Low- and middle-income countries** (like India, Nigeria) have large youth populations with untapped potential.
7. **Gender & Fertility Gaps:** Women's education and autonomy significantly influence fertility patterns and gaps persist in access to healthcare & contraception.

What is Fertility and Its Features?

- **Definition:** Fertility refers to the actual number of children born to a woman during her reproductive years (15–49 years).
- **Total Fertility Rate (TFR):** Measures average births per woman and **2.1** is considered the replacement level.
- **Determinants:** Influenced by education, health access, family planning services, cultural norms, and economic conditions.

Global Issues Surrounding Fertility:

1. **Falling Fertility in Developed Countries:** Countries like **Japan, Italy, and South Korea** face declining TFRs, below **1.5**, triggering ageing concerns.
2. **High Fertility in Fragile States:** Sub-Saharan Africa has TFRs above **4**, stressing healthcare, education, and resources.
3. **Reproductive Inequality:** Millions lack access to **contraception, maternal care**, and autonomy in reproductive choices.

India's Status as per the 2025 Report:

- **Population Size:** India leads with **146.39 crore**, expected to peak at **170 crores** in 40 years before stabilizing.
- **TFR Status:** Current TFR is **1.9**, below replacement level, indicating a demographic transition.
- **Demographic Composition:**
 - Youth (0–14): 24%
 - Teens (10–19): 17%
 - Working age (15–64): 68%
 - Elderly (65+): 7%
- **Life Expectancy (2025):** Men – 71 years; Women – 74 years.
- **Unrealized Fertility:** A section of the population cannot achieve desired fertility goals due to poor access to services.

Way Ahead:

1. **Census Completion (2027):** A fresh census is vital to revise socio-economic and fertility-related policies.
2. **Strengthen Reproductive Health:** Enhance access to family planning, maternal care, and education for women.
3. **Elderly & Youth Policy Balance:** Craft policies that balance between ageing population welfare and youth skill development.

Conclusion:

India stands at a pivotal moment demographically. With a TFR below replacement level and a large working-age population, the focus must shift from mere numbers to ensuring quality of life, reproductive rights, and preparedness for the demographic future.

PYQ:

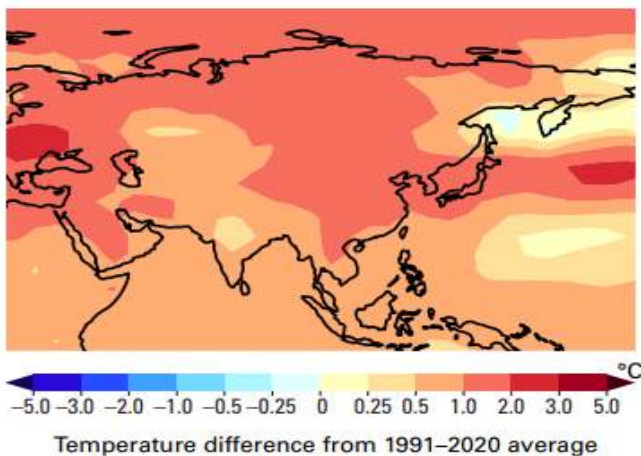
Discuss the main objectives of Population Education and point out the measures to achieve them in India in detail. (UPSC-2021)

Syllabus: Important Geophysical phenomena

WMO'S STATE OF THE CLIMATE IN ASIA 2024 REPORT

Context:

India's eastern and western coastal regions are witnessing faster sea level rise than the global average, according to WMO's State of the Climate in Asia 2024 report, posing an increasing threat to livelihoods and infrastructure.



Summary WMO's State of the Climate in Asia 2024 Report:

Key Trends in India:

- **Sea Level Rise:** Arabian Sea rising at 3.9 ± 0.4 mm/year and Bay of Bengal at 4.0 ± 0.4 mm/year, both surpassing global average of 3.4 mm/year,

threatening coastal zones.

- **Coastal Impact:** Low-lying regions within **50 km of India's coast** face increasing submergence risk, endangering livelihoods and urban infrastructure.
- **Glacial Retreat:** 23 of 24 glaciers in the **Central Himalayas** are losing mass, accelerating flood risk from glacial lake outburst floods (GLOFs).
- **Heatwaves:** Over **450 deaths** reported in 2024 due to prolonged and extreme heatwaves affecting multiple Indian states.
- **Lightning:** Lightning incidents claimed **1300 lives** in 2024 and a single deadly event killed **72 people** across five Indian states on **July 10**.

Trends in Asia:

- **Warming Rate:** Asia is heating at **twice the global rate**, amplifying regional climate impacts like droughts, floods, and storms.
- **Heat Records:** 2024 marked the **second warmest year** on record in Asia, with widespread, prolonged heatwaves across several countries.
- **Natural Disasters:** Increased frequency of **landslides and floods**, e.g., Kerala's **Wayanad landslide** (350+ deaths after 500 mm rainfall in 48 hours).
- **Glacial Lake Outburst:** Glaciers in **Himalayas and Tian Shan** are melting rapidly, increasing GLOF events and downstream flooding risk.

Factors Influencing Sea Level Rise:

- **Thermal Expansion:** Rising ocean temperatures cause **thermal expansion** of water, pushing sea levels higher.
- **Melting Ice Sheets:** Accelerated melting of **Greenland, Antarctic ice sheets, and global glaciers** directly contributes to sea level rise.
- **GHG Emissions:** CO₂ and other **greenhouse gases** from fossil fuels drive global warming, fuelling further sea level rise.
- **Ocean Currents Variability:** Changes in regional **ocean currents** redistribute heat, affecting local patterns of sea level increase.

Consequences:

- **For India:**
 - **Coastal Erosion:** Progressive **erosion of coastlines** threatens India's eastern and western seabords, affecting millions of residents.
 - **Livelihood Risks:** Rising seas imperil **fishing, agriculture**, and tourism-based livelihoods in vulnerable coastal communities.
 - **Infrastructure Damage:** Key **ports, industrial hubs, homes, and urban infrastructure** risk flooding or permanent

damage.

- **Migration:** Increasing displacement of populations from **coastal belts** likely, triggering climate-induced migration.
- **For Asia:**
 - **Island Nations:** Countries like the **Maldives** face existential threats from rising seas and coastal inundation.
 - **Urban Heat:** Asian cities are seeing more frequent **heatwaves**, stressing public health and urban infrastructure.
 - **Agricultural Stress:** Warming and erratic rainfall lead to **crop yield failures**, jeopardizing food security.
 - **Health Hazards:** Heat-related illnesses and **vector-borne diseases** (malaria, dengue) are on the rise due to climate change.

Case Study: Nepal

- Nepal's glaciers in **Central Himalayas** lost significant mass in 2024, heightening flood risks.
- Increased **GLOFs** are threatening **hydropower stations, roads, and mountain communities** with devastating floods.

Recommended Measures:

- **Coastal Zone Management:** Develop **resilient coastal infrastructure** and restore **mangroves** to buffer sea level rise.
- **Emission Reductions:** Accelerate **NDC targets** and implement **net-zero emissions pathways** to mitigate warming.
- **Early Warning Systems:** Invest in **climate monitoring, forecasting, and disaster early warning mechanisms**.
- **International Cooperation:** Strengthen **regional partnerships** through **UNFCCC** and related climate adaptation frameworks.
- **Local Capacity Building:** Train communities in **adaptive techniques** and build local resilience to climate risks.

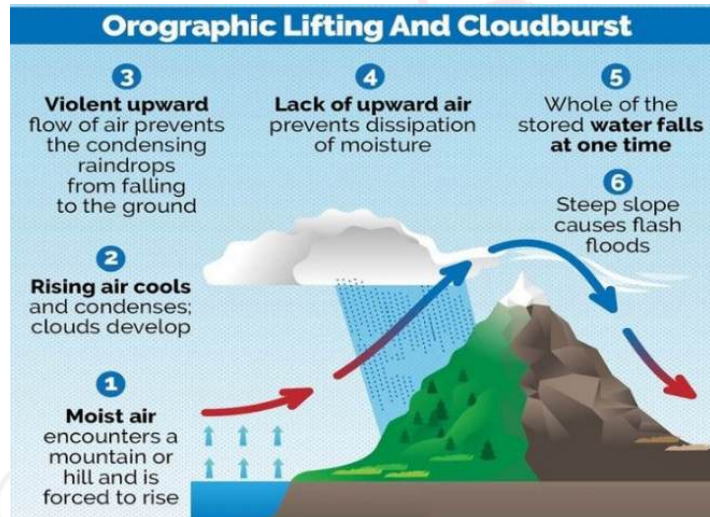
Conclusion:

The WMO's State of the Climate in Asia 2024 underscores the urgent climate threat to India's coasts. Policymakers must integrate robust mitigation and adaptation strategies to safeguard lives, livelihoods, and ecosystems.

CLOUDBURST

Context:

Cloudbursts in Kangra and **Kullu districts of Himachal Pradesh** triggered devastating flash floods, killing two people and leaving over a dozen missing.



About Cloudburst:

What is a Cloudburst?

- A cloudburst is a sudden, highly intense rainfall event, releasing **≥100 mm of rain in under one hour** over a **localized area (~10 km²)**.
- These events often occur over **hilly or mountainous regions**, triggering flash floods, landslides, and infrastructural damage.

Conditions Favoring Cloudbursts:

- **Orographic lifting:** Moist winds rise rapidly due to **steep mountainous terrain**, forming large cumulonimbus clouds.
- **Strong convection currents:** Fast vertical motion of air (60–120 km/h) forms **deep vertical clouds**, storing vast water content.
- **Localized convergence zones:** Wind patterns trap moisture in narrow valleys, increasing precipitation density.
- **High latent heat release:** Warm air holds more moisture—7% more per 1°C rise (Clausius-Clapeyron law)—intensifying rainfall rates.

RECENT CLOUDBURST INCIDENTS IN INDIA

Location	Date	Impact
Kullu & Kangra (HP)	June 2025	2 dead, 10+ missing, flash floods in Brahmaganga, Sainj, Gadsa
Uttarkashi (UK)	July 2023	Flash floods killed 7, cloudburst near Gangotri glacier
Amarnath Cave (J&K)	July 2022	16 pilgrims dead, 40 injured due to upstream burst
Mumbai (MH)	July 2005	94 cm rain in 24 hrs, 400+ deaths (extreme rainfall like cloudburst)
Leh (Ladakh)	August 2010	200+ killed, massive mudslides in Nubra valley

How Cloudbursts Occur?

- **Moist air from monsoon winds** hits the **windward slope** of mountains (e.g., Himalayas).
- This causes **adiabatic cooling** and **condensation**, forming **towering cumulonimbus clouds** up to 15–21 km high.
- Under **unstable atmospheric conditions**, rapid cloud formation overwhelms the area's drainage capacity.
- The result is **intense downpours** over small regions, sometimes exceeding **2 billion litres/hour over 20 km²**, causing **flash flooding** and debris flows.

Consequences of Cloudbursts:

- **On Other Disasters:**
 - **Flash Floods:** Sudden water surge inundates settlements (e.g., Manikaran 2025).
 - **Landslides:** Rain-saturated slopes collapse (e.g., Chokhang–Nainghar road, Lahaul 2025).
 - **Infrastructure Damage:** Bridges and roads washed away (e.g., Baladhi Bridge, 2025).
- **On People:**
 - **Loss of life & displacement:** Sudden impact leaves little evacuation time (e.g., 15 workers missing in Kangra).
 - **Livelihood impact:** Damage to hydropower, tourism, and agriculture leads to long-term setbacks.
 - **Access issues:** Entire villages (e.g., Jsrath, Manikaran) cut off due to washed bridges.
- **On Environment**
 - **Soil erosion** and **riverbank destabilization** affect biodiversity and river ecosystems.
 - **Sediment load** increases in rivers, affecting

aquatic habitats and downstream dams.

- **Waste dispersion** from urban areas into rivers degrades water quality.

Measures to Manage Cloudburst Risks:

1. National Disaster Management Authority (NDMA)

Guidelines:

- Released **specific Cloudburst Management Guidelines (2010)** focusing on early warning systems, risk zoning, and community awareness.
- Emphasis on preparedness, response coordination, and structural resilience in vulnerable areas.

2. Technological Upgrades:

- **Doppler Weather Radars:** Installed in select regions for nowcasting (<3 hours alert).
- **Automatic Rain Gauges:** Help identify high-risk zones for cloudburst-prone mapping.
- **Weather Modelling:** IMD uses numerical models for heavy rain alerts, though cloudburst prediction remains limited.

3. Local Capacity Building:

- **Panchayats and DM offices** instructed to share emergency numbers, monitor hillsides, and halt dam water release if risk arises (HP advisory, June 2025).
- **Evacuation drills** and awareness campaigns in hill villages before monsoon onset.

4. Climate Action:

- IPCC warns of increased extreme weather with warming: a **1°C rise causes 7–10% more rainfall** capacity.
- Need for **mitigation of emissions** and **resilient urban planning** in hill cities.

Conclusion:

Cloudbursts are becoming increasingly destructive, especially in ecologically fragile Himalayan regions, due to a combination of intense rainfall and poor forecasting infrastructure. A multi-pronged, tech-enabled approach must be prioritized to safeguard lives, livelihoods, and ecosystems.

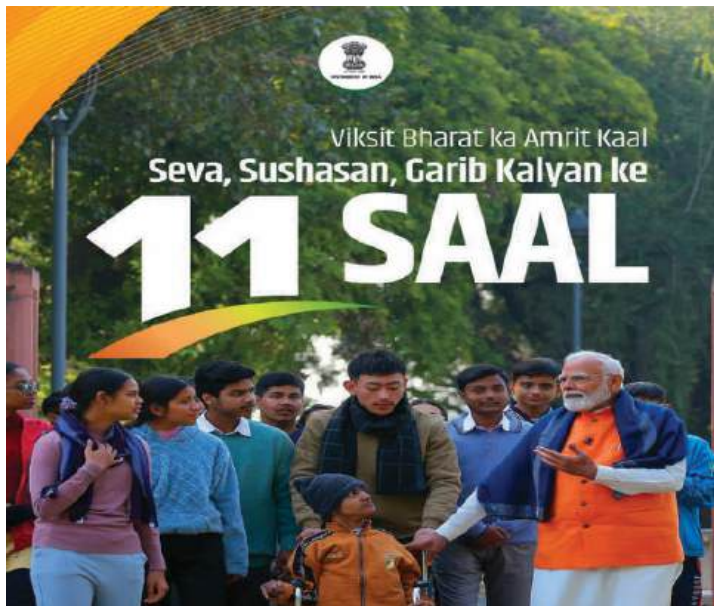
GENERAL STUDIES - 2

Syllabus: Governance

VIKSIT BHARAT KA AMRIT KAAL REPORT

Context:

The Government of India released a comprehensive report titled “Viksit Bharat Ka Amrit Kaal: Seva, Sushasan, Garib Kalyan ke 11 Saal”, marking [11 years of governance](#) under PM Narendra Modi.



About Summary of Viksit Bharat Ka Amrit Kaal Report:

• Serving the Poor and Marginalized:

- **Theme:** Inclusive development through Antyodaya — ensuring 100% welfare coverage and irreversible empowerment.
- **Key Data Points:**
 - 81 crores received free foodgrains under PMGKY.
 - 52.5+ crore [MUDRA loans](#) disbursed and >50% to SC/ST/OBC.
 - 15 crore households connected via Jal Jeevan Mission.
 - 4 crore houses completed under PM Awas Yojana.
- **Initiatives Taken:** PMGKY, MUDRA, Stand-Up India, Namaste Scheme, Janjatiya Gaurav Diwas, Aspirational Districts Programme.
- **Achievements:**
 - India ended extreme poverty (IMF) and MPI indicators improved (UNDP).
 - 68 lakh street vendors benefitted

under PM SVANidhi.

- SC/ST/OBC representation in cabinet increased.
- Over 112 Aspirational Districts exceeded state average in development.

• Ensuring Farmer Welfare

- **Theme:** “Beej se Bazaar Tak” — strengthening agriculture through holistic reforms.
- **Key Data Points:**
 - ₹3.7 lakh crore transferred to PM-Kisan beneficiaries.
 - Pulses MSP procurement rose by 7350%; oilseeds by 1500%.
 - eNAM linked 1,473 mandis; 24 Mega Food Parks operational.
 - ₹1 lakh crore allocated under Agriculture Infra Fund.
- **Initiatives Taken:** PM-Kisan, PM-FBY, PM-KSY, e-NAM, TOPS, Shree Anna (Millets), Soil Health Card.
- **Achievements:**
 - India's foodgrain output touched 347 MMT (2024–25).
 - Record 63.56% increase in milk production.
 - 1943 agri-startups supported under [RKVY](#).
 - Export of processed food nearly doubled to \$9.03 bn.

• New Momentum for Nari Shakti

- **Theme:** Lifecycle-based empowerment of women in social, economic, and digital spheres.
- **Key Data Points:**
 - 35.38 crore MUDRA loans (₹14.72 lakh cr) to women (68%).
 - 10 crore+ women in 90 lakh SHGs and 3 crores to become Lakhpati Didis.
 - Sex Ratio at Birth: 1020 females per 1000 males.
 - 77+ crore sanitary pads sold via Jan Aushadhi.
- **Initiatives Taken:** [Mission Shakti](#), Ujjwala Yojana, PMMVY, Samarthya, BBBP, Mahila Samman Savings Certificate.
- **Achievements:**
 - Paid maternity leave extended to 26 weeks.
 - Institutional deliveries, MMR, and

IMR improved significantly.

- Women now hold 73% of PMAY-Gramin ownership.
- 50,000+ startups have a woman director.

• **Empowering Amrit-Peedhi (Youth)**

- **Theme:** Harnessing demographic dividend via skilling, education, entrepreneurship, and sports.
- **Key Data Points:**
 - 1.6 crore skilled under PM Kaushal Vikas Yojana.
 - 6,500 new IIT seats added; 23 IITs & 23 AIIMS operational.
 - 1.6 lakh startups created 17.6 lakh jobs.
 - 490 new universities opened.
- **Initiatives Taken:** NEP 2020, Startup India, Agnipath Scheme, Rozgar Mela, Fit India Movement, Khelo India, TOPS.
- **Achievements:**
 - 4.8 lakh direct jobs by DPIIT-recognized startups.
 - 61 Olympic/Paralympic medals (Tokyo + Paris).
 - 94+ athletes supported under TOPS Core.
 - EPFO added 8.59 crore formal jobs since 2017.

• **Ease of Living for Middle Class**

- **Theme:** Improving quality of life via better housing, connectivity, digital access, and tax reforms.
- **Key Data Points:**
 - 4 crore homes under PMAY.
 - Metro expanded from 5 cities (2014) to 23 cities (2025).
 - UPI users: 46 crore individuals, 6.5 crore merchants.
 - 5G rolled out in 99.6% districts in just 22 months.
- **Initiatives Taken:** PMAY, RERA, SWAMIH, UDAN, UMANG App, Svamitva Yojana, GST, New Tax Regime.
- **Achievements:**
 - 1.5 crore+ citizens availed air travel under UDAN.
 - ₹37,000 crore unlocked via SWAMIH for stalled projects.
 - Data cost reduced by 97%; 52 crore

Digilocker users.

- Over 2297 services digitized via UMANG app.

• **Affordable, Accessible Healthcare for All**

- **Theme:** Transforming India into a global health leader through robust public health and infrastructure.
- **Key Data Points:**
 - 9+ crore Ayushman Bharat hospital admissions worth ₹1.3 lakh crore.
 - 77 crore ABHA health accounts created.
 - 220+ crore COVID vaccine doses administered.
 - 1.18 lakh MBBS and 74,000 PG medical seats now available.
- **Initiatives Taken:** Ayushman Bharat, PM-ABHIM, Jan Aushadhi, e-Sanjeevani, Mission Indradhanush, NMC.
- **Achievements:**
 - 16,000+ Jan Aushadhi Kendras saved ₹38,000 crore for citizens.
 - 37+ crore teleconsultations via eSanjeevani.
 - Maternal Mortality down from 130 to 80 per lakh live births.
 - AIIMS opened in Northeast; 2,045 medical colleges in total.

Conclusion:

Over the past 11 years, the central government has ushered in a transformative era rooted in inclusive growth, digital empowerment, and national pride.

PYQ:

The Gati-Shakti Yojana needs meticulous coordination between the government and the private sector to achieve the goal of connectivity. Discuss. (2023)

NITI AAYOG INDIA'S DATA IMPERATIVE REPORT

Context:

NITI Aayog released its report "India's Data Imperative: The Pivot Towards Quality", recommending urgent reforms to improve the quality of India's public data ecosystem.



About NITI Aayog India's Data Imperative Report:

What it is?

- India's data ecosystem refers to the vast network of **digital public infrastructure, platforms, and databases** that power governance, welfare delivery, and financial inclusion across both public and private sectors.
- It integrates identity (Aadhaar), financial (UPI), health (Ayushman Bharat), and social schemes through **data-driven platforms**.

Key Data Points:

- Aadhaar:** Over **27 billion authentications** conducted in FY 2024–25 — backbone of identity-linked service delivery.
- UPI:** ₹23.9 trillion worth of transactions processed **monthly** — world's largest real-time payment system.
- Ayushman Bharat:** **369 million** Ayushman Bharat Digital Health IDs issued — transforming health data interoperability.
- Direct Benefit Transfer (DBT):** ₹5.47 lakh crore transferred via DBT to beneficiaries in FY 2024–25, covering **330+ schemes**.
- Aadhaar e-KYC:** 1.8 billion e-KYC transactions completed in FY 2024–25, reducing onboarding costs across sectors.
- Digital India penetration:** 1.2 billion mobile subscribers; 800 million internet users — one of the world's largest **digital user bases**

Need for Robust Data Ecosystem:

- Prevent Fiscal Leakage:** Inaccurate data leads to **duplicate or erroneous beneficiaries**, causing **4–7% excess welfare spending** each year.
- Enable Evidence-Based Governance:** High-quality data is the backbone for **AI-driven insights** and **precise targeting** of government schemes and interventions.
- Build Public Trust:** Citizens' trust in digital governance rests on the ability of public systems to deliver **accurate, reliable, and timely services**.
- Strengthen India's AI Ecosystem:** AI models and

platforms depend on **clean and validated data** to drive innovation in healthcare, agriculture, and e-governance.

- Improve Cross-Ministerial Coordination:** Interoperable, accurate data allows for **better policy alignment** across departments, improving the efficiency of public service delivery.

Challenges in India's Data Ecosystem:

- Fragmentation:** Government data systems remain **siloed**, with incompatible formats and platforms across ministries hindering seamless usage.
- Lack of Ownership:** No clear **custodian or accountable body** is responsible for end-to-end data quality across national and state departments.
- Legacy IT Systems:** Outdated **digital infrastructure** delays **real-time updates** and obstructs seamless **interoperability** across modern platforms.
- Incentive Mismatch:** Current practices reward **fast data entry** rather than prioritising **accuracy and validation**, compromising data integrity.
- Poor Quality Culture:** An informal acceptance of **"80% accuracy is good enough"** reduces accountability and leads to systemic data errors over time.

Recommended Way Ahead:

- Institutionalising Ownership:** Appoint dedicated data custodians at national, state, and district levels.
- Incentivising Quality:** Integrate error rates and data quality metrics into performance reviews and budget incentives.
- Promote Interoperability:** Standardise data formats using IndEA, NDGFP frameworks to break silos.
- Deploy Practical Tools:** Adopt **NITI Aayog's** Data Quality Scorecard and Maturity Framework for regular self-assessment.
- Invest in Capacity Building:** Train field staff and managers to uphold data fidelity as a core responsibility.

Conclusion:

NITI Aayog's data quality framework is a vital step toward precision-driven governance. India must now embed data stewardship, incentives, and interoperability across all levels to ensure public trust and maximise the benefits of its digital infrastructure.

FAIR DEALING IN INDIA

Context:

A copyright and defamation dispute between ANI and YouTuber Mohak Mangal has raised critical questions on

India's ambiguous fair use laws in the digital era.

About ANI vs Mohak Mangal dispute:

- ANI filed multiple copyright strikes against Mohak Mangal for using short ANI video clips in at least 10 of his YouTube videos.
- Mangal countered these claims citing *fair dealing*, accusing ANI of extortion and misuse of copyright provisions.
- ANI additionally filed a case on [trademark infringement](#), defamation, and disparagement, and sought removal of certain videos and tweets.

About Fair Dealing in India:

What is Fair Use (Fair Dealing)?

Fair dealing, defined under Section 52(1) of the [Copyright Act, 1957](#), permits limited use of copyrighted material without permission. It applies when the purpose is educational, critical, journalistic, or research-based, ensuring balance between creators' rights and public interest.

Criteria for Fair Use (Qualitative Factors):

- **Purpose of Use:** When the intent is to inform, educate, or critique—such as in journalism or parody—the use is more likely to be fair. Commercial exploitation or content meant to mislead would fall outside the scope of [fair dealing](#).
- **Nature of Work:** The use of factual, published, or publicly accessible works tends to be more permissible than unpublished or highly creative works.
- **Amount Used:** Using small, necessary portions increases the chances of fair use, but even short clips can infringe if they capture the essence of the original.
- **Market Impact:** Fair use is invalidated if the copied content harms the original's revenue, substitutes the original, or diverts its audience. The greater the economic loss to the copyright holder, the lesser the chance of qualifying as fair dealing.

Example: In *TV Today vs NewsLaundry*, limited use of video clips was accepted under fair use since it neither caused financial loss nor undermined the original broadcast's value.

Other IP Instruments in news:

- **Trademark Disparagement:** This refers to using a registered trademark in a way that damages its image, credibility, or public perception.

In this case, the Delhi High Court asked Mangal to delete remarks seen as harming ANI's brand reputation.

- **De Minimis Doctrine:** Under this principle, minor or trivial uses of copyrighted material may not attract legal scrutiny.

NOTABLE JUDGMENTS ON FAIR DEALING

CASE NAME	INSIGHTSIAS	KEY TAKEAWAY
CIVIC CHANDRAN V. AMMINI AMMA (1996)	→	FAIR DEALING UPHELD FOR A COUNTER-PLAY BASED ON ANOTHER PLAY IN PUBLIC INTEREST.
OXFORD V. RAMESHWARI (2012-17)	→	PHOTOCOPYING PARTS OF TEXTBOOKS FOR EDUCATION RULED FAIR USE.
INDIA TV V. YASHRAJ FILMS (2013)	→	COURT RESTRICTED USE OF SONGS IN NEWS SHOWS AND LATER MODIFIED ON APPEAL.
TV TODAY V. NEWSLAUNDRY (2022)	→	USE OF BROADCAST CLIPS FOR CRITICISM ALLOWED UNDER FAIR DEALING.

Need for Fair Use Clarity in India's Digital Ecosystem:

- **Digital Expansion Demands Legal Precision:** With over 850 million internet users and thousands of content creators, digital India needs clear fair use boundaries.
- **AI-Based Takedowns Ignore Indian Law:** Global platforms like YouTube apply U.S. DMCA protocols, bypassing Indian copyright exceptions. This often results in wrongful removals of content that would be legal under Section 52.
- **Satire, Review, and Education Need Protection:** Fair use shields socially relevant content like documentaries, news critique, and parody. Without safeguards, creators may [self-censor](#) or face disproportionate legal threats.

Example: Mohak Mangal's video was taken down by YouTube under DMCA, despite invoking Indian fair dealing for public interest reporting.

Challenges in the Current Fair Use Framework:

- **No Defined Duration or Scope:** Indian law lacks numerical limits or time thresholds, making it hard for creators to know how much is "too much." This vagueness increases legal risks and dependency on judicial interpretation.
- **Platform-Law Discrepancy:** YouTube and other platforms operate on global algorithms that don't recognise Indian fair use clauses. As a result, even lawful content under Indian law is penalised based on foreign standards.
- **Weaponization of Copyright Strikes:** Rights holders can misuse copyright takedown tools to suppress criticism or extract payments.
- **Low Awareness Among Digital Creators:** Many YouTubers and educators are unaware of their fair use protections under Indian law.
- **High Judicial Discretion and Cost:** Since fair use is judged case-by-case, creators must often go through expensive litigation for clarity. Absence of consistent precedent weakens confidence in creative freedoms.

Way Forward:

- **Introduce Statutory Guidelines on Fair Use:** Parliament or the Supreme Court must lay down clear boundaries—like time, purpose, and market harm.
- **Regulate Platform-Based Takedowns:** Rule 75 of the Copyright Rules should be enforced, ensuring content restoration if no court order is obtained in 21 days.
- **Educate Creators on Their Rights:** Awareness campaigns, in partnership with civil society and digital platforms, can empower users.
- **Develop a Uniform Judicial Doctrine:** A standardised fair use test from the Supreme Court or Law Commission will ensure predictability.
- **Penalise Misuse of Takedown Systems:** There should be strict consequences for entities that file malicious or repetitive copyright strikes.

Conclusion:

India's fair use regime offers valuable flexibility but suffers from poor enforcement and vague boundaries in the digital era. Clarity, platform accountability, and legal literacy must go hand in hand to preserve [freedom of expression](#) online. The ANI vs Mangal case is a pivotal moment for shaping copyright jurisprudence in India's digital future.

PYQ:

1. In a globalized world, Intellectual Property Rights assume significance and are a source of litigation. Broadly distinguish between the terms—Copyrights, Patents and Trade Secrets. (UPSC-2014)

GENDER EQUITY IN URBAN BUREAUCRACY

Context:

A recent policy insight by Janaagraha stressed that while women now make up nearly 46% of elected representatives in local governments, [urban bureaucracies](#)—especially planners, engineers, and police—remain male-dominated, undermining inclusive governance.



About Gender Equity in Urban Bureaucracy:

- **Definition:**
 - Gender equity in bureaucracy refers to equal representation, opportunity, and influence for women in administrative and technical city roles such as municipal officers, urban planners, engineers, and law enforcement.
- **Data:**
 - **Women in IAS:** Only about 20% of IAS officers are women as of 2022.
 - **Local government representation:** While women hold over 46% of elected seats in urban local bodies, their administrative influence remains limited.
 - **Women in police force:** Just 11.7% of India's police personnel are women, with most in desk roles, according to Bureau of Police Research & Development data.
 - **Engineering sector representation:** Women constitute only 14% of engineers in the workforce, despite making up 40% of [STEM graduates](#).

Why Urban Bureaucracy Needs Gender Equity?

- **Inclusive Planning & Design:** Women professionals incorporate caregiving roles, travel habits, and safety concerns into planning.

E.g. 84% of women in Delhi/Mumbai use shared or public transport (ITDP-Safetipin).

- **Localized Infrastructure Prioritization:** Women focus more on lighting, toilets, healthcare, and water — services directly linked to everyday wellbeing.

E.g. Safetipin audit shows over 60% of public spaces in cities lack proper lighting.

- **Empathy in Law Enforcement:** Women in police roles reduce reporting barriers for domestic violence and sexual harassment.

E.g. BPR&D data shows only 11.7% of police are women, affecting community trust.

- **Better Stakeholder Communication:** Women bureaucrats often improve citizen engagement through inclusive, participatory methods.

E.g. Kerala's Kudumbashree has enhanced responsiveness of local governance structures.

- **Bridging Policy-Implementation Gaps:** Elected women in ULBs (now 46%) need bureaucratic counterparts to translate priorities into outcomes.

Impacts of Gender-Inclusive Bureaucracy:

On People:

- **Improved Women's Safety in Public Spaces:** More female officers help ensure better lighting, surveillance, and safer public areas.

- **Enhanced Public Transport Access:** Infrastructure reflects women's mobility patterns (multi-stop, off-peak hours).

E.g., Delhi's women-only buses emerged from GRB influence.

- **Social Inclusion of Marginalized Groups:** Women's governance styles often include elderly, disabled, children in urban design.
- **Upliftment of Low-Income Urban Women:** Better sanitation and housing facilities are prioritized by women administrators.

E.g., Brazil's women-led cities focused on slum upgrading and maternal health.

On Governance:

- **Institutionalization of GRB Practices:** Representation drives structured gender budgeting, as seen in Kerala and Tamil Nadu.
- **Citizen-Centric Governance:** Women's presence ensures programs align with lived realities — not just economic goals.
- **Better Law & Order Outcomes:** Increased trust and reporting due to gender-sensitive policing enhances rule of law.
- **Improved Governance Trust:** Women leaders reduce corruption and increase transparency (UNDP, ICRIER studies).
- **Strengthened Local Democracy:** Balanced administration reflects participative values enshrined in 74th Constitutional Amendment.

Key Challenges:

- **Structural Barriers in Entry:** Fewer women in engineering, policing, and planning due to lack of scholarships, support systems.

E.g., Less than 10% of town planners in ULBs are women (MoHUA reports).

- **Workplace Discrimination and Glass Ceilings:** Gender bias in promotions, hostile work environments, and limited mentoring hinder career growth.
- **Lack of Gender-Disaggregated Data:** Without detailed data, city policies fail to capture differential needs of women and men.
- **Tokenism in GRB Implementation:** Many GRB allocations are symbolic without real planning or monitoring.

E.g., Most ULBs do not track gender outcomes of budget lines (NIPFP & UN Women).

- **Weak Institutional Mechanisms for Gender Equity:** Absence of gender councils or mandatory audits at city level reduces accountability.

Conclusion:

For urban India to be inclusive, gender balance must shift

from politics to bureaucracy. Women in leadership can only be effective if mirrored in the technical ecosystem that supports them. Inclusive cities begin with [inclusive governance](#) structures.

Syllabus: Judiciary

Bar Council of India Decision to Allow Foreign Lawyers

Context: CJI B.R. Gavai praised the Bar Council of India's (BCI) amended rules allowing foreign lawyers and firms to advise on international law and arbitration.



About [Bar Council of India Decision to Allow Foreign Lawyers](#):

- The **Bar Council of India (BCI)** amended its 2022 rules to allow foreign law firms and lawyers to practice foreign law, international law, and participate in arbitration in India.
- This entry is **limited to non-litigious matters only**, i.e., they cannot appear before Indian courts, tribunals, or practice Indian law.

Need for This Decision:

- **Enhancing Arbitration Quality:** India needs global expertise to elevate arbitration standards and meet growing international business demands.

E.g., India ranked 5th globally in arbitration case volume – ICC Report 2024.

- **Global Integration of Legal Services:** Indian lawyers benefit from reciprocal access to foreign legal markets and broaden their cross-border practice.
- **Institutional Support Expansion:** With growing centres like MCIA (Mumbai), DIAC (Delhi), IIAC (New Delhi), India seeks foreign participation to boost credibility and caseloads.
- **Bridging Talent Gaps in Niche Areas:** Specialized roles like [climate litigation](#), tech-law, and commercial arbitration require international collaboration for knowledge transfer.

Challenges to Implementation:

- **Protectionism & Legal Monopoly Fears:** Concerns exist among Indian lawyers over loss of work or market share in elite consultancy and arbitration roles.
- **Regulatory Oversight & Reciprocity Issues:**

Enforcing reciprocal entry for Indian firms abroad may face hurdles, especially in countries with stringent entry norms.

- **Risk of Unequal Competition:** Foreign firms may have larger capital, global clientele, and better resources, creating imbalance with domestic law firms.
- **Monitoring Compliance:** Ensuring that foreign firms strictly operate within non-litigious limits requires strong regulatory mechanisms from BCI.

Significance of Allowing Foreign Lawyers in India:

- **Boosts India's Arbitration Ecosystem:** CJI Gavai noted it aligns with India's ambition to be a global arbitration hub, supporting dispute resolution in sectors like infrastructure and trade.
- **Strengthens Indo-UK Legal Ties:** Announced at the Indo-UK Arbitration Conference, the step enhances bilateral legal cooperation.
- **Enables Legal Sector Modernization:** Access to global best practices, legal tech, and international advisory standards promotes professional excellence.
- **Preserves Indian Legal Sovereignty:** The framework clearly prohibits foreign lawyers from practicing Indian law, maintaining the sanctity of [the Advocates Act, 1961](#).
- **Opens Global Opportunities for Indian Lawyers:** Indian advocates can now register to practice foreign law abroad under reciprocity provisions without surrendering Indian practice rights.

Conclusion:

The controlled entry of foreign lawyers marks a progressive shift in India's legal framework, balancing globalization with domestic protection. With robust regulatory oversight, this can uplift India's arbitration and consultancy sectors. Its success will depend on mutual trust, clarity of rules, and regulatory vigilance.

PYQ:

What are the major changes brought in the Arbitration and Conciliation Act, 1990 through the recent Ordinance promulgated by the President? How far will it improve India's dispute resolution mechanism? Discuss. (2015)

Syllabus: Representation of People's Act

REGISTERED UNRECOGNISED POLITICAL PARTIES (RUPPS)

Context:

The Election Commission of India (ECI) has initiated the delisting of 345 Registered Unrecognised Political Parties (RUPPs) that have not contested any elections since 2019

and are physically untraceable.



About Registered Unrecognised Political Parties (RUPPs):

- RUPPs are political entities registered under **Section 29A of the Representation of the People Act, 1951**, but not yet recognised as State or National parties.
- **Privileges:** They enjoy **income tax exemptions** and can receive **political donations**, even without electoral participation.
- **Scale:** India has over **2,800 RUPPs** as of 2025. According to ADR, their number doubled from 1,112 in 2010 to 2,301 in 2019.
- **Status:** Nearly **97% of all registered parties are unrecognised**, yet most do not file mandatory financial disclosures.

Features and Criteria for Recognised Political Parties:

State Party: A registered party must meet **any one** of the following:

- **6% Vote + 2 Assembly Seats:** The party must secure at least 6% of the valid votes polled in the Legislative Assembly election and win at least 2 seats in that Assembly.
- **6% Vote + 1 Lok Sabha Seat:** It must win at least 6% of valid votes in the Lok Sabha election held in that state and secure 1 seat in Lok Sabha from that state.
- **3% of Assembly Seats or 3 Seats Minimum:** The party must win at least 3% of the total Assembly seats, or at least 3 seats (whichever is higher) in the Legislative Assembly.
- **1 of Every 25 Lok Sabha Seats:** The party must win 1 Lok Sabha seat out of every 25 seats allocated to the state.
- **8% Vote Share:** It must secure at least 8% of the total valid votes in a state, either in Lok Sabha or Assembly elections, even if it wins no seats.

National Party: A registered party must meet **any one** of the following:

- **6% Vote in 4 States + 4 Lok Sabha Seats:** The party must secure at least 6% of valid votes in Lok Sabha or Assembly elections in four or more states, and

win at least 4 Lok Sabha seats from any states.

- **2% Lok Sabha Seats from 3 States:** It must win at least 2% of the total Lok Sabha seats (currently 11 out of 543), and those seats must be from at least 3 different states.
- **Recognized as State Party in 4 States:** If a party is recognized as a State Party in four or more states, it automatically qualifies as a National Party.

Structural and Functional Issues with Registered Unrecognised Political Parties (RUPPs):

- **Electoral Inactivity:** Many RUPPs haven't contested any election since 2019, raising doubts about their political purpose.
- **Funding Opacity:** Less than 5% submitted donation reports (2013–2016), reflecting weak compliance with financial disclosure norms.
- **Tax Loophole Misuse:** They misuse Section 13A of the IT Act to claim tax exemptions despite zero electoral activity.
- **No Verifiable Presence:** Many lack traceable offices or functioning bodies, violating norms under Section 29A of the [RPA, 1951](#).
- **Election-Year Surge:** Registrations spike during election cycles, often linked to shady donation flows and proxy operations.

Way Ahead:

- **Delisting dormant parties:** EC must periodically remove non-functional entities from its register.

E.g., Current move to delist 345 RUPPs.

- **Strengthen registration norms:** Include **mandatory participation criteria** and stricter financial disclosures.
- **Regular audits:** Subject inactive RUPPs to **IT scrutiny** and **EC compliance checks**.
- **Digital oversight tools:** Promote [Political Parties Registration Tracking Management](#) System (PPRTMS) for transparency and real-time status updates.
- **Public disclosure:** State CEO websites must update party status, audit report filings, and compliance history.

Conclusion:

The delisting of inactive RUPPs is a **long-overdue reform** to clean up the electoral landscape. It ensures that political privileges aren't misused for **money laundering**

or **tax evasion**. Strengthening party registration, enforcing accountability, and regular audits are essential to uphold **electoral integrity** and [democratic transparency](#).

Syllabus: Social Sector Services relating to Health, Education

UNESCO GLOBAL EDUCATION MONITORING (GEM) REPORT 2024–25

Context:

The UNESCO Global Education Monitoring (GEM) Report 2024–25 highlights that India continues to struggle with poor learning outcomes despite near-universal school enrolment.



Key Findings of UNESCO Global Education Monitoring (GEM) Report 2024–25:

1. **Near-Universal Enrolment but Poor Learning Outcomes (India):** Despite >95% primary school enrolment, India struggles with foundational

literacy and numeracy gaps

E.g., [ASER 2023](#) shows only 43% of Class 3 students can read a Class 2-level text.

2. **Global Gender Disparity in Reading Proficiency:** Globally, only 87 boys per 100 girls achieve minimum reading proficiency. In middle-income countries, it drops to 72 boys per 100 girls.
3. **Post-Pandemic Gender Reversal in Math Proficiency:** While gender parity was improving, COVID-19 reversed gains—girls now underperform in math in countries like Brazil, UK, and Italy.
4. **Women Dominate Teaching but Lag in Leadership (India):** In India, 60% of elementary teachers are women, but only 13% of vice-chancellors in central universities were women as of 2022.
5. **Inadequate Leadership Training:** Many Indian states lack formal principal training despite NEP 2020's provision of **50 hours** of annual professional development.
6. **Global Gaps in Leadership Accountability:** Less than **50% of surveyed countries** require headteachers to undergo leadership preparation before appointment.
7. **Correlation Between Female Leadership and Better Learning Outcomes:** In some African countries, female-led schools showed up to **1 additional year of learning gain** over male-led ones.
8. **Decentralized Leadership Builds Trust:** Case studies (e.g., Delhi's pilot on middle leadership) show **teacher trust** improves with effective mentorship and distributed leadership.

Positive Trends in Education:

- **Female Teaching Workforce Rising (India):** Over 60% female representation in elementary schools enhances gender-sensitive learning environments.
- **Policy Commitment via NEP 2020:** NEP mandates structured training for school leaders, indicating recognition of leadership's role in outcomes.
- **Evidence-Based Global Monitoring:** [UNESCO's](#) expanded global dataset helps identify performance gaps in literacy, gender, and governance.
- **Success of Peer-Mentorship Models:** Middle leadership initiatives in Delhi boosted professional culture and collaboration among teachers.
- **Global Dialogue on School Leadership:** Over 100+ countries participated in leadership surveys—highlighting the rising global priority on education governance.

Negative Trends in Education:

- **Learning Crisis Despite Enrolment Gains:** High enrolment has not translated into learning—India's NAS 2021 showed only 25% proficiency in math at

Class 8.

- **Gender Inequity in Leadership:** Women remain underrepresented in top roles—only 19% of global education ministers are women.
- **Digital Divide Post-Pandemic:** Prolonged school closures hit girls harder, especially in developing countries with poor digital access.
- **Inconsistent Implementation of Reforms:** [NEP's training goals](#) remain uneven—few states ensure full compliance with the 50-hour leadership training rule.
- **Opaque Selection and Promotion:** Many education systems—including India's—lack transparency and merit-based recruitment for leadership posts.

Way Forward:

- **Strengthen Leadership Pipelines:** Institutionalize mandatory leadership certification programs for principals and school heads.
- **Promote Women in Senior Roles:** Launch targeted leadership acceleration programs for women in education administration.
- **Improve Learning Metrics:** Shift from enrolment-centric monitoring to robust measurement of learning outcomes through tools like NAS and ASER.
- **Integrate Leadership into Teacher Training:** Develop leadership modules within pre-service and in-service teacher education curriculums.
- **Invest in Localized Mentorship Models:** Scale up successful decentralized leadership models (e.g., Delhi middle leader pilot) across states.

Conclusion:

The UNESCO GEM Report 2024–25 reveals that systemic leadership gaps and gender inequities continue to affect learning outcomes despite strong enrolment numbers. Bridging the gap between policy and implementation remains critical for building equitable, high-performing education systems.

PYQ:

1. Discuss the main objectives of Population Education and point out the measures to achieve them in India in detail. (2021)

INCLUSIVE EDUCATION FOR CHILDREN WITH DISABILITIES

Context:

The Centre signed a tripartite MoU between DEPWD, NIOS, and NCERT to strengthen inclusive education for children with disabilities, focusing on curriculum reform, accessibility, and institutional partnerships.



About Inclusive Education for Children with Disabilities:

- **What it is?**
 - Inclusive education ensures that children with and without disabilities learn together in a common environment, supported by adapted curricula and teaching methods ([RPWD Act, 2016](#)).
- **Key Data Point:**
 - **1.7%** of Indian children (0–19 yrs) have disabilities — Census 2011.
 - Only **0.98%** of enrolled primary students are children with disabilities — UDISE+ 2019-20.
 - **21 lakh** CWSN covered under Samagra Shiksha — 2018-19.
 - **27,774** special/resource teachers available for CWSN support — [Samagra Shiksha](#) data

Need for Inclusive Education for Children with Disabilities:

- **Right to Education:** Article 21A and [RTE Act 2009](#) guarantee free, compulsory education for all children aged 6–14, including CWSN — fulfilling constitutional and legal obligations.
- **Equity & Inclusion:** UNESCO reports 29 million out-of-school children in South Asia, many with disabilities — inclusion ensures no child is left behind.
- **Breaking Social Barriers:** Inclusive schooling reduces stigma, fosters empathy, and builds community acceptance toward persons with disabilities.
- **Human Capital:** Educating CWSN unlocks their potential, enabling them to become active contributors to economic growth and innovation.
- **International Commitments:** India's obligations under CRPD 2007, SDG 4, and NEP 2020 mandate inclusive, equitable, and quality education for CWSN.

Government Initiatives

- **Tripartite MoU (2025):** DEPwD-NIOS-NCERT signed MoU to adapt curriculum and recognise DDRS-run special schools as SAIEDs to expand academic options.
- **NEP 2020:** NEP 2020 integrates disability inclusion across all education levels, emphasising equity and

universal access.

- **Samagra Shiksha:** Supports ₹3500/child/year, expanded girl stipend (Classes I–XII), special educators, resource rooms, and home-based education.
- **Barkha Series:** NCERT's "Barkha" UDL-based reading series provides accessible, inclusive learning material in print and digital formats.
- **RPWD Act 2016:** Mandates inclusive learning environments with accessible infrastructure and provision of assistive devices and support.
- **Home-based Education:** CWSN with severe disabilities can access tailored home-based education up to Class XII under Samagra Shiksha.

Challenges associated:

- **Data Gaps:** Current UDISE+ lacks detailed disability data by type/severity, hindering targeted interventions and resource planning.
- **Infrastructure Deficit:** Many schools lack ramps, accessible toilets, Braille resources, or inclusive TLM — limiting CWSN participation.
- **Shortage of Trained Teachers:** Nationwide, only ~27,700 special/resource teachers (2019) are available, far short of demand across all states.
- **Low Enrolment:** Less than 1% of children with disabilities are enrolled at primary level — reflecting systemic access gaps.
- **Social Barriers:** Stigma, lack of awareness, and parental reluctance continue to impede CWSN integration in regular schools.
- **Inconsistent Implementation:** Inclusion under [NEP](#) varies widely across states; lack of robust monitoring and accountability mechanisms.

Way Ahead:

- **Improve Data:** Incorporate Washington Group questions in UDISE+ for disaggregated, globally comparable disability data.
- **Boost Funding:** Achieve NEP's 6% of GDP target for education, with specific earmarked allocations for inclusion initiatives.
- **Infrastructure Upgrade:** Mandate 100% accessible infrastructure — classrooms, toilets, playgrounds — in all government and aided schools.
- **Teacher Training:** Integrate UDL and disability education into all B.Ed and in-service training to build teacher competency.
- **Strengthen Monitoring:** Develop and track clear, measurable [SDG 4](#) inclusion indicators at national and state levels.
- **Community Engagement:** Encourage parent-teacher forums, partnerships with NGOs, and community-led sensitisation to promote inclusion.

Conclusion:

Inclusive education is pivotal to fulfilling India's constitutional vision of equality and dignity for all. The recent MoU and evolving frameworks like NEP 2020 signal progress, but addressing gaps in data, training, and community awareness is vital for meaningful change.

PYQ:

1. The Rights of Persons with Disabilities Act, 2016 remains only a legal document without intense sensitisation of government functionaries and citizens regarding disability. Comment. (2022)

PERFORMANCE GRADING INDEX (PGI) 2.0 REPORT

Context:

The Ministry of Education released the **Performance Grading Index (PGI) 2.0** report for 2022-23 and 2023-24, ranking States/UTs on school education.

- Chandigarh topped the index while Meghalaya was at the bottom.

Categories	Domain	Indicators	Total Weight
1. Outcomes	Learning Outcomes and Quality (LO)	12	240
	Access (A)	7	80
	Infrastructure & Facilities (IF)	15	190
	Equity (E)	16	260
2. Governance Management (GM)	Governance Processes (GP)	15	130
	Teacher Education & Training (TE&T)	8	100
Total		73	1000

About Performance Grading Index (PGI) 2.0 Report:

- **What it is:** An evidence-based assessment tool measuring the performance of school education across States/UTs.
- **Launched in:** 2017 and PGI 2.0 version aligned with **NEP 2020** and **SDGs**.
- **Published by:** Ministry of Education, Govt of India.
- **Domains Covered:** 6 domains, 73 indicators — Learning Outcomes, Access, Infrastructure & Facilities, Equity, Governance Processes, and **Teacher Education & Training**.
- **Grading Scale:** Out of 1000 points, classified into 10 grades from **Daksh** (Top) to **Akanshi-3** (Lowest).

Summary & Trends in Performance Grading Index (PGI) 2.0 Report:

- **Top Rank:** Chandigarh scored **703 points**, achieving *Prachesta-1*, reflecting its strong performance in governance and infrastructure.
- **Lowest Rank:** Meghalaya scored **417 points** (*Akanshi-3*), indicating persistent challenges in access and learning outcomes.
- **No State in Top 4 Bands:** No State/UT reached *Daksh* (Top 951-1000) or *Utkarsh* bands, showing

systemic gaps needing national-level reforms.

- **Overall Progress:** **24 States/UTs** improved in 2023-24, though **12** recorded a decline, signalling uneven progress.
- **Infrastructure Gains:** **Delhi, J&K, Telangana** showed top progress in upgrading school infrastructure and learning environments.
- **Learning Outcomes:** No State reached *Daksh* in this domain; reflects the long-standing issue of poor learning levels in foundational literacy and numeracy.
- **Equity:** Gaps in educational outcomes between **SC/ST** and **general category** students have narrowed slightly but remain an area of concern.
- **Access Improvements:** **Bihar and Telangana** showed highest gains in increasing enrolment and retention, especially among disadvantaged groups.

Analysis of PGI 2.0 Report:

- **Positive Trends:**
 - **Wider Score Gains:** 24 States/UTs improved scores in 2023-24, indicating systemic strengthening of school education post-pandemic disruptions.
 - **Access Excellence:** Odisha achieved *Daksh* in Access, reflecting robust enrolment, retention, and efforts to minimise dropouts.
 - **Progressive Equity:** PGI 2.0 shows **gender parity** improving across most States and gaps in enrolment and learning for SC/ST and minorities steadily narrowing.
 - **Infrastructure Upgradation:** **Delhi, J&K, Telangana** demonstrated model progress in upgrading **physical infrastructure** (toilets, electricity, digital classrooms), vital for NEP 2020 goals.
 - **Access Improvements in Low Performers:** Bihar, Telangana, Jharkhand moved up bands in Access, showing targeted interventions in under-served areas.
 - **Learning Outcomes Leadership:** Chandigarh, Punjab, Puducherry ranked in higher bands of Learning Outcomes, highlighting that focused governance can yield quality improvements.
 - **Governance & Digital Monitoring:** Progress seen in some UTs like Chandigarh in digitisation of school governance, **UDISE+** adoption, transparent fund utilisation.
- **Negative Trends:**
 - **No State in Top Bands:** No State/UT reached *Daksh* or *Utkarsh* (761+ scores) —

underscoring that **quality of education** lags behind infrastructure and access gains.

- **Persistent Learning Gaps:** Outcomes in NAS 2021 reveal low proficiency in foundational literacy & numeracy across most States — urgent challenge for NEP 2020.
- **High Inter-State Variability:** Score gap of ~286 points between Chandigarh (703) and Meghalaya (417) shows deep regional disparities in school education quality.
- **Declining Performance in 12 States:** Bihar, Karnataka, West Bengal, Andaman Nicobar, Ladakh among States where PGI scores fell — suggests weak post-pandemic recovery in some regions.
- **Infrastructure Deficits in Aspirational States:** Many low-performing States still report lack of functional toilets, boundary walls, libraries, labs — critical to both equity and learning.

Way Ahead:

- **Address Learning Gaps:** Urgent need to improve **Learning Outcomes** — foundational literacy & numeracy as per NEP 2020 goals.
- **Accelerate Access:** Sustain progress on **Access** and focus on retaining vulnerable and marginalised children.
- **Strengthen Governance:** Enhance monitoring & governance capacity to ensure effective policy implementation.
- **Improve Infrastructure:** Priority to upgrade **labs, libraries, toilets, digital classrooms** across low-performing States.
- **Build Equity:** Continue efforts on **gender, caste, and rural-urban equity** to ensure **inclusive quality education**.

Conclusion:

PGI 2.0 is a robust benchmarking tool aligned with NEP 2020. While progress is evident, India must intensify efforts to address learning gaps, governance bottlenecks, and infrastructure inequalities to meet SDG 4 by 2030

PYQ:

Skill development programmes have succeeded in increasing human resources supply to various sectors. In the context of the statement analyse the linkages between education, skill and employment. (2023)

Syllabus: International Relations

INDIA-JAPAN MARITIME RELATION

Context:

India and Japan have held high-level bilateral discussions to deepen cooperation in maritime affairs, including **port digitisation**, shipbuilding, and the employment of Indian seafarers, marking a new phase in strategic maritime collaboration.



Key Highlight about India-Japan Maritime Relation:

- **Investment and Infrastructure:** Japan showed interest in investing in Indian shipyards and port infrastructure, such as **Imabari Shipbuilding's** proposed greenfield project in Andhra Pradesh.
- **Port Digitisation:** Agreement on enhancing digital technologies in port operations to improve efficiency and reduce carbon emissions.
- **Smart Islands Development:** Japan to assist India in converting Andaman & Nicobar and Lakshadweep into smart, green islands using renewable energy and disaster-resilient systems.
- **Employment and Training:** Japan expressed interest in employing skilled Indian seafarers; India has over 1.54 lakh trained personnel available.
- **R&D and Technology Transfer:** Collaboration in next-gen ship design, sustainable maritime tech, and increased cooperation in research through Indian agencies and Cochin Shipyard Limited (CSL).

Over view of India-Japan Relations:

- **Strategic Partnership:** Both nations share the Indo-Pacific vision (Free and Open Indo-Pacific and Indo-Pacific Oceans Initiative), work under the Quadrilateral Security Dialogue and **Supply Chain Resilience Initiative** frameworks to counter China's dominance in the region.
- **Economic Engagement:** Bilateral trade was United States Dollar 21.96 billion in Financial Year 2022–23; target of five trillion-yen (Rs 3.2 lakh crore) investment by 2027.
- **Infrastructure Development:** Joint ventures in Mumbai-Ahmedabad Bullet Train and North-East

development align with Japan's Partnership for Quality Infrastructure model.

- **Energy and Technology Collaboration:** Clean Energy Partnership (2022), civil nuclear agreement (2017), and Lunar Polar Exploration Mission with Indian Space Research Organisation and [Japan Aerospace Exploration Agency](#).
- **People-to-People Ties:** Programmes like Technical Intern Training Programme and Specified Skilled Worker help India supply skilled manpower to Japan's aging economy.

Challenges in Bilateral Ties:

- **Trade Imbalance:** Comprehensive Economic Partnership Agreement has not yielded expected growth and India's exports remain low due to non-tariff barriers and strict standards.
- **Foreign Direct Investment Limitations:** Japan's total [Foreign Direct Investment](#) in India is still a small share of its global investment footprint.
- **Geopolitical Divergences:** Different approaches to China and Russia; Japan aligns more with United States strategy while India maintains strategic autonomy.
- **Project Delays:** High-speed rail and Asia-Africa Growth Corridor have faced slow implementation due to procedural bottlenecks.

Significance of the Maritime Agreement:

- **Strategic Leverage:** Enhances maritime security, strengthens port connectivity, and supports India's Indo-Pacific strategy.
- **Green Shipping Push:** Aligns with [India's Maritime India Vision 2030](#) and Maritime Amrit Kaal Vision 2047 for carbon-neutral logistics.
- **Employment Boost:** Leverages India's large seafaring workforce and creates new skilled job avenues.
- **Innovation and Technology Transfer:** Fosters sustainable maritime innovation through Japanese technology and research and development partnerships.

Conclusion:

India-Japan maritime cooperation represents a convergence of economic, strategic, and environmental interests. As both nations navigate regional challenges, this partnership can serve as a model for Indo-Pacific collaboration. Strengthening maritime ties will be pivotal for a resilient and secure maritime future.

PYQ:

'The time has come for India and Japan to build a strong contemporary relationship, one involving global and strategic partnership that will have a great significance for Asia and the world as a whole.' Comment. (2019)

4TH INDIA-CENTRAL ASIA DIALOGUE

Context:

India hosted the 4th India-Central Asia Dialogue in New Delhi under the chairmanship of EAM Dr. S. Jaishankar.

- The conclave focused on regional security, critical minerals, connectivity, counter-terrorism, and economic integration with the five Central Asian nations.



About 4th India-Central Asia Dialogue:

- **What It Is?**
 - A multilateral platform for **foreign ministers of India and Central Asian countries** to engage in structured dialogue.
 - Launched in **2019 (Samarkand)** to deepen strategic, political, and economic cooperation.
- **Members:** India, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan.
- **Objectives:**
 - Enhance cooperation in trade, transport, security, energy, IT, health, and people-to-people ties.
 - Serve as a mechanism for regional stability and sustainable development.

Major Outcomes of the 4th Dialogue:

- **Counter-Terrorism Cooperation:** Condemned Pahalgam attack and called for early adoption of [UN Comprehensive Convention on International Terrorism](#).
- **Rare Earth & Critical Minerals:** Expressed joint interest in exploration and investment in rare earths; Second India-Central Asia Rare Earth Forum to be convened soon.
- **Connectivity & Trade Facilitation:** Emphasized optimum use of INSTC and Chabahar Port; supported Uzbekistan and Turkmenistan's entry into [INSTC](#).
- **Financial and Digital Integration:** Agreed on enhancing digital payment systems, interbank cooperation, and trade in national currencies.

- **Health & Traditional Medicine:** Discussed Universal Health Coverage, medical tourism, and support for traditional medicine integration.
- **Energy & Technology Partnership:** Supported cooperation on India Stack, solar alliance, and biofuels, enhancing resilience in digital and clean energy sectors.
- **Support for India's Global Role:** Reaffirmed backing for India's permanent UNSC membership and greater role in multilateral platforms like SCO and UN.

Challenges In India–Central Asia Relations:

- **Geographical Disconnect:** Lack of direct land borders and Pakistan's denial of transit limits overland connectivity.
- **Chinese Strategic Depth:** China's Belt and Road Initiative ([BRI](#)) and financial clout dominate infrastructure and trade corridors.
- **Security Volatility in Afghanistan:** Instability in Afghanistan hinders trans-regional connectivity projects and cooperation frameworks.
- **Low Trade Volume:** Bilateral trade is below potential (India–Central Asia trade was under \$2 billion in 2022–23).
- **Language & Bureaucratic Barriers:** Cultural and regulatory differences slow project implementation and policy coordination.

Way Forward:

- **Strengthen Chabahar and INSTC Integration:** Enhance usage of Shahid Beheshti Terminal, streamline customs via TIR Convention for smooth transit.
- **Deepen Digital Diplomacy:** Leverage India Stack and DPI models to build tech-based governance partnerships.
- **Strategic Energy & Minerals Partnership:** Fast-track critical mineral agreements, encourage joint R&D and green energy investments.
- **Cultural and Academic Exchange:** Expand [ITEC programs](#), language training, and higher education scholarships to deepen soft power ties.
- **Institutional Mechanisms:** Regularize Joint Working Groups on health, fintech, climate, and counter-terrorism for actionable outcomes.

Conclusion:

The 4th India-Central Asia Dialogue reaffirms India's strategic vision for regional cooperation rooted in shared civilizational ties. To counter geopolitical constraints, India must strengthen multimodal connectivity, economic linkages, and institutional frameworks. A proactive, resilient approach can anchor [India-Central Asia](#) relations in long-term stability and mutual growth.

PYQ:

1. A number of outside powers have entrenched themselves in Central Asia, which is a zone of interest to India. Discuss the implications, in this context, of India's joining the Ashgabat Agreement, 2018. (2018)

INDIA'S NEW CHALLENGE: CHINA-LED TRILATERAL NEXUS

Context:

China recently hosted the first China-Pakistan-Bangladesh trilateral dialogue in Kunming, soon after a China-Pakistan-Afghanistan meet, signalling a strategic push to consolidate Beijing's influence in South Asia.



About India's New Challenge: China-led Trilateral Nexus:

What is the Nexus?

- The emerging **China-Pakistan-Bangladesh** and **China-Pakistan-Afghanistan** trilaterals are Beijing's strategic mechanism to expand its **geopolitical leverage** in South Asia.
- **China** drives the agenda and **Pakistan** gains strategic relevance; and **Bangladesh & Afghanistan** are pulled into China's orbit for political, economic, and connectivity influence.

Mutual Interests Behind the Trilateralism:

- **China:** Seeks to dilute India's influence, expand [BRI projects](#), and use Pakistan to complicate India's neighbourhood strategy.
- **Pakistan:** Gains strategic cover and economic aid from China to counterbalance India, especially post-Islamabad's international isolation.
- **Bangladesh & Afghanistan:** Seek Chinese infrastructure investments and political assurances in a multipolar South Asia.

Historical Context & Evolution:

- **1962 Indo-China War Legacy:** Post-1962, China backed Pakistan as a regional counterweight to India. This set the stage for long-term military and strategic convergence.
- **Siliguri Strategy (1965):** Pakistan attempted to isolate India by roping in Nepal, China, and East Pakistan to disrupt India's connectivity via the Siliguri Corridor — a concept now resurrected.
- **Terror Shielding & UNSC Diplomacy:** China has shielded Pakistan-based terror entities like Lashkar-e-Taiba at the UNSC, reinforcing strategic trust between the two.
- **2025 Escalations:** In **Operation Sindoor**, Pakistan used Chinese drones and radars, and Beijing criticized India's counterstrike, reaffirming the alliance.

Implications of the Nexus

1. On India

- **Security Threat Intensification:** Trilateral setups give legitimacy to China-Pakistan coordination on cross-border terrorism (e.g., Pahalgam attack, 2025).
- **Diplomatic Disruption:** China's involvement complicates India's outreach in Bangladesh and Afghanistan, traditionally seen as Indian strategic depth.
- **BRI Encroachment:** Enhanced trilateralism strengthens BRI's southern flank, marginalizing India-led alternatives like **BBIN** or Chabahar route.

2. On South Asian Stability:

- **Strategic Polarization:** Smaller countries are forced to balance between India and China, risking long-term regional fragmentation.
- **Proxy Conflict Risks:** Pakistan may exploit Chinese backing to re-intensify state-sponsored terrorism, destabilizing regional peace.
- **Undermining SAARC-Like Platforms:** China's encroachment could render regional initiatives ineffective and externally influenced.

Way Ahead for India:

- **Reassert Strategic Redlines:** India must clearly communicate that any neighbour aligning against its sovereignty will face economic, political, and military consequences.
- **Strengthen Regional Partnerships:** Boost engagement through platforms like BIMSTEC, IORA, and IPRU, bypassing Chinese influence.
- **Counter with Economic Diplomacy:** Offer targeted

investments, credit lines, and market access to South Asian nations to dilute Chinese influence.

- **Expand Defence Engagement:** India should deepen military ties with Bangladesh, Maldives, and Afghanistan, showcasing credible alternatives to Chinese military aid.
- **Narrative Building & Strategic Communication:** Project India as a non-hegemonic, inclusive partner, countering Chinese propaganda in the region.

Conclusion:

The China-led trilateral nexus marks a shift in regional power play aimed at restraining India's strategic ascent. India must blend **hard power, diplomacy, and economic leverage** to prevent encirclement. Only a confident, proactive India can shape a secure and multipolar South Asian order free from coercive trilateralism.

PYQ:

1. "The USA is facing an existential threat in the form of a China, that is much more challenging than the erstwhile Soviet Union." Explain. (2021)

INDIA'S EVOLVING FOREIGN POLICY

Context:

India's evolving foreign policy came under spotlight after Operation Sindoor, a decisive military response to the Pahalgam terror attack, reigniting debates on India's strategic posture towards Pakistan and terrorism.



About India's Evolving Foreign Policy:

1. Idealism of the Nehru Era (1947–1962)

- **Non-alignment as strategic posture:** India refused to align with Cold War power blocs.
- **Anti-colonial leadership:** Supported decolonisation across Asia and Africa.
- **Faith in multilateralism:** Trusted the UN system and collective global institutions.

2. Moral Diplomacy and Peace Principles (1950s–Early 1960s)

- **Adoption of Panchsheel:** Advanced peaceful coexistence and respect for sovereignty.
- **Gandhian influence on diplomacy:** Emphasised ethics, dialogue, and non-violence.
- **Peace through bilateralism:** Rejected coercion; promoted trust-building measures.

3. Shift to Realpolitik (Post-1962 War Phase)

- **National interest over ideology:** Prioritised hard power and security preparedness.
- **Strengthening border defence:** Reoriented policies to address external threats.
- **Rise of defence institutions:** Boosted indigenous arms and strategic planning.

4. Nuclearization & Strategic Assertiveness (1974–1998)

- **Pursuit of autonomous deterrence:** Maintained sovereign decision-making in security.
- **Indigenous capability development:** Focused on self-reliant nuclear infrastructure.
- **Rejection of external pressure:** Resisted NPT/CTBT to safeguard strategic autonomy.

5. Counterterrorism Doctrine (2000s–2019)

- **Shift from restraint to retaliation:** Adopted offensive-defensive security approach.
- **Use of calibrated military action:** Integrated diplomacy with precision operations.
- **Redefined internal-external threat linkage:** Recognised cross-border terror as war proxy.

6. Operation Sindoor & Strategic Clarity (2025 Onward)

- **Codification of pre-emptive strikes:** Operationalised strike-first policy on terror.
- **Assertive neighbourhood posture:** Reinforced zero-tolerance against proxy threats.
- **Public signalling of intent:** Demonstrated capacity and will to escalate if needed.

Challenges to Evolving Foreign Policy:

- **Pakistan's Proxy War Strategy:** Continuous use of non-state actors and the "Bleeding India with a Thousand Cuts" doctrine poses security threats.

E.g. Pahalgam 2025 killings, Uri 2016, 26/11 attacks.

- **China's Aggressive Posture:** Border tensions,

especially post-Galwan clash, test India's diplomacy and deterrence.

E.g. Line of Actual Control violations.

- **Balancing Soft Power with Hard Response:** India must preserve its **civilizational values** while using force against terrorism, a tightrope challenge.
- **Global Perception Management:** Military assertiveness may invite **global scrutiny**, requiring India to justify actions in global forums.
- **Geopolitical Realignment Pressures:** Strategic partnerships with USA, Quad, BRICS, and West Asia require **delicate recalibration** of non-alignment.

Way Ahead for Indian Foreign Policy:

- **Adopt Realistic Non-Alignment:** Shift from passive NAM to strategic autonomy through flexible alliances without compromising sovereignty.
- **Invest in Indigenous Defence:** Boost [Atmanirbhar Bharat](#) in defence to reduce foreign dependency.

E.g. DRDO's BrahMos, Agni, INS Arihant.

- **Use of Proactive Deterrence:** Continue doctrine of proportional retaliation to deter cross-border terrorism.
- **Strengthen Global Alliances:** Enhance strategic ties with US, France, Japan, and Middle East for multi-vector diplomacy.
- **Leverage Diplomacy for Global Standing:** Take leadership on global issues like terrorism, climate change, and AI governance to shape world order.

Conclusion:

India's foreign policy has evolved from the moral compass of Nehru to a muscular, self-reliant, and assertive framework in 2025. While rooted in peace, it now incorporates strategic defence, [economic autonomy](#), and global leadership. The journey reflects India's growing confidence to protect its interests without compromising its identity.

PYQ:

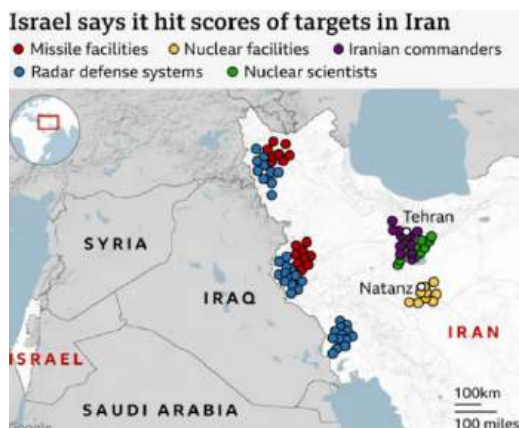
1. Project 'Mausam' is considered a unique foreign policy initiative of the Indian Government to improve relationship with its neighbours. Does the project have a strategic dimension? Discuss. (2015)

ISRAEL IRAN CONFLICT

Context:

Israel launched "Operation Rising Lion," a full-scale military strike on Iran targeting nuclear and missile infrastructure.

- This comes immediately after the [IAEA](#) declared Iran in violation of its nuclear safeguard's agreement.



About Israel Iran Conflict:

- **Foundational Rivalry:** Hostilities began after Iran's 1979 Islamic Revolution, which adopted a theocratic and anti-Israel stance.
- **Proxy Network:** Iran supports Hezbollah (Lebanon), Hamas (Gaza), Houthis (Yemen), and militias in Iraq to encircle Israel without direct confrontation.
- **Past Israeli Strikes:** Israel has previously struck nuclear facilities in Iraq (1981) and Syria (2007); Iran has remained a red line due to complexity.
- **Abraham Accords Outcome:** Iran's threat prompted Sunni Arab nations to normalize ties with Israel, sidelining the Palestine issue temporarily.
- **October 7 Aftermath:** Iran-backed Hamas' Gaza offensive intensified regional hostilities, drawing global attention to Iran's proxy warfare.

Causes Behind Recent Confrontation:

1. **IAEA Resolution:** The IAEA Board formally declared Iran non-compliant under the 1974 Safeguards Agreement after finding enriched uranium traces at unreported sites.
2. **Nuclear Negotiation Breakdown:** Talks between the US and Iran in Oman stalled over uranium enrichment disputes. Israel viewed this as a diplomatic loophole exploited by Tehran.
3. **Military Escalation Logic:** Israel believes targeting Iranian proxies is ineffective and has thus chosen to strike at their patron—Tehran.
4. **Domestic Politics in Israel:** PM Netanyahu, under political pressure, leveraged security threats to avoid elections and consolidate internal control.
5. **Strategic Timing:** Israel acted before the expiry of nuclear deal sanctions on October 18, potentially undermining Western diplomatic re-engagement.

IAEA Decision and Its Implications:

- **Non-Compliance Declaration:** The IAEA expressed "grave concern" over Iran's uranium traces and lack of transparency at Lavisan-Shian, Varamin, and Turqzabad.
- **IAEA Statute Invoked:** Under Article XII.C, this is

the 7th time IAEA found a country non-compliant, setting the stage for a UNSC escalation.

- **Sanctions Risk:** European powers may trigger snapback sanctions under the JCPOA, expiring in October.
- **Iran's Reaction:** Tehran denounced the resolution, threatened to exit the NPT, and initiated new deep-underground [uranium enrichment](#) projects.
- **IAEA's August Report Awaited:** IAEA chief Grossi will flag non-compliance in August if Iran remains evasive, intensifying global scrutiny.

Consequences of Israel-Iran Conflict:

- **Global Implications:**
 - **Oil Price Shock:** Escalation near the Strait of Hormuz (through which 20% of world oil flows) could destabilize global markets.
 - **US Strategic Dilemma:** The US faces pressure to distance itself from Israeli actions while protecting its regional assets.
 - **Nuclear Proliferation Threat:** Iran's exit from the NPT may trigger a nuclear arms race in West Asia.
- **Regional Impact:**
 - **Destabilisation of Middle East:** Countries like Iraq, Syria, and Lebanon may face intensified drone warfare and proxy escalations.
 - **Collapse of Peace Talks:** Iran-US talks in Muscat and the two-state solution dialogues face an uncertain future.
 - **Rise of Armed Militias:** Groups like PMF and Houthis may intensify retaliation against Israel or US bases.
- **Impact on India:**
 - **Diaspora Risk:** Nearly 8 million Indians reside in [West Asia](#). War puts their safety and evacuation logistics at risk.
 - **Energy Dependency:** Over 60% of India's crude imports pass through the Strait of Hormuz—supply disruptions threaten inflation.
 - **Diplomatic Balancing:** India's ties with both Israel and Iran require delicate management amidst war rhetoric and sanctions.

Conclusion:

The Israel-Iran conflict has reignited fears of full-scale war in an already volatile region. [Diplomatic breakdown](#), proxy wars, and nuclear brinkmanship threaten global peace and economic stability. De-escalation and multilateral dialogue remain the only path forward to prevent irreversible damage.

RESHAPING WEST ASIA GEOPOLITICS

Context:

The latest Israel-Iran conflict and closure of the [Strait of Hormuz](#) are reshaping West Asia's energy and geopolitical landscape, with major implications for global markets and India's strategic interests.



About Reshaping West Asia Geopolitics:

- **What it is?**
 - A transformation in **power dynamics, alliances, and energy politics** in West Asia, triggered by the escalation of military conflict and shifting global energy trends.
- **Recent Events:**
 - **Israel's strikes on Iranian nuclear sites:** Israel launched targeted airstrikes on Iranian nuclear facilities, escalating regional tensions and provoking Iranian retaliation.
 - **Iran's robust retaliation with ballistic missile attacks:** Iran responded with extensive missile strikes on Israeli military targets and infrastructure, signalling a new phase of direct conflict.
 - **Rising threat of a blockade of the Strait of Hormuz:** Iran blocking this vital oil shipping route, through which ~20% of global oil passes, risking a global energy supply shock.
 - **Potential for oil embargoes and attacks on Gulf energy infrastructure:** Fears grow over Iranian-backed militias attacking rival Gulf oil facilities or coordinated embargoes against Western powers.

Earlier Geopolitics in West Asia

- **Dominated by Cold War rivalries and US-Soviet influence:** Regional dynamics were shaped by superpower competition and alliances, often fuelling local conflicts.
- **Oil diplomacy and the 1973 Arab oil embargo shaped global markets:** The 1973 OPEC embargo demonstrated West Asia's power to influence global energy prices and political outcomes.
- **Israel-Iran relations were covert but pragmatic post-1979:** Despite public hostility, secretive arms deals and intelligence sharing occurred during the Iran-Iraq war.
- **Regional instability driven by Iraq-Iran war, Gulf wars, Arab-Israeli conflict:** West Asia faced decades of war and turmoil, keeping energy markets volatile and alliances fluid.

New Geopolitics in West Asia:

- **Shift toward multi-polar alignments (BRICS, SCO, China-Russia-Gulf links):** Emerging alliances reflect growing Gulf ties with China and Russia, diluting traditional US dominance.
- **Decline in US influence, emergence of Gulf regional autonomy:** Gulf nations increasingly chart independent foreign policies, seeking diversified partnerships.
- **Weaponisation of energy supplies as geopolitical tool:** Oil and gas flows are now used strategically, with threats of embargoes or supply disruptions to gain leverage.
- **Rising importance of non-state actors (Iran-backed militias):** Militias, proxies, and hybrid warfare shape regional conflicts, adding layers of instability.
- **Fragile balances between Gulf monarchies, Iran, and Israel:** Tense but pragmatic co-existence among regional players risks tipping into wider conflict.

Factors / Causes for New Geopolitics:

- **Energy Transition Pressures:** Though renewables grow, oil and gas remain crucial, prompting Gulf states to maximise control and profits.
- **Military Escalation:** Israel-Iran hostilities now threaten key maritime routes like Hormuz, destabilising global energy trade.
- **Regional Realignments:** Warming Iran-Gulf relations may reshape oil alliances and affect traditional bloc politics.
- **US Strategic Shifts:** Erratic US policies create uncertainty, encouraging regional powers to hedge their bets and seek new partners.
- **Public Sentiment:** Pro-Palestinian, anti-West sentiment forces Gulf rulers to balance domestic opinion with external alliances.

Implications on India

- **Positive**
 - **Potential opportunities in diversified energy sourcing and strategic reserves building:** India can use this crisis to expand energy partnerships and build buffer reserves for supply security.
 - **Space to play balancer role in BRICS, SCO diplomacy:** India's non-aligned stance offers a platform to mediate and strengthen multilateral engagements.
- **Negative**
 - **Possible disruption in oil/LNG supplies (40-50% of India's energy imports via Hormuz):** Any blockade or supply cut through Hormuz will critically disrupt India's energy imports.
 - **Rising energy costs leads to inflationary pressures on Indian economy:** Surging oil prices may trigger inflation, raising costs for transport, manufacturing, and food.
 - **Risk to Indian investments in Chabahar Port, INSTC, IMEC Corridor:** Heightened conflict could derail India's key connectivity and trade initiatives in the region.
 - **Strain on India's balanced relations with both Israel and Iran:** Growing polarisation forces India into difficult diplomatic choices, risking ties with either side.
 - **Possible erosion of remittance flows from Gulf nations:** Regional instability may affect jobs and remittances from Gulf-based Indian workers, impacting household incomes.

Conclusion:

West Asia's fast-evolving geopolitical landscape demands that India adopt a **pragmatic, flexible, and interest-driven approach**. Balancing diplomacy, energy security, and economic interests will be crucial to safeguard India's strategic stakes in the region.

Syllabus: Important International Institutions

BANGKOK CONFERENCE ON CIVIL REGISTRATION AND VITAL STATISTICS

Context:

Governments across Asia-Pacific, including India, adopted a resolution at the Third Ministerial Conference on Bangkok Conference on Civil Registration and Vital Statistics in Bangkok to achieve universal birth and death registration by 2030.



About Bangkok Conference on Civil Registration and Vital Statistics:

- **What is Civil Registration and Vital Statistics (CRVS)?**
 - **Definition:** CRVS is the **continuous, permanent, universal, and compulsory recording** of key life events such as **births, deaths, marriages, and divorces** under legal frameworks.
 - **Lead Organisation:** [UN ESCAP](#) (Economic and Social Commission for Asia and the Pacific).
 - **Goal:** Achieve **legal identity for all** (SDG Target 16.9) and improve delivery of services and data governance.

Key Features of a Civil Registration System:

- **Legal Identity Establishment:** Registers births and deaths to provide **ID documents**, including birth/death certificates.
- **Life-cycle Services:** Enables access to **healthcare, education, pensions, inheritance**, etc.
- **Vital Statistics Generation:** Supports policymaking and **disease surveillance** (e.g., COVID-19 mortality tracking).
- **Inclusive Approach:** Covers **marginalised populations**, including orphans, single-parent children, surrogate births.
- **Digital Integration:** Adoption of **online portals, Digilocker**, and AI tools for secure and easy documentation.

Why a Systematic and Inclusive CRVS is Needed:

- **Legal Identity for All:** Globally, over 14 million children in Asia-Pacific alone remain unregistered by age one, denying them access to education, health services, and social protection.
- **Tackling Generational Exclusion:** In countries like Myanmar, Pakistan, and Nepal, vulnerable groups such as migrants, ethnic minorities, and undocumented populations are often excluded, perpetuating cycles of statelessness.
- **Weak Data Undermines SDGs:** Incomplete civil

registration distorts key indicators for SDG targets on maternal mortality, child health, and pension coverage, leading to flawed policy design and delivery.

- **Barrier to Rights and Protections:** Lack of a legal identity increases susceptibility to human trafficking, child marriage, and modern slavery—especially among girls and displaced populations.
- **Public Health Blind spots:** In countries with low death registration coverage (e.g., Afghanistan, Cambodia), epidemics like COVID-19 exposed the risks of weak mortality data for surveillance and response.

Key Challenges in Expanding CRVS Coverage:

- **Geographical Isolation:** Mountainous regions (e.g., Nepal, Bhutan) and small island nations face last-mile connectivity issues for registration.
- **Death Certification Gaps:** Many Southeast Asian countries lack robust verbal autopsy mechanisms, especially for deaths outside hospitals, hampering accurate cause-of-death reporting.
- **Inter-Agency Fragmentation:** Across the region, CRVS responsibilities are often split between health ministries, interior departments, and local governance bodies, reducing operational synergy.
- **Digital Divide Risks:** As countries digitize CRVS, low digital access in Laos, Papua New Guinea, and tribal areas of India risks excluding the most vulnerable.
- **Cultural Norms & Stigma:** In patriarchal societies, births outside wedlock or to surrogate mothers often go unregistered due to social stigma and weak legal protections.

Key Outcomes of the 2025 Bangkok Summit:

- **Extension to 2030:** CRVS Decade extended to align with the SDGs.
- **Declaration Adopted:** Renewed commitment to ensure **100% birth and death registration**.
- **Digital Reforms:** Emphasis on AI-based tools, digitisation of records, and interoperability.
- **Equity and Privacy:** Focus on **gender equity** and **data protection** in CRVS systems.
- **Regional Progress:** Birth registration improved from 86% to 96% in India; 29 countries now register 90%+ births.

Way Ahead:

- **Cross-border Interoperability:** Build regional CRVS standards to track identities across nations—vital for migrants in ASEAN and [SAARC](#).
- **Last-mile Infrastructure Boost:** Deploy mobile registration units in Pacific Islands, remote Himalayan regions, and conflict zones like Myanmar and Afghanistan.

- **Inclusive Legal Reforms:** Update CRVS laws to include refugees, [LGBTQIA+](#) families, and surrogate/adopted children, following models in Thailand and the Philippines.
- **Verbal Autopsy Rollout:** Mandate WHO-based autopsy tools in nations with high home deaths (e.g., Bangladesh, Cambodia) for accurate mortality data.
- **Privacy-first Architecture:** Ensure encrypted, consent-based CRVS databases to safeguard personal identity—especially for women and minors.

Conclusion: The Bangkok CRVS Summit 2025 marks a pivotal moment in advancing legal identity and inclusive governance across [Asia-Pacific](#). With political will, digital innovation, and community participation, the vision of “getting everyone in the picture” by 2030 is not just a promise, but a reachable goal.

INDIA'S REFUSAL TO SIGN SCO DRAFT STATEMENT

Context:

Defence Minister refused to endorse the SCO joint statement during the Qingdao meet, objecting to the omission of India-specific terror concerns.



About Shanghai Cooperation Organisation (SCO):

- **What is it?**
 - The SCO is a Eurasian intergovernmental organisation focused on political, economic, security, and defence cooperation, particularly in Central and South Asia.
- **Established in:** Formally founded on **15 June 2001**,

evolving from the 1996 Shanghai Five initiative.

- **Founding Members:** China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan.
- **Current Members (2025):** 10 countries — India, China, Russia, Pakistan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Iran, and Belarus.
- **Objectives:**
 - Promote [regional security](#), counter terrorism and extremism, resolve border issues, foster economic cooperation, and advocate for multipolarity in global governance.
- **Governing Body:** The Heads of State Council (HSC) and Regional Anti-Terrorist Structure (RATS) are key decision-making and security cooperation bodies.

India's Refusal to Sign SCO Draft Statement:

- **What Happened?**
 - India declined to sign the draft declaration at the SCO Defence Ministers' Meet in Qingdao, chaired by China.
- **Why India Refused?**
 - The draft excluded the [Pahalgam terror attack](#) while highlighting the Jaffar Express hijack in Pakistan.
 - India sought balanced representation of terror threats from all member states, but one country (likely Pakistan) blocked the inclusion.
- **India's Stance:**
 - Defence Minister reiterated India's zero tolerance for terrorism, demanding accountability for state-sponsored terrorism and cross-border proxy groups like Lashkar-e-Taiba.

Significance of India's Action at SCO:

- **Sends a Strong Diplomatic Signal:** India's refusal reaffirms its non-negotiable stance on terrorism,

even within a forum influenced by China and Pakistan.

- **Assertive Multilateral Diplomacy:** India disrupted consensus in a 10-member bloc, challenging the China-Pakistan narrative control within the SCO.
- **Strategic Autonomy in Action:** Aligns with India's policy of strategic assertiveness, as seen during Operation Sindoor and other post-Galwan diplomatic moves.
- **Undermines Anti-India Propaganda:** By refusing to accept a selective and biased joint statement, India weakens attempts to internationalize internal security matters through SCO platforms.
- **Signals to Upcoming SCO Summit:** This stand sets the tone for the SCO Heads of State Summit in Tianjin, where India will push for terrorism-centric reforms in [RATS](#).

Conclusion:

India's SCO dissent underscores its unwavering red lines on terrorism in global diplomacy. It reflects a calculated assertion of strategic interests in a China-heavy regional bloc. As tensions evolve, India's multilateral diplomacy will continue shaping the regional security narrative.

PYQ:

Virus of Conflict is affecting the functioning of the SCO. In the light of the above statement point out the role of India in mitigating the problems. (2023)

GENERAL STUDIES - 3

Syllabus: Economy

INDIA'S TEXTILE AND APPAREL INDUSTRY

Context:

A recent analysis highlighted India's stagnant global apparel trade share (3%), stressing the urgent need for policy innovation to achieve the \$40 billion export target by 2030.



About India's Textile and Apparel Industry:

- **Sector Overview:** A heritage industry employing over **45 million**, contributing **2.3% to GDP**, and 12% of manufacturing employment.
- **Export Status:** India holds only **4.2%** share in global T&A trade (\$37.8 bn out of \$897.8 bn); **apparel alone is at 3%**.
- **MSME Dominance:** Over **80%** of apparel units are small, fragmented enterprises lacking integration and global scale.

Importance of Textile and Apparel Industry:

- **Mass Employment Generator:** Employs over 45 million people, making it the second-largest employer after agriculture.

E.g. Major source of livelihood in states like Tamil Nadu, Gujarat, and West Bengal.

- **High Value Addition:** From raw cotton to readymade garments, it adds value across every stage of the supply chain.

E.g. Apparel exports fetch higher returns than raw textile exports.

- **Export Potential:** Contributes ~\$37.8 billion to global trade, with high potential to expand India's share in global markets.

E.g. India's target is \$40 billion in apparel exports by 2030.

- **Supports Ancillary Sectors:** Boosts industries like dyes, chemicals, logistics, machinery, and retail.

E.g. A 10% rise in garment output raises demand for spinning and processing units.

- **Women-Centric Employment:** Around 70% of workers in major apparel hubs are women, aiding gender-inclusive growth.

E.g. Shahi Exports employs over 70,000 women across its

factories.

Government Schemes (Textile & Apparel):

- **For Textiles:**
 - **PM MITRA Parks:** 7 integrated textile parks to boost competitiveness and reduce logistics costs.
 - **Amended TUFs:** Technology Upgradation Fund Scheme incentivizing modernization in textile units.
- **For Apparel:**
 - **RoSCTL Scheme:** Refund of state and central taxes and levies on exports.
 - **SAMARTH:** Focused skilling programme to train workers in textile/apparel operations.
 - **PLI Scheme for Textiles:** Focus on MMF and technical textiles and PLI 2.0 draft proposes inclusion of large garment units.

Key Structural Bottlenecks:

- **Fragmented Units:** Over 80% are MSMEs with limited scale, reducing competitiveness and global visibility.
- **High Capital Cost:** India's 9% interest rate makes expansion costly vs. 3–4.5% in China/Vietnam.
- **Rigid Labour Laws:** Complex laws and high overtime costs (2x wage) deter formalisation and scaling.
- **Supply Chain Inefficiencies:** Dispersed production leads to longer delivery timelines and higher logistics costs.
- **Low Female Workforce Participation:** Despite high employment potential, FLFP in textiles remains underutilized.

Way Ahead:

- **Subsidised Capital for Scale:** 25–30% capex subsidy and 5–7-year tax holiday for units with 1,000+ machines.
- **Flexible Labour Norms:** Rationalize overtime payments (ILO standard: 1.25x), simplify compliance for formal hiring.
- **Link MGNREGA with Wages:** Use 25–30% funds to subsidize garment factory wages, ensuring employment and competitiveness.
- **Designate MITRA Garment Hubs:** Two parks in UP/MP can reduce migration, cut costs, and boost industrialization.
- **Introduce Export-Linked Incentive (ELI):** Shift from production-linked to export-linked schemes rewarding market competitiveness.

Conclusion:

India's apparel sector holds immense potential for job creation and export growth. But realizing the \$40

billion goal needs **bold reforms, scalable models, and policy precision**. The success of Shahi Exports proves that scale is achievable — but only if replicated through enabling ecosystems.

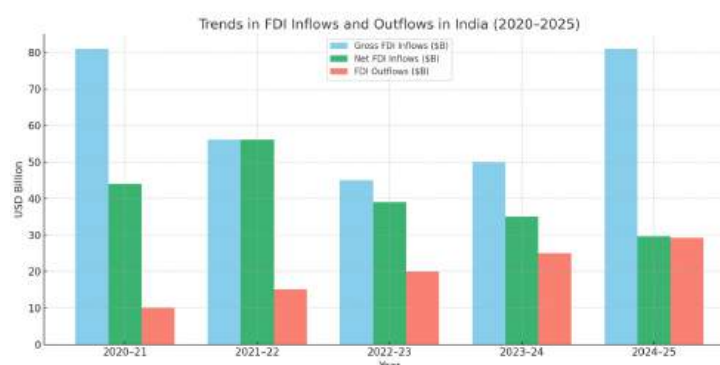
PYQ:

1. Faster economic growth requires increased share of the manufacturing sector in GDP, particularly of MSMEs. Comment on the present policies of the Government in this regard. (UPSC-2023)

FDI PARADOX: INDIA'S INVESTMENT CROSSROADS

Context:

The RBI's Annual Report 2024–25 shows gross FDI inflows rose by 13.7%, yet long-term net inflows have halved due to rising disinvestments. India's net FDI dropped to just \$0.4 billion in 2024–25, down sharply from \$44 billion in 2020–21.



About FDI Paradox: India's Investment Crossroads

- **What is FDI?**
 - **Definition:** Foreign Direct Investment (FDI) refers to investments made by foreign entities in Indian businesses or sectors, typically in equity or through joint ventures.
- **FDI Role in Indian Economy:**
 - **Capital Access:** It provides critical capital for infrastructure, startups, and industrial expansion.
 - **Technology Transfer:** Brings in **advanced technologies**, R&D capabilities, and managerial expertise.
 - **Employment Generation:** Helps create direct and indirect employment across sectors.
 - **Boost to Balance of Payments (BoP):** Stable FDI inflows help reduce current account deficits and stabilize forex reserves.

Recent Trends in FDI Inflows (As per RBI 2024–25 Report)

1. **Sluggish Long-Term Growth:** Despite a 13.7%

increase in gross inflows in 2024–25, average annual growth was only 0.3% in the last four years.

2. **Rising Disinvestments:** Repatriation surged at 18.9% annually post-pandemic, leading to net FDI halving to \$29.6 billion.
3. **Distorted Composition:** Significant flows from Singapore (15%) and Mauritius (close to 10%) suggest dominance of **financial flows** over productive investments.
4. **Manufacturing Decline:** Share of FDI in manufacturing dropped to 12%, down from peak levels.
5. **Outward FDI Boom:** Indian FDI outflows rose to \$29.2 billion in 2024–25, almost tripling in five years.

Issues Surrounding FDI in India

1. **High Repatriation Rate:** Disinvestments now account for 63.5% of gross FDI, up from <1% in early 2000s.
2. **Short-Term Financial Flows:** Surge in private equity/VC investments focuses on profit, not production.
3. **Sectoral Imbalance:** Productive sectors like manufacturing and computer services are witnessing withdrawal.
4. **Geographic Shift:** Decline in investments from tech leaders like the US, Germany, UK reduces innovation value.
5. **Data Discrepancy:** **UNCTAD** figures are up to 60% lower than RBI estimates, indicating **inflated official figures**.

Way Ahead:

1. **Improve Policy Stability:** Ensure consistent and transparent FDI policies to build long-term investor trust.
2. **Focus on Quality FDI:** Encourage inflows in **manufacturing, green tech, and R&D**, avoiding passive capital.
3. **Boost Domestic Reforms:** Labour, land, and ease-of-doing-business reforms must align with investor needs.
4. **Rationalize Tax Treaties:** Reevaluate tax incentives to limit **round-tripping** via financial centres.
5. **Strengthen Investment Monitoring:** Create a robust mechanism to track real sectoral contribution of FDI.

Conclusion:

India's FDI landscape shows worrying signs of capital flight and low-quality inflows, raising structural concerns. Despite short-term growth, long-term investment stability is threatened by disinvestment surges and sectoral decline. Policymakers must pivot to reform-driven, high-

quality FDI attraction to sustain economic resilience.

PYQ:

1. Justify the need for FDI for the development of the Indian economy. Why there is gap between MOUs signed and actual FDIs? Suggest remedial steps to be taken for increasing actual FDIs in India. (UPSC-2016)

PREDATORY PRICING

Context:

The [Competition Commission of India](#) (CCI) has notified the Determination of Cost of Production Regulations, 2025, introducing ATC-based cost norms to tackle predatory pricing and enhance competition safeguards.



About Predatory Pricing:

- **Definition:** Predatory pricing is a strategy where a dominant firm sets artificially low prices to eliminate competitors, thereby gaining monopoly power.

Example: NSE vs. MCX case — low-cost tactics to drive out rivals in stock exchange services.

- **Core Features:**
 - Prices set below production costs
 - Aimed to drive out market competitors
 - Benefits to consumers are short-term
 - Long-term monopoly leads to **high prices and fewer choices**
- **Types of Predatory Pricing:**
 - **Direct Predation:** Pricing below cost to drive out competitors.
 - **Cross-subsidisation:** Using profits from one product/service to subsidise losses in another.
 - **Discriminatory Pricing:** Targeted lower prices for specific market segments.

Factors Leading to Predatory Pricing:

- **Dominant Market Power:** Large firms leverage scale and deep capital reserves to sustain below-cost pricing over prolonged periods.
- **Network Externalities:** Digital platforms lock users through data advantages, making entry harder for new players.
- **Weak Enforcement History:** Pre-2025, only 1 successful predatory pricing case (NSE-MCX) — regulatory deterrence was low.
- **Regulatory Ambiguity:** Older rules lacked clarity on which cost metrics to apply, delaying verdicts.
- **Lack of Global Coordination:** Cross-border e-commerce giants exploit varying competition regimes.
- **Market Myopia:** Short-term consumer gains make predation socially invisible until monopolisation sets in.

Issues Surrounding Predatory Pricing:

- **Consumer Welfare Trap:** Initial low prices give way to monopolistic pricing post-rival exit.
- **Difficult Proof of Intent:** Establishing “anti-competitive intent” legally remains complex under Section 4 of [Competition Act](#).
- **Chilling Effect on Startups:** Fear of market capture deters innovation in sunrise sectors like AI, FinTech.
- **Fragmented Data Ecosystem:** Absence of dynamic market surveillance mechanisms weakens early detection.
- **Judicial Delays:** Prolonged litigation reduces the effectiveness of penalties in fast-moving digital markets.

Recent 2025 Rules: CCI’s New Reforms

- **Notified on:** May 6, 2025 — replaces 2009 Cost Regulations.
- **Key Innovations:**
 - Introduces **ATC** ([Average Total Cost](#)) as a clear benchmark for pricing assessment.
 - Removes vague “**market value**” measure — promoting consistency.
 - Mandates expert involvement for complex technical assessments.
 - Requires CCI to publicly record reasons when deviating from Average Variable Cost — promotes transparency.
 - Provides tools for real-time market monitoring — modernising **CCI’s enforcement under Section 4**.

Significance of New Rules:

- **Upholds Competitive Integrity:** Protects both traditional and emerging sectors from abusive pricing practices.
- **Strengthens MSME Ecosystem:** Safeguards smaller

players from capital-driven predation.

- **Aligns with OECD Best Practices:** Global standards incorporated into Indian framework.
- **Addresses Digital Monopoly Risks:** Equips CCI to tackle BigTech predatory moves in India's digital economy.
- **Promotes Investor Confidence:** Transparent and predictable enforcement boosts FDI in competitive markets.
- **Supports SDG 8 (Decent Work & Economic Growth):** Fair competition fosters broader employment and market diversity.

Conclusion:

The 2025 reforms on predatory pricing mark a progressive step towards fostering **transparent markets and protecting consumer welfare**. With a refined cost framework and expert-driven enforcement, the CCI is now better equipped to tackle unfair pricing practices, promote healthy competition, and secure long-term market dynamism.

MICROFINANCE IN INDIA

Context:

The RBI Deputy Governor flagged a rising crisis in India's microfinance sector, citing a sharp fall in the gross loan portfolio (13.9%) and surge in delinquencies and NPAs (₹55,000 crore).



About Microfinance in India:

- **What is Microfinance in India?**
 - Microfinance refers to small-ticket financial services (loans, savings, insurance) extended to low-income households excluded from formal banking.
- **Objective:** Promote **financial inclusion**, entrepreneurship, and poverty alleviation through **credit access without collateral**.
- **History:**
 - **1974:** India's first MFI – **SEWA Bank**, Ahmedabad.

- **1976:** Grameen Bank by Muhammad Yunus (Bangladesh) popularized global microcredit.
- **2010:** **Malegam Committee** recommended regulatory norms for NBFC-MFIs.
- **Regulator:** Reserve Bank of India (RBI)

Present Trends in the Microfinance Sector (FY25):

- **Loan Portfolio Shrinkage:** The gross loan portfolio (GLP) fell by 13.5% to ₹3.75 lakh crore, reflecting reduced disbursements and growing risk aversion by lenders.
- **Rising Defaults:** Non-performing assets surged to ₹55,000 crore, while loans overdue by 31–180 days (PAR) rose sharply from 2% to 6.2%, signalling deep credit stress.
- **Disbursal Dip:** Q4 FY25 witnessed a 34% drop in disbursements to ₹70,942 crore YoY, indicating cautious lending amid tightening **regulatory scrutiny** and defaults.
- **Average Loan Size:** Despite lower disbursements, average loan ticket size rose by 11.5% to ₹53,897, suggesting lenders are focusing on fewer but higher-value accounts.
- **State Trends:** Karnataka saw a 17% portfolio drop due to policy backlash, while Bihar, Tamil Nadu, and UP led in active microfinance engagement and outstanding credit.

Challenges to Microfinance:

- **Over-indebtedness:** Borrowers are taking multiple loans from different entities without proper assessments, resulting in repayment defaults and financial distress.
- **High Interest Rates:** Even institutions with access to low-cost capital are levying high margins, raising concerns of usury and borrower exploitation.
- **Coercive Recovery Practices:** Instances of aggressive recovery, borrower harassment, and even suicides have raised ethical and legal alarms in the sector.
- **Credit Appraisal Gaps:** Poor risk assessment and commission-based lending incentives are pushing loans to financially fragile clients, worsening asset quality.
- **State Regulatory Uncertainty:** Laws like Karnataka's penal action on coercive recovery practices have disrupted operations of even compliant and formal microfinance players.

Way Ahead:

- **Stronger Credit Risk Frameworks:** MFIs must integrate better risk profiling tools and limit multiple borrowings to prevent borrower over-leverage and defaults.

- **Regulation of Recovery Practices:** [RBI](#) must enforce a uniform recovery code ensuring borrower dignity and outlawing intimidation and coercion during repayment collection.
- **Rate Rationalisation:** A ceiling on microloan interest rates and margin controls could curb profiteering and improve affordability for poor borrowers.
- **Empathetic Lending:** The focus must shift from profit-maximisation to developmental finance that uplifts communities and promotes [social equity](#).
- **Tech-Based Monitoring:** Using AI, data analytics, and early warning systems can help MFIs predict defaults and monitor repayment health proactively.

Conclusion:

Microfinance remains a vital pillar of India's inclusive development story. However, its potential is hindered by credit quality erosion, ethical breaches, and regulatory lapses. A calibrated approach combining [financial prudence](#) with social empathy is essential for sustainable impact.

PYQ:

"In the villages itself no form of credit organisation will be suitable except the cooperative society." – All Indian rural credit survey. Discuss this statement in the background of agriculture finance in India. What constrain and challenges do financial institutions face supplying agricultural finances? How can technology be used to better reach and serve rural clients? (2014)

INCLUSIVE PENSION SYSTEM FOR INDIA

Context:

The [Economic Survey 2025-26](#) highlighted that India's pension assets are only 17% of GDP, with less than 12% workforce coverage.

- Experts call for an inclusive national pension system to address rising old-age dependency.



About Inclusive Pension System for India:

What is a Pension System?

- A **pension** provides **financial security after retirement**, ensuring income stability when earning capacity declines.
- As per **Economic Survey 2025-26**, India's pension assets equal **17% of GDP** vs **80% in OECD nations**.
- **Current coverage:** Just **12% of workforce**, and **5.3% of population** covered by NPS and APY combined (FY24).
- **Old-age dependency ratio** projected to reach **30% by 2050**, heightening the urgency for pension reforms.

Need for an Inclusive Pension System in India:

- **Rising Old-Age Dependency:** By 2050, India's old-age dependency will rise to **30%**, risking a future old-age poverty crisis.
- **Gig and Informal Workforce:** **85% of workforce** is informal, generating over **50% of GDP**, yet remains largely outside formal pension safety nets.
- **Financial Security for All:** A universal pension system would **protect low-income households**, enhance savings, and reduce dependency on public funds.
- **Sustainable Growth:** Inclusive pensions are key to sustainable economic growth, vital for India's target to be a **developed economy by 2047**.

Initiatives Taken by India:

- **National Pension System (NPS):** A voluntary, market-linked scheme, now covering 4.5% of GDP assets.
- **Atal Pension Yojana (APY):** Aimed at the informal sector, with 629 lakh subscribers as of FY24, but 93.7% opt for ₹1,000/month pension due to affordability.
- **Unified Pension Scheme (UPS):** Launched in Aug 2024 for govt employees, blending old and new systems with minimum pension ₹10,000.
- **Gender Inclusion:** Share of female APY subscribers grew from 37.9% in FY16 to 52% in FY24.
- **NPS Vatsalya:** Extended coverage to children, aiming for early financial literacy and inclusion.

Issues in Indian Pension System:

- **Low Coverage:** Only 12% of workforce covered and NPS and APY reach only 5.3% of total population.
- **Fragmentation:** Multiple parallel schemes cause complexity and inefficiency.
- **Voluntary Opt-In:** APY is voluntary and low awareness and financial literacy hinder broader adoption.
- **Inadequacy:** Adequacy Index dropped from 41.9 (2023) to 34.2 (2024) in Mercer Global Pension

Index.

- **Fiscal Sustainability**: Risks of asset-liability mismatch as demographic profile shifts, risking pension fund solvency.

Measures to Build an Inclusive Pension System:

- **Unified Tiered Framework:** Integrate schemes under a three-tier system — basic mandatory pension, employer-based pensions (opt-out), and voluntary savings.
- **Mandatory Basic Pension:** Introduce a guaranteed flat pension for all workers, irrespective of employment status.
- **Financial Literacy Drives:** Embed superannuation education in schools (like Australia); use UPI-enabled pension payments to boost participation.
- **Tech-Driven Accessibility:** Leverage digital platforms and apps for seamless enrolment, inspired by UPI's success.
- **Behavioural Nudges:** Use auto-enrolment and default options (like UK's opt-out model) to expand participation.
- **Private Sector Engagement:** Encourage private pension funds to complement public pensions and ensure [long-term liquidity](#).

Conclusion:

India's future demographic shift demands an inclusive, sustainable pension system to ensure financial dignity for retirees. With smart reforms, unified regulation, and tech-driven outreach, India can secure broad-based pension coverage for all sectors. The time to act is now — to build resilience before old-age poverty becomes an economic crisis.

PYQ:

1. How do subsidies affect the cropping pattern, crop diversity and economy of farmers? What is the significance of crop insurance, minimum support price and food processing for small and marginal farmers? (2017)

WORLD INVESTMENT REPORT 2025

Context:

The World Investment Report 2025, released recently by the United Nations Conference on Trade and Development ([UNCTAD](#)), highlights critical trends in global foreign direct investment (FDI).

About World Investment Report 2025:

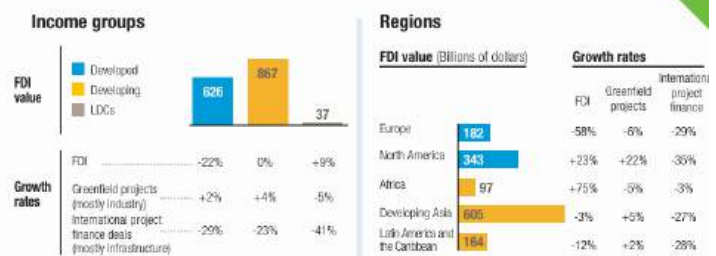
- What It Is?
 - An annual report analyzing global trends

in foreign direct investment (FDI) and international production.

- **Published By:** United Nations Conference on Trade and Development (UNCTAD).
- **Objective:**
 - To monitor global FDI trends.
 - To guide **policymakers** and **investors** on sustainable development investments.
 - To support progress on the **SDGs** and **Global Digital Compact** by highlighting investment patterns in emerging sectors like the digital economy.

Summary of World Investment Report 2025:

1. **Global FDI Decline:** FDI fell **11% in 2024**, reaching **\$1.5 trillion**—second consecutive year of decline.
2. **Digital Economy Outpaces:** Digital sectors saw a **doubling in project values**, becoming the primary FDI growth engine.
3. **SDG Investment Crisis:** Investment in SDG sectors (renewable energy, water, sanitation) fell by **25–33%**.
4. **Developing Countries Uneven Gains:** Africa (+75%), ASEAN (+10%) saw FDI growth; China (-29%), South America (-18%) experienced declines.
5. **Infrastructure Finance Collapse:** International Project Finance (IPF) fell **26%**, worsening the infrastructure investment gap.
6. **Rise in Geopolitical Risks:** Trade tensions and **tariff wars** are reshaping global FDI flows.
7. **Shift to Near-shoring:** MNEs increasingly favour **domestic** and **regional** investments due to supply chain disruptions.
8. **Positive Digital Trends:** FDI in AI, data centres, and semiconductor sectors continues to surge.



Analysis of Trends:

Positive Trends:

- **Digital sector growth:** Surge in [FDI](#) for AI, cloud computing, data centres, and digital platforms reflects the shift towards a global digital economy. Investors are prioritizing high-growth tech sectors amid global digital transformation.
- **Africa's record FDI:** Africa saw a **75% rise in FDI**, led by Egypt's \$35B megaproject, signaling rising investor confidence in African markets despite

global uncertainty.

- **Resilient FDI in ASEAN:** [ASEAN](#) and India attracted steady FDI in manufacturing, EVs, and digital services, driven by global supply chain realignment and strong domestic demand.

Negative Trends:

- **Declining SDG Investments:** Investment in renewable energy, water, sanitation, and agrifood sectors fell by up to **33%**, undermining efforts to meet SDG targets.
- **IPF collapse:** [International Project Finance \(IPF\)](#) funding for large infrastructure fell by **26%**, severely affecting LDCs that rely heavily on such financing for development.
- **Geopolitical fragmentation:** Trade wars, tariff hikes, and political instability are fragmenting global FDI flows, pushing MNEs to **regionalize** investments and avoid cross-border risks.
- **China slowdown:** FDI inflows and outflows for China dropped sharply (**-29% inflows**), reflecting global supply chain tensions and rising geopolitical risk around Chinese markets

India and Investment:

- India retained its position among top FDI destinations—**\$28 billion inflows in 2024**.
- Strong growth in **semiconductors**, [EV](#) components, and **digital infrastructure** projects.
- India among top 5 global hubs for greenfield projects—benefiting from global supply chain shifts.
- Indian investors also climbed in FDI outflows, with a **20% increase in greenfield announcements**.

Measures Recommended:

1. **Boost digital infrastructure:** Increase public-private investment in broadband and data centres.
2. **Strengthen SDG financing:** Leverage development banks and sovereign funds to fill sustainability investment gaps.
3. **Policy alignment:** Integrate digital strategies with national industrial and sustainability agendas.
4. **De-risk private capital:** Use blended finance to attract more capital into developing markets.
5. **Enhance IP frameworks:** Improve global data governance and IP regulations to encourage innovation.
6. **Advance regional integration:** Support regional trade agreements to buffer against global fragmentation.

Conclusion:

The World Investment Report 2025 signals deep shifts in global investment flows, with digital sectors booming while SDG sectors falter. For India, opportunities lie in positioning as a hub for digital and supply chain-linked

investments. Globally, stronger collaboration and innovative financing are essential to make future investments more inclusive and sustainable.

PYQ:

“Investment in infrastructure is essential for more rapid and inclusive economic growth.” Discuss in the light of India’s experience. (2021)

SKILLS FOR THE FUTURE REPORT

Context:

Union Minister launched the “Skills for the Future: Transforming India’s Workforce Landscape” report by the Institute for Competitiveness.



About Skills for the Future Report:

Importance of Skills in India’s Development

- **Demographic Dividend:** India has one of the world’s youngest populations. By 2047, skilling is crucial to convert this into productive human capital before ageing sets in.
- **Economic Growth:** Higher education boosts long-term GDP. A 1% rise in GER at tertiary level raises GDP by 0.511% (Parika, 2020).
- **Employment Demand:** India must create **78.5 lakh non-farm jobs annually** till 2030 (Economic Survey 2023–24), needing skilled and job-ready workers.
- **Global Competitiveness:** To lead in EVs, [AI](#), and green tech, India needs a workforce equipped for Industry 4.0 and sustainable sectors.

Key Findings from the Report:

1. Skill Level Distribution ([PLFS 2023–24](#)):

- **88%** of India’s workforce is in low-competency jobs (Skill Levels 1 & 2).
- Only **10–12%** are in high-skill roles (Skill Levels 3 & 4).
- **9.76%** of population has education beyond

secondary level; **52.4%** have only primary education.

2. **Severe Skill Mismatch:**

- Only **8.25%** of graduates (Skill Level 3) work in matching roles.
- Over **50% of graduates** are employed in lower-skill jobs (e.g., shopkeepers, operators).
- **Overqualification** is more prevalent than underqualification.

3. **Low Penetration of TVET (Technical & Vocational Education & Training):**

- Only **4.5%** of the workforce has formal vocational training.
- TVET is often limited to Skill Level 2 roles; lacks alignment with modern industry needs.

4. **Income Inequality by Skill Level:**

- Skill Level 1 Avg. Wage: ₹98,835
- Skill Level 2 Avg. Wage: ₹1.26 lakh
- Skill Level 3 Avg. Wage: ₹2.81 lakh
- Skill Level 4 Avg. Wage: ₹3.94 lakh
- **46% of workforce** earns less than ₹1 lakh annually.

5. **Sectoral Skilling Concentration:**

- Five sectors make up **66% of vocational enrolments**: Electronics, IT/ITeS, Textiles & Apparel, Healthcare & Life Sciences, and Beauty & Wellness

6. **Regional Skill Inequality:**

- States like **Bihar, Assam**: 95% of workforce in low-skill roles.
- States like **Kerala, Chandigarh** have higher shares in Skill 3 & 4.
- **Brain drains and migration** are prominent in low-skill, low-growth regions.

7. **Educational Transition Challenges:**

- Transition from secondary to higher secondary level is weak: GER at higher secondary is only **57.56%** (2021–22).
- **GER** at higher education remains below 30%, limiting pipeline to Skill Levels 3 and 4.

8. **Sector-Specific Workforce Readiness Deficit:**

- Many states show <5% workforce in Skill 3 roles.
- In IT, healthcare, and green jobs (EVs, biotech), India lacks skilled technicians, supervisors, and associate professionals.

fill skilled roles via informal pathways, reducing efficiency.

- **Weak TVET-Industry Linkage**: TVET programs are outdated and poorly aligned with digital, green, and advanced manufacturing sector needs.
- **Informal Jobs & Wage Inequality**: 46% of the workforce earns under ₹1 lakh/year; most low-skill jobs lack social security and upward mobility.
- **Regional Imbalances & Migration**: Skilling gaps in states like Bihar and UP fuel migration, burdening urban economies and worsening rural stagnation.
- **Data & Access Gaps**: Absence of real-time tracking, outcome-based metrics, and low skilling access for women, SC/STs, and rural youth.

Recommendations:

- **Institutional Reforms**: Launch a Skill Gap Survey and create a Central Skill Data Repository for real-time policy inputs.
- **Curriculum Overhaul**: Update NCO codes and align TVET content with modern tech and green economy job roles.
- **TVET Revamp**: Integrate vocational learning in schools, boost NAPS apprenticeships, and tie industry hiring to **PMKVY** certifications.
- **Higher Education Push**: Raise GER at higher secondary/tertiary levels; scale flexible, remote skilling for working populations.
- **Inclusive, Targeted Skilling**: Empower states through **Skill Missions**, prioritize women and SC/ST training, and focus on high-job-growth sectors like logistics and healthcare.

Conclusion:

A future-ready India hinges on bridging its skill gaps through inclusive, data-driven, and industry-aligned interventions. Skilling must evolve beyond education to enable meaningful employment and economic mobility. With focused reforms, India can transform its demographic potential into a global workforce advantage by 2047.

Syllabus: Inclusive growth and issues

SUSTAINABLE DEVELOPMENT REPORT (SDR) 2025

Context:

India has, for the first time, ranked in the top 100 (99th) in the Sustainable Development Report (SDR) 2025 released by the [UN Sustainable Development Solutions](#) Network (SDSN), marking its 10th edition.

Challenges Associated with Skilling in India:

- **Skill-Education Mismatch**: Overqualified youth work in low-skill jobs; underqualified workers

Figure 2.1
World SDG Dashboard 2025



About Sustainable Development Report (SDR) 2025:

- **What it is:** The Sustainable Development Report is the world's most authoritative ranking on progress towards SDGs for 193 UN member states.
- **Released by:** UN Sustainable Development Solutions Network (SDSN).
- **Focus of 2025 edition:** Financing SDGs by 2030 and reforming the Global Financial Architecture (GFA).
- **Top Rankers:** Finland (1st), Sweden (2nd), Denmark (3rd)

Key Highlights of SDG Report 2025:

1. **Strong Global Commitment:** 190 of 193 UN member states submitted **Voluntary National Reviews (VNRs)**, reflecting high global engagement on SDGs.
2. **East and South Asia Lead:** These regions show **fastest SDG progress** since 2015, driven by rapid **socio-economic growth** and targeted policies.
3. **Top Improvers:** Nepal (+11.1), Benin (+14.5), UAE (+9.9), Peru (+8.7) recorded highest score improvements, showing effective domestic SDG implementation.
4. **Europe Tops:** 19 of top 20 SDG-performing countries are **European**, highlighting long-term investment in social welfare and green transitions.
5. **Global Lag:** None of the 17 SDGs are fully on track globally and only **17% of targets progressing**, signalling serious implementation gaps.
6. **Multilateralism Ranking:** Barbados ranks **1st** in commitment to UN multilateralism, while the **US ranks last (193rd)** due to recent withdrawal trends.
7. **Fiscal Space Gap:** Nearly **50% of countries** lack sufficient fiscal capacity to fund SDG priorities, aggravating development inequality.
8. **Broken Global Finance:** Current **Global Financial Architecture (GFA)** disproportionately favors rich countries, starving **EMDEs** of needed capital.

India's Status in SDG Report 2025:

- **Rank:** India climbed into **99th place**, entering the top 100 for the first time, showing growing alignment with SDG targets.
- **Score:** India's SDG Index score reached **67.0 points**,

demonstrating gradual but steady improvement across sectors.

- **Regional Standing:** India ranks behind China (49th), ahead of Bangladesh (114th), Pakistan (140th), reflecting **South Asia's varied progress**.
- **Progress Areas:** Notable gains in **digital infrastructure (SDG 9)**, healthcare (SDG 3), and electricity access (SDG 7) were recorded.
- **Challenges:** India struggles with rising **obesity (SDG 2)**, **climate action (SDG 13)**, and **press freedom (SDG 16)** indicators.

Key Challenges to SDG Progress:

- **Geopolitical Conflicts:** Conflicts and wars disrupt SDG delivery, particularly in fragile and conflict-prone states.
- **Limited Fiscal Space:** **Debt burdens** in many low- and middle-income countries restrict investments in SDGs and welfare programs.
- **Climate Emergency:** Climate change is exacerbating **food insecurity, inequality, and biodiversity loss**, undermining SDG progress.
- **Weak Financing Mechanism:** Global finance disproportionately benefits wealthy countries, leaving EMDEs underfunded for sustainable development.
- **Institutional Gaps:** Many nations face weak **institutional capacity, poor governance**, and lack of data-driven SDG planning.

Recommendations Suggested:

- **Finance UN Systems:** Ensure **full and predictable funding** for UN-led SDG initiatives and development cooperation.
- **Debt Relief:** Adopt innovative solutions to reduce debt stress in poor countries, freeing fiscal space for SDG investments.
- **Invest in Global Commons:** Mobilize new funding for **climate, biodiversity, and clean energy**, areas essential for global sustainability.
- **Reform GFA:** Reorient global capital flows to align **private investment** with long-term SDG priorities and sustainability.
- **Multilateral Cooperation:** Strengthen **UN-based multilateralism** to drive coordinated, equitable SDG action across nations.

Conclusion:

The **SDG Report 2025** highlights that global SDG progress remains far behind target. India's entry into the top 100 reflects growing commitment, but structural reforms in global finance, better governance, and stronger international cooperation remain key to achieving the SDGs by 2030

REFORMING INDIA'S FOOD AND FERTILISER SUBSIDIES

Context:

With [poverty levels now](#) at historic lows (5.3%) and subsidy bills rising steeply, there is a growing policy debate on reforming India's food and fertiliser subsidies to improve efficiency.



About Reforming India's Food and Fertiliser Subsidies:

A **subsidy** is a financial support or incentive provided by the government to individuals, businesses, or sectors to make goods or services more affordable or to encourage desired economic activities. It helps lower the cost of production or consumption and is aimed at achieving **social welfare, economic efficiency, or public policy goals**.

Types of Subsidies:

1. Direct Subsidy:

- Government provides **cash transfers** or direct payments to beneficiaries.
- Example:** PM-KISAN income support to farmers.

2. Indirect Subsidy:

- Government reduces the **cost of goods/services** via tax exemptions or price controls.
- Example:** Subsidised foodgrains under [NFSA](#), subsidised LPG cylinders.

Data points:

- Food Subsidy FY26:** ₹2.03 lakh crore (source: Ashok Gulati article).
- Fertiliser Subsidy FY26:** ₹1.56 lakh crore (source: Ashok Gulati article).
- Poverty Decline:** Extreme poverty reduced from

27.1% in 2011 to 5.3% in 2022 (source: Ashok Gulati article).

- Current PDS Coverage:** Free foodgrains given to **800 million people** (source: Ashok Gulati article).
- Public Distribution System Reach:** 84% households had ration cards in FY 2022–23, with 59% under BPL, AAY, or PHH categories (source: Economic Survey 2025).
- Gini Coefficient Improvement:** Rural Gini coefficient improved from **0.266 in 2022–23** to **0.237 in 2023–24** (source: Economic Survey 2025).

Need for Reforms in Food and Fertiliser Subsidy:

- Poverty Trends:** With **extreme poverty** falling to 5.3%, providing **blanket subsidies** to 800 million people is fiscally inefficient and fails to reflect actual poverty levels.
- Leakages:** Despite digitisation (84% ration card coverage), **PDS leakages** and **ghost beneficiaries** persist (e.g., Jharkhand's cancelled cards), leading to poor targeting.
- Nutrition Gap:** Current PDS focuses heavily on **cereals (rice, wheat)** but neglects **protein-rich and micronutrient foods**, failing to address **nutrition security**.
- Fertiliser Imbalance:** Overuse of **nitrogen-based fertilisers (urea)** and underuse of P and K have **damaged soil health**, leading to declining yields and soil nutrient depletion.
- Fiscal Pressure:** High food and fertiliser subsidies crowd out **capital investment** in critical rural infrastructure like **roads, irrigation, and storage facilities**.

Initiatives Taken:

- For Food Subsidy:**
 - PM Garib Kalyan Anna Yojana (PMGKAY):** Launched in 2020 to provide **5 kg free foodgrains per person/month** to all NFSA beneficiaries during COVID and now integrated into **NFSA provisions**.
 - Digitisation of Ration Cards:** ~84% coverage through **Aadhaar seeding and ePOS machines** to improve **targeting** and reduce leakages.
 - Strengthening TPDS:** Adoption of **Targeted Public Distribution System (TPDS)** to better focus on **BPL, Antyodaya (AAY)** families for subsidised grains.
 - Expanded PDS Commodities:** Some states now supply **pulses, edible oils, iodised salt** via PDS to improve **nutritional diversity** beyond cereals.
- For Fertiliser Subsidy:**
 - Neem-Coated Urea:** Mandatory coating to

reduce **black marketing** and promote **slow nitrogen release** for better soil health.

- **Nutrient-Based Subsidy (NBS) Policy:** Subsidy linked to **nutrient content (N, P, K, S)** to encourage balanced fertiliser use (non-urea fertilisers).
- **Direct Benefit Transfer (DBT):** Pilots and partial rollout for **DBT of fertiliser subsidy** to companies and farmers buy at lower prices via retailers.
- **Price Regulation for Key Fertilisers:** Government **controls prices** of urea, DAP, MOP — ensuring affordable access for farmers and stability in input costs.

Measures Needed:

- **Food Coupons/Digital Wallets:** Shift to **digital coupons** for bottom 15% population (~₹700/family/month) to buy diverse foods (pulses, milk, eggs).
- **Targeting & Gradation:** Tailor subsidy levels based on **beneficiary income data** (use PM-KISAN, Aadhaar, SECC databases).
- **Fertiliser Coupons:** Issue **fertiliser coupons** to farmers and deregulate prices to promote balanced and eco-friendly use.
- **Encourage Alternatives:** Incentivise **bio-fertilisers and natural farming**.
- **Strengthen Monitoring:** Triangulate data ([PM-KISAN](#), land records) to improve targeting and **reduce inclusion/exclusion errors**.
- **Political Communication:** Build trust with farmers through **advance communication** to avoid resistance (as seen in earlier protests).

Conclusion:

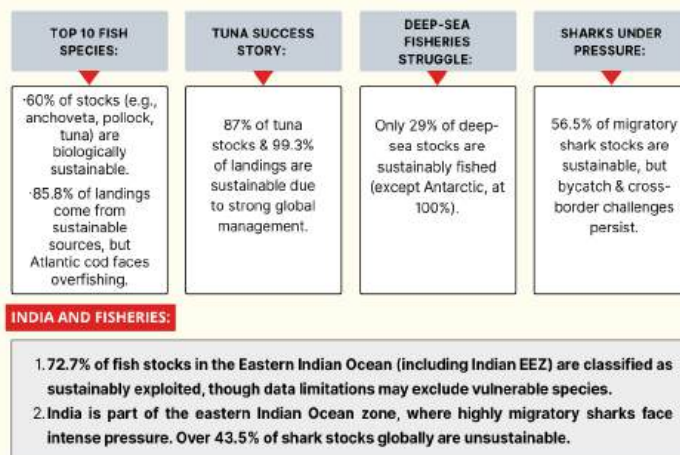
India has made remarkable progress in poverty reduction and agriculture growth. But with a bloated subsidy bill and changing rural realities, it is time for smart reforms that promote nutrition, [fiscal prudence](#), and environmental sustainability. Timely reform in food and fertiliser subsidies will ensure that public funds deliver maximum welfare impact.

STATE OF WORLD MARINE FISHERY RESOURCES - 2025

Context:

The [FAO's 2025](#) report on the state of marine fisheries was released during the UN Ocean Conference (UNOC3) in Nice, France.

KEY HIGHLIGHTS OF DATA:



Summary of State of World Marine Fishery Resources – 2025:

1. **Global Stock Sustainability:** 64.5% of global marine fishery stocks are exploited within biologically sustainable levels, while 35.5% remain overfished.
2. **Deep-Sea Species Crisis:** Only **29% of deep-sea species** are sustainably fished due to traits like slow growth, late maturity, and low reproduction rates.
3. **Migratory Shark Decline:** 43.5% of the 23 assessed shark stocks (7 species) are unsustainable; high catches occur in the **tropical Indo-Pacific**.
4. **Tuna Sustainability Success:** 87% of assessed **tuna and tuna-like species** are sustainably fished due to effective regional fisheries management organizations (RFMOs).
5. **Regional Disparities:** Regions like the **northeast and southwest Pacific** show high sustainability; the **Mediterranean and Black Seas** report only 35.1% sustainability.
6. **Data Deficiency Challenge:** Areas such as the **eastern Indian Ocean** show high sustainability (72.7%) but are cautioned due to inadequate species-specific data.
7. **Call for Stronger Governance:** The report emphasizes the role of RFMOs, technology, and precautionary policies as essential tools to reverse overfishing and support global marine resilience.

Analysis of the Report:

Positives:

- **Global Sustainability Improved:** 64.5% of fishery stocks are biologically sustainable – reflects growing awareness and partial management success.

E.g.: Northeast and Southwest Pacific show higher sustainability due to strict regulation.

- **Tuna Management is Working:** 87% of tuna and tuna-like species are sustainably harvested due to active Regional Fisheries Management

Organisations (RFMOs).

E.g.: High seas governance models like observer systems, catch reporting.

- **Robust Methodology Adopted:** Participation of 600+ experts from 90 countries enhances credibility and scientific depth.

E.g.: Integrated biological and ecological assessments.

- **Policy Guidance Provided:** Offers actionable insights into vulnerable stocks, e.g., sharks and rays, for better conservation targeting.

E.g.: Emphasizes bycatch risks in tuna fisheries.

Negatives:

- **Deep-Sea Stocks Severely Overfished:** Only 29% of deep-sea species are sustainably fished due to low resilience and inadequate protection.

E.g.: Species like Orange Roughy mature late, making recovery difficult.

- **Shark Stocks Declining:** 43.5% of the assessed shark species are unsustainably harvested, largely as tuna bycatch.

E.g.: High mortality in Indian and Pacific Oceans.

- **Poor Data in Some Regions:** Lack of monitoring in Southeast Asia and African coastal waters hinders accurate policy planning.

E.g.: Gaps in species-specific [stock biomass](#) estimates.

- **Inadequate Management in Some Seas:** Mediterranean and Black Sea show only 35.1% sustainability, reflecting weak implementation of controls.

E.g.: Overfishing persists due to unregulated artisanal fishing.

Recommendations:

- **Strengthen RFMO Mandates:** Expand monitoring tools, onboard observers, and real-time data sharing.
- **Promote Ecosystem-Based Management:** Incorporate climate adaptation and biodiversity conservation into marine policy.
- **Support Data Collection:** Build capacity in data-poor countries via FAO, World Bank, or regional forums.
- **Ban Harmful Subsidies:** Implement WTO's agreement to eliminate subsidies leading to overfishing.
- **Empower Coastal Communities:** Include local stakeholders in co-management and marine protected areas (MPAs).

Conclusion:

The FAO's 2025 report provides a sobering yet constructive assessment of global fisheries. While progress is visible in regions with strong governance, deep-sea and shark species remain under severe threat. Urgent

multilateral cooperation and science-based policies are essential to safeguard marine biodiversity.

Syllabus: Infrastructure (Energy, Ports, Roads, Railways, Airports)

INDIA ENERGY SECURITY

Context:

India's Petroleum Minister highlighted India's energy strategy, biofuel achievements, and green hydrogen push in an op-ed, as India became the 4th largest global economy in 2025 with \$4.3 trillion GDP.



About India Energy Security:

Need for Energy Security in India:

- **High Demand Growth:** India is set to contribute 25% of global energy demand by 2047, necessitating assured, affordable, and clean energy access.
- **Strategic Sovereignty:** Energy sufficiency reduces dependence on volatile global markets and enhances national security.
- **Development Imperative:** With 6.7% growth in Q1 2025, uninterrupted energy is critical for sustaining infrastructure, manufacturing, and services expansion.
- **Urban-Rural Linkage:** Energy security ensures equitable development across states through city gas networks and rural LPG penetration.
- **Global Commitments:** India's [net-zero goal](#) by 2070 and INDCs require energy diversification and sustainable energy systems.

India's Multi-Pronged Energy Strategy:

- **Diversification of Sources:** Increased imports from new suppliers and promotion of domestic production to reduce oil dependency.
- **Expansion of Exploration:** OALP and DSF reforms doubled exploration coverage from 8% (2021) to 16% (2025), and targets 1 million sq km by 2030.
- **Pricing Reforms:** Gas linked to 10% of Indian crude basket, 20% premium for new wells enhances

investment and urban gas access.

- **Infrastructure Expansion:** India now has 24,000 km of product pipelines and 96,000 fuel outlets, ONGC and Oil India added 75 MMtoe via new discoveries.
- **Digital Governance:** [PM Gati Shakti](#) digitally mapped 1 lakh+ energy assets; enabled cost savings of ₹169 crore via route optimization.

India's Focus on Green Energy:

- **Ethanol Success:** Blending rose from 1.5% (2013) to 19.7% (2025), saving ₹1.26 lakh crore in forex and paying ₹1.79 lakh crore to distillers.
- **Green Hydrogen Push:** 8.62 lakh tonnes tendered, IOCL awarded 10 KTPA plant at Panipat, and NRL to pioneer hydrogen in NE.
- **Compressed Biogas:** 100+ plants under [SATAT](#), targets 5% blending by 2028 to reduce agri-waste and boost circular economy.
- **Pipeline Growth:** National gas pipeline spans 25,000 km and projected to hit 33,000 km by 2030.
- **Hybrid Leases:** 2024 amendment allows hydrocarbons and renewables on same oilfield, boosting low-carbon transitions.

Conclusion:

[India's energy journey](#) has shifted from anxiety to self-assurance. With strategic planning, infrastructure expansion, and green innovation, India is building a secure, sustainable energy future that aligns with its development goals and global climate pledges.

PYQ:

1. Do you think India will meet 50 percent of its energy needs from renewable energy by 2030? Justify your answer. How will the shift of subsidies from fossil fuels to renewables help achieve the above objectives? Explain. (2022)

RESTRICTING AC TEMPERATURE: A CLIMATE-SMART AND HEALTH-SAFE COOLING STRATEGY

Context:

The Union Ministry of Power has proposed restricting the operational temperature range of new air conditioners to 20°C–28°C to save energy and safeguard public health.

About [Restricting AC Temperature: A Climate-Smart and Health-Safe Cooling Strategy](#):

What is the Proposal?

- The new guidelines will **mandate default AC settings between 20°C and 28°C** in all new units used in homes, hotels, and vehicles.

- Unlike the earlier 24°C default advisory in 2018, these norms aim for **hardwired compliance** in manufacturing.



Why It Matters?

1. **Rising Cooling Load:** India's cooling demand is projected to reach **200 GW by 2030**, placing a heavy burden on power infrastructure.
2. **Current Consumption:** [Air conditioners](#) already account for **50 GW**—about **20% of peak demand**, despite low market penetration.
3. **Low Household Use, High Growth Potential:** Only **6% of households** currently use ACs, indicating **massive future load** if unregulated.
4. **Cost Implications:** Increased cooling demand may force **higher electricity tariffs** and **fossil-fuel-based generation**, impacting economic equity.

Health Risks of Low Temperatures (<18°C):

1. **Cardiovascular Strain:** Vasoconstriction below 18°C raises **blood pressure by 6–8 mmHg**, increasing [hypertension risk](#).
2. **Respiratory Impacts in Children:** Exposure to **16°C or less** linked to **lower lung capacity and airway resistance**, especially in children.
3. **Mental Health Stress:** Cold indoor climates are associated with **higher depression and anxiety levels**, as seen in UK studies.
4. **Disrupted Sleep Cycles:** Constant overcooling **disturbs sleep patterns**, weakens immunity, and impairs daily functioning.
5. **Elderly Vulnerability:** Elderly and infants have **weaker thermoregulation**, leading to **higher morbidity** in cold homes.

Restricting Temperature Range Helps:

1. **Energy Savings:** Every 1°C increase in AC setting saves **6% power**, enabling **20 billion units saved** per year.
2. **Emissions Reduction:** Lower consumption curbs **CO₂ emissions**, supporting India's [net-zero goals](#).
3. **System Efficiency:** Reduces **grid stress during summer**, avoiding blackouts and fuel cost

escalation.

4. **Health-Conscious Cooling:** Ensures **thermal comfort without health trade-offs**, especially in densely populated urban areas.
5. **Model Global Practice:** Follows global examples like **Japan's 28°C default**, creating behavioral norms for responsible use.

Significance:

1. **Supports ICAP Goals:** Reinforces the [India Cooling Action Plan](#) to reduce cooling energy demand by 25–30% by 2038.
2. **Meets Global Climate Commitments:** Contributes to Paris Agreement targets and SDG 13: Climate Action.
3. **Enables Energy Equity:** Helps keep **energy affordable** and accessible across income groups by controlling demand spikes.
4. **Public Awareness:** Educates users on the **health and economic downsides** of extreme cooling preferences.
5. **Long-Term Urban Resilience:** Promotes **sustainable urban cooling strategies** aligned with smart city goals and climate resilience.

Conclusion:

proposed AC temperature norms represent a scientifically backed, eco-friendly, and health-sensitive policy shift. By curbing energy use and public health risks, India takes a crucial step towards sustainable urban living and climate resilience.

PYQ:

1. What are the key features of the National Clean Air Programme (NCAP) initiated by the Government of India? (2020)

BUILDING-INTEGRATED PHOTOVOLTAICS (BIPV)

Context:

India is witnessing a surge in interest around Building-Integrated Photovoltaics (BIPV), and updates under the [PM Surya Ghar Yojana](#) highlighting its potential for clean energy in urban spaces.



About Building-Integrated Photovoltaics (BIPV):

- **Definition:**
 - BIPV involves embedding solar panels directly into a building's envelope — like façades, windows, and rooftops — transforming them into energy-generating structures.
- **Dual Role:** It replaces traditional construction materials (glass, tiles, cladding) while simultaneously generating electricity.

Features of BIPV:

- **Aesthetic Flexibility:** BIPV systems can be customized in terms of transparency, color, shape, and size to blend into building architecture.
- **Space Efficiency:** Unlike conventional [rooftop solar](#), BIPV utilizes vertical surfaces like façades and railings — crucial for space-constrained urban areas.
- **Structural Integration:** BIPV functions as part of the building fabric, reducing additional installation effort and costs in the long run.

How BIPV Works?

- **Photovoltaic Integration:** Solar cells are integrated into construction elements like glass panels or roofing materials.
- **Electricity Generation:** These panels absorb sunlight and convert it into electricity, reducing the building's grid dependency.
- **Passive Cooling Benefits:** Semi-transparent panels reduce solar heat gain, improving indoor energy efficiency.

Advantages of BIPV

- **Space-efficient solar adoption:** BIPVs use façades, railings, and windows — ideal for high-rise buildings with limited rooftop space.

E.g. A façade can generate 150 kWp vs. 40 kWp from rooftop alone.

- **Aesthetic integration:** They blend with architecture and are customizable in color, shape, and transparency, unlike conventional solar panels.

E.g. Renewable Energy Museum, Kolkata features a solar-powered dome.

- **Dual-purpose functionality:** Replaces traditional construction materials like glass or tiles while generating clean energy.
- **Improves energy efficiency:** BIPVs reduce heat gain and contribute to passive cooling, lowering AC demand.

E.g. Semi-transparent façade panels cut indoor heat load.

- **Long-term economic savings:** Though upfront cost is high, electricity savings over years can offset initial investment.

E.g. German balcony BIPVs help save up to 30% in bills.

Challenges of BIPV:

- **High initial costs:** Installation is costlier than traditional rooftop solar due to material, design, and structural integration.
- **Lack of awareness:** Architects, builders, and citizens are largely unaware of BIPV options and benefits.
- **Policy vacuum:** Absence of dedicated regulatory norms or performance standards delays adoption.
- **Limited domestic manufacturing:** Heavy reliance on imported BIPV components increases costs and supply vulnerability.
- **Exclusion from planning stages:** BIPV is often not considered during early building design, limiting integration possibilities.

Significance of BIPV in India:

- **Urban solar potential:** Helps meet solar targets in densely built cities where land/rooftop space is scarce.

E.g. 309 GW potential via BIPV on existing building stock (World Bank).

- **Supports climate commitments:** Reduces carbon emissions from buildings, aligning with India's Paris Agreement targets.
- **Decentralized clean energy:** Enables localized power generation and reduces pressure on central grids.
- **Boosts green infrastructure:** Encourages eco-friendly construction under Smart Cities and AMRUT missions.
- **Economic opportunity:** Promotes innovation in green architecture, new markets for solar design, and green jobs in construction.

Conclusion:

BIPV offers a transformative path for energy-positive buildings, blending utility with aesthetics. Its success demands robust policy backing, financial incentives, and awareness drives. Scaling BIPV now can redefine urban sustainability in India.

PYQ:

To what factors can the recent dramatic fall in equipment costs and tariff of solar energy be attributed? What implications does the trend have for the thermal power producers and the related industry? (2015)

REVISED GUIDELINES UNDER THE BIOMASS PROGRAMME

Context:

The Ministry of New and Renewable Energy ([MNRE](#)) revised guidelines under the Biomass Programme (Phase-I, 2021–26).

- Aim to streamline clean energy adoption, support MSMEs, and address stubble burning with more flexibility and financial incentives.



About Revised Guidelines Under the Biomass Programme:

- **Launched by:** MNRE under National Bioenergy Programme Phase-I
- **Term:** 2021–22 to 2025–26
- **Objective:** Promote briquette/pellet manufacturing and biomass (non-bagasse) based cogeneration in industries.
- **Targeted Plants:** [Biomass](#) briquette/pellet units & industrial biomass-based cogeneration setups.

Key Features:

- **CFA Support:**
 - ₹9 lakh per MTPH for briquette/pellet plants (max ₹45 lakh/plant)
 - ₹40 lakh/MW for cogeneration projects (max ₹5 crore/project)
 - E.g. A 2 MTPH pellet plant can avail ₹18 lakh assistance.
- **Monitoring Mechanism:** Mandates Supervisory Control and Data Acquisition (SCADA) or [IoT](#)-based remote monitoring for transparency.
- **Eligibility Criteria:** Only new equipment eligible for subsidy and projects to be routed via an online portal.
- **Inspection Agencies:** SNAs and Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE)

Revised Biomass Guidelines:

- **Simplified Documentation:** Removes several clearance paperwork requirements for MSMEs.
- **Flexible Sale Agreements:** Replaces mandatory 2-year contracts with general sales agreements.
- **IoT-based Monitoring:** Allows cost-effective digital monitoring over expensive SCADA.
- **Performance-based Subsidy:**

- Projects with 80%+ operation receive full Central Financial Assistance (CFA) and others get pro-rata.
- E.g. A plant operating at 70% will get 7/8th of eligible CFA.
- **Shortened Inspection Duration:** 3-day 16-hour inspection now reduced to 10 hours continuous operation.
- **Stubble Management Provision:** Pellet producers in Delhi, Punjab, Haryana, NCR can choose MNRE or CPCB support scheme.

Need for Revision:

- **Regulatory Overload for MSMEs:** Complex documentation and multi-tier approvals discouraged small biomass entrepreneurs from participating in the scheme effectively.

E.g. MSMEs lacked capacity to navigate environmental and financial compliance burdens.

- **High Monitoring Costs:** Mandating SCADA systems increased capital burden for low-scale biomass units, making adoption economically unviable.

E.g. A SCADA system costs ₹20–30 lakh, unaffordable for plants under 2 MTPH capacity.

- **Ineffective Stubble Management:** Northern states faced persistent crop residue burning due to inadequate support for biomass [pelletization infrastructure](#).

E.g. Punjab alone generates over 20 million tonnes of paddy stubble annually – CEEW.

- **Inflexible CFA Norms:** Linking subsidy only to 80% plant performance excluded semi-operational units, delaying uptake and limiting rural biomass penetration.

E.g. Plants facing seasonal feedstock issues couldn't qualify despite viable operation.

Significance of the Revisions

- **Improved Business Viability:** Simplified contracts and reduced paperwork attract more private sector investment, especially from decentralized players.

E.g. General sale agreements allow local pellet traders to operate without fixed buyers.

- **Inclusive Technological Access:** Allowing IoT or quarterly monitoring enables low-cost compliance, boosting digital integration in Tier-2/3 biomass units.

E.g. IoT solutions cost 70% less than SCADA systems for data tracking.

- **Support for India's Climate Goals:** Enhanced biomass usage directly contributes to reduced GHG emissions and helps transition from fossil fuels.

E.g. MNRE data estimates 1 MW biomass saves ~1,000 tonnes of CO₂/year.

- **Boost to Rural Circular Economy:** Localised biomass plants promote waste-to-wealth conversion, create jobs, and support farm income diversification.

E.g. Briquette units generate ~10–15 direct jobs per MTPH of installed capacity.

- **Transparent and Targeted Subsidy:** Output-based disbursement ensures only productive and operational plants receive financial support, curbing misuse.

E.g. Plants operating at 75% PLF get proportionate CFA, incentivising higher efficiency.

Conclusion

The revised biomass guidelines represent a pragmatic step towards decarbonising India's [energy matrix](#) while empowering MSMEs. By linking incentives to performance and simplifying processes, MNRE strengthens both environmental outcomes and industrial innovation.

PYQ:

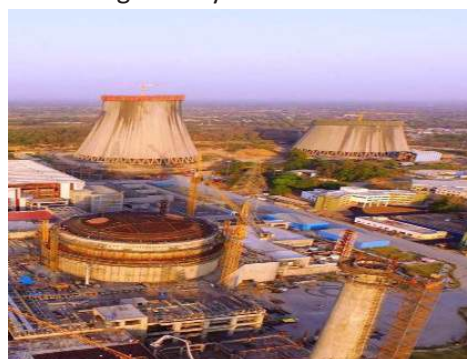
Do you think India will meet 50 percent of its energy needs from renewable energy by 2030? Justify your answer. How will the shift of subsidies from fossil fuels to renewables help achieve the above objectives? Explain. (UPSC-2022)

INDIAN NUCLEAR LIABILITY LAW

Context:

India is planning amendments to its **nuclear liability law** to ease supplier liability, aiming to attract foreign investment in its growing nuclear energy sector.

- Budget 2025-26 also proposed ₹20,000 crore for developing [small modular reactors \(SMRs\)](#) and streamlining liability frameworks.



About Indian Nuclear Liability Law:

India Nuclear Liability Framework:

- **Civil Liability for Nuclear Damage Act (CLNDA), 2010:** Provides legal backing for prompt compensation in case of nuclear accidents.
- **Key Provision:** Holds the **operator strictly and exclusively liable** for nuclear damage, with capped liability of ₹1,500 crore.
- **Government Liability:** Covers excess claims up

to ₹2,300 crore, in line with the **Convention on Supplementary Compensation (CSC)**.

- **Insurance Mandate:** Operators must insure liability, enabling quick disbursement to victims.
- **Parliament Ratification:** India signed CSC in 1997, ratified it in 2016; CLNDA was enacted earlier in 2010.

Ambiguous Provisions in CLNDA:

1. Section 17(b):

- Allows operators to seek recourse from suppliers for latent/patent defects or substandard services.
- Contradicts international norms where only the operator is liable.

2. Section 46:

- Permits additional civil/criminal proceedings under other laws.
- Lacks clarity on scope of “nuclear damage,” exposing suppliers to **unlimited liability** via tort law.

These clauses diverge from the **CSC model**, creating legal uncertainty.

Key Projects Affected by Legal Uncertainty:

- **Jaitapur Project (Maharashtra):**
 - MoU signed with France’s Areva in 2009, later with EDF.
 - EDF raised concerns over legal risk and project remains stalled.
- **Kovvada Project (Andhra Pradesh):**
 - Proposed U.S.-India collaboration stalled due to supplier liability fears.
- **Only operational foreign partnership:**
 - Russia-backed Kudankulam Nuclear Plant, which predates CLNDA.

Core Issues Surrounding India’s Nuclear Liability Law:

- **Supplier Deterrence:** Foreign suppliers refuse participation due to exposure to open-ended claims.
- **Contractual vs. Statutory Conflict:** Even without mention in contracts, Sections 17(b) and 46 make suppliers liable—creating regulatory conflict.
- **Insurance Ambiguity:** Unclear how much suppliers must set aside for liability coverage—hindering financial planning.
- **Policy Contradiction:** Government defends the law’s alignment with CSC, but courts rely on statutes, not legislative debates or intent.

Implications of Legal Ambiguity:

- **Delays in Nuclear Expansion:** Major global partnerships delayed, affecting India’s clean energy goals.

- **Investment Hesitancy:** Ambiguity limits participation by global nuclear firms.
- **Trust Deficit:** Contradictory clauses reduce India’s credibility as a nuclear partner.

Way Ahead:

- **Amend CLNDA:**
 - Clearly define scope of Sections 17(b) and 46.
 - Align fully with CSC by restricting supplier liability.
- **Enable Private Sector Entry:** Amend the **Atomic Energy Act** to allow private participation in SMRs.
- **Launch Model Insurance Pools:** Create shared risk mechanisms for suppliers and operators, modelled on global best practices.
- **Legislate Damage Definition:** Notify a clear, exhaustive list of ‘nuclear damage’ to limit tort claims.
- **Diplomatic Engagement:** Clarify law with nuclear partners like France, U.S., and Japan to revive pending deals.

Conclusion: India’s ambitious nuclear roadmap requires urgent legal reforms to de-risk investments and accelerates international collaborations. By streamlining the CLNDA and aligning it with global norms, India can unlock foreign partnerships, ensure faster clean energy transition, and meet its 100 GW target by 2047.

PYQ:

With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy. (2018)

Syllabus: Science and Technology- Developments & Applications

QUANTUM COMPUTING: JOURNEY FROM BITS TO QUBITS

Context:

Quantum computing has drawn global attention after Google, IBM, and China’s Jiuzhang showcased systems crossing 100 qubits.



About Quantum Computing: Journey from bits to qubits:

What Is Quantum Computing?

- **Quantum computing** uses the principles of **quantum mechanics**—not classical physics—to perform complex computations using **qubits** (quantum bits).
- **Origin:** Proposed by **Richard Feynman in 1981**, it aims to simulate quantum systems using machines that follow quantum rules like **superposition** and **entanglement**.

How It Works?

- **Superposition:** Qubits can represent both 0 and 1 simultaneously, unlike classical bits (0 or 1), enabling massive parallel processing.

E.g. A 100-qubit system can represent 2^{100} ($\sim 10^{30}$) states at once.

- **Entanglement:** Qubits become interlinked so that the state of one instantly affects another, regardless of distance — a feature Einstein called “**spooky action at a distance**”.
- **Quantum Gates and Circuits:** Logical operations are performed using **quantum gates** that manipulate qubits’ phase and entangled state.

Applications of Quantum Computing:

- **Drug Discovery & Material Science:** Simulate **molecular interactions** to design drugs and materials at the atomic level.

E.g. Pfizer and IBM collaborate on quantum simulations for drug development.

- **Logistics and Optimization:** Solve complex problems in supply chains, traffic control, and portfolio management.
- **Cybersecurity:** Enables **quantum key distribution** (QKD) for secure communication and could break existing encryption using Shor’s Algorithm.
- **High-Precision Sensing:** Used in mineral detection, gravitational field mapping, and medical imaging.

Progress So Far:

- **Google’s Sycamore (2019)** performed a task in 200 seconds that would take a supercomputer 10,000 years.
- **IBM** has built systems with **over 100 qubits** and targets **1,000-qubit machines**.
- **China’s Jiuzhang** achieved quantum advantage using **photonic qubits**.
- Startups like IonQ, PsiQuantum explore trapped ions and photonic methods for scalability.

Challenges in Implementation:

- **Decoherence and Fragility:** Qubits collapse quickly under environmental noise—lasting only 10^{-4} seconds in some cases.
- **Error Correction Overhead:** Requires **many physical**

qubits to build one stable logical qubit.

- **Scalability:** Current machines with 100–200 qubits only deliver **5 reliable logical qubits**—not enough for real-world applications.
- **Infrastructure Cost:** Requires **ultra-cold environments**, vacuum chambers, and advanced quantum labs.

Global Race in Quantum Computing:

- **China:** Leads with **\$15 billion public funding**, investing in national quantum networks.
- **USA:** Spent **\$4 billion**; firms like IBM, Google, Microsoft dominate the private sector.
- **EU:** Runs a **€1 billion “Quantum Flagship”** program.
- **UK, Japan, Canada:** Invested in quantum-safe encryption and hybrid computing.

India’s Status:

- Launched **National Quantum Mission (2020)** with ₹8,000 crore funding.
- Institutes like **IITs, IISc, TIFR** run 5–10 qubit systems and goal set for 50–100 qubits by 2030.
- Working on **quantum-safe cryptography, sensing systems**, and post-quantum communication.
- India is among the **top five global investors**, alongside China, US, EU, and UK.

Future Outlook:

- Full-scale, fault-tolerant quantum computers with **millions of qubits** are expected by **2040s**.
- Quantum will **augment classical computing**, solving tasks like **quantum simulations**, decryption, and complex optimizations.
- Global push is on for **quantum-safe systems**, cross-border collaborations, and indigenous R&D.

Conclusion:

Quantum computing signifies a paradigm shift that can transform science, defence, and economy. India’s early commitment positions it to become a key quantum power if it sustains investment and research. From bits to qubits, the future belongs to those who decode the quantum universe.

PYQ:

Discuss the work of ‘Bose-Einstein Statistics’ done by Prof. Satyendra Nath Bose and show how it revolutionized the field of Physics. (2018)

Syllabus: Awareness in fields of IT, Space, Computers, Robotics, Nano-tech, Bio-Tech, IPR

AI AND BIOMANUFACTURING

Context:

The integration of Artificial Intelligence in India's biomanufacturing sector is accelerating with the rollout of [BioE3 Policy](#) and IndiaAI Mission.



About AI and Biomanufacturing:

What is AI in Biomanufacturing?

- It involves using AI tools like machine learning, digital twins, and predictive analytics to automate and optimize biological production processes.
- **Key Features:**
 - AI models monitor fermentation, pH, temperature, and microbial growth.
 - Digital twins simulate entire bioproduction facilities for testing changes.
 - Predictive systems reduce waste, failure rates, and improve product consistency.

Example: Biocon uses AI for drug screening and quality control.

India's Current Status in Biomanufacturing:

- India supplies **~60% of global vaccines** and is a major hub for generics.
- The **specialty chemicals sector** is worth ₹2.74 lakh crore and growing.
- **AI applications** are already deployed in leading firms.

E.g., Wipro's pharma AI tools, TCS's AI for clinical trials.

Opportunities for AI in Biotechnology:

- **Enhanced Productivity:** AI enables real-time monitoring of bioreactors, detecting anomalies like pH or temperature drift before they impact the batch.

E.g. Strand Life Sciences uses AI to streamline biological data analysis for faster diagnostics.

- **Lower Cost of Drugs:** AI-driven automation reduces dependency on manual oversight and speeds up production cycles, cutting overall manufacturing costs.
- **Faster Drug Discovery:** AI models can simulate the effect of millions of compounds virtually, reducing

[lab trials](#) and discovery time.

E.g. Wipro's AI systems help pharmaceutical firms reduce molecule screening time.

- **Rural Health Leap:** AI-based tools can provide context-sensitive diagnostics and treatment recommendations in semi-urban/rural areas using region-specific data.
- **Export Leadership:** AI ensures product consistency and regulatory traceability, enhancing India's brand as a trusted biomanufacturing exporter.

Government Initiatives:

- **BioE3 Policy (2024):** Introduces Bio-AI Hubs and biofoundries with funding mechanisms to promote next-gen biotech innovation.
- **IndiaAI Mission:** Aims at developing explainable, ethical, and inclusive AI models, particularly for healthcare and biotech applications.
- **Digital Personal Data Protection Act (2023):** Lays down principles of lawful data processing and security but lacks AI-specific safeguards for biomanufacturing.

Challenges:

- **Regulatory Gaps:** India's current drug laws don't account for AI-controlled systems, leading to ambiguity in compliance and approval processes.
- **Data Diversity Issues:** AI tools trained on urban data may fail to adapt to regional manufacturing variables, risking faulty decisions in diverse settings.
- **Safety & Accountability:** There's no institutional mechanism to audit, certify, or red-flag AI-led errors in critical bioproduction lines.
- **Intellectual Property (IP):** AI-generated innovations challenge traditional IP norms on inventorship, data ownership, and licensing rights.
- **Lack of Skilled Workforce:** There's a shortfall in professionals trained in both AI and life sciences, limiting cross-functional innovation.

Measures to be Taken:

- **Risk-Based Regulations:** Introduce tiered AI regulations similar to the EU's AI Act or US FDA's model based on risk-level and context of use.

E.g. Predetermined Change Control Plans allow AI updates under predefined safety checks.

- **Data Quality Norms:** Mandate inclusion of diverse, representative datasets to train AI for different geographies and plant settings.
- **Continuous Oversight:** Set up regulatory sandboxes to test and update AI models without disrupting national safety or production norms.
- **Cross-Sector Collaboration:** Encourage joint task forces between industry, academia, and regulators to co-develop AI benchmarks and best practices.

- **IP & Data Licensing Law:** Develop clear legal frameworks for AI-generated patents, licensing rights, and access to training datasets in biotech.

Conclusion:

India's push for AI-driven biomanufacturing holds transformative potential for healthcare and exports. However, ambition must be balanced by adaptive, risk-aware regulation rooted in data integrity and public trust. The future of AI-led biotech leadership will depend on India's ability to innovate responsibly.

PYQ:

1. What are the research and developmental achievements in applied biotechnology? How will these achievements help to uplift the poorer sections of the society?

Syllabus: Defence Technology & Navy

DRONE – THE NEW FACE OF WARFARE

Context:

India's [Operation Sindoor](#), in response to the Pahalgam terror attack, showcased a shift in military doctrine through the use of combat drones alongside stand-off weapons — underlining their rising role in India's national security strategy.

About Drone – The New Face of Warfare:

- **What Are Drones?**
 - Drones, or Unmanned Aerial Vehicles (UAVs), are aircraft operated without a human pilot onboard, controlled remotely or autonomously via AI.
- **Types of Drones:**
- **Surveillance Drones:** Used for intelligence, surveillance, and reconnaissance (ISR) missions to monitor enemy movement.

E.g. Heron and Searcher drones are deployed for border patrolling and tactical surveillance.

- **Combat Drones (UCAVs):** Armed drones capable of precision strikes without endangering pilots.

E.g. Heron TP and MQ-9 Reaper carry missiles for surgical operations in hostile zones.

- **Loitering Munitions:** Drones that hover before self-destructing on target, ideal for high-value attacks.

E.g. Harpy and Nagastra-1 target radar systems and mobile missile units.

- **Swarm Drones:** Multiple drones operated via AI coordination to saturate defences and confuse radars.

- **Nano/Micro Drones:** Extremely small drones for short-range, indoor, or urban surveillance tasks.

E.g. Black Hornet is used by infantry for room-to-room clearance and intelligence.

DRONE NAME	MAJOR MINERALS
• Heron TP	• A combat-capable surveillance drone with 30 hours of endurance and a range of 7,400 km. It is equipped with precision-guided munitions.
• Rustom-II	• An armed reconnaissance drone developed in India with 12 hours of flight time and a range of 200 km. It can carry Helina missiles and rockets.
• MQ-9 Reaper	• A high-endurance precision drone with a flight time of 27 hours and a range of 1,850 km. It carries bombs and air-to-surface missiles.
• Harpy	• A loitering munition designed for suppression of enemy air defences with 6 hours of endurance and a range of 500 km.
• Nagastra-1	• A suicide drone designed for precision strikes with a 60-minute flight time and a 30 km range, carrying an explosive payload.
• DRDO Aura	• A stealth unmanned combat aerial vehicle currently under development with 5 to 6 hours of endurance and a range of 3,000 km. It features an internal weapons bay.

Key Features of Modern Military Drones:

- **Stealth and AI Integration:** Drones like DRDO Aura use radar-evading design with AI for target identification.
- **EO/IR Sensors and Data Links:** Electro-optical and infrared sensors provide day-night surveillance, linked to ground stations.
- **Long-Range, High-Endurance:** Drone range varies from a few km to over 7,000 km with up to 52 hours of flight.

Roles of Drones in Modern Warfare:

- **Reconnaissance and Precision Strikes:** Combine observation and attack capabilities to eliminate specific threats.

E.g. Reaper drone targeted Iran's General Soleimani without collateral damage.

- **Electronic and Tactical Warfare:** Loitering drones can suppress air defence, others jam enemy signals.
- **Logistics and Convoy Support:** Drones can drop supplies or scout ahead of moving convoys for threats.
- **Psychological and Area Denial:** Constant drone presence can demoralize enemies and deter movement.

E.g. [Ukraine-Russia war](#) saw drones used to dominate no-man's-land areas.

NON-WEAPON DRONES



DRONE NAME	FEATURES
• Heron	• A long-endurance surveillance drone capable of flying for 52 hours with a maximum range of 3,000 km. It is used mainly for intelligence gathering
• Switch	• A tactical surveillance drone designed for high-altitude missions with a 2-hour flight time and a 15 km operational range.
• Black Hornet	• A micro surveillance drone used for close-range observation. It flies for 25 minutes and covers a distance of up to 2 km.
• Trinetra	• A tactical reconnaissance drone designed for battlefield surveillance with a flight time between 10 to 12 hours and a range of 150 km.
• Netra	• A short-range drone used for urban surveillance and disaster response missions. It can fly for 30 minutes with a range of 2.5 km.

Drones Are Changing Modern Warfare:

- **Asymmetric Superiority:** Low-cost drones can destroy high-value defence systems, shifting the cost-benefit equation of war.

E.g. Ukraine used \$2,000 drones to disable Russia's advanced S-300 air defence systems.

- **Strategic Depth and Precision:** Armed drones enable precise long-range strikes without endangering pilots or ground troops.

E.g. The [MQ-9 Reaper](#) eliminated Iranian General Soleimani with zero troop deployment.

- **Real-time ISR Advantage:** Drones offer real-time surveillance data critical for rapid border response and disaster operations.

E.g. Heron drones in Ladakh provided live monitoring during the India-China standoff.

- **Swarm & Kamikaze Tactics:** Dozens of small drones overwhelm enemy air defences using quantity over quality.

E.g. Azerbaijan's drone swarms crippled Armenian positions in Nagorno-Karabakh (2020).

- **Blurring Military-Civilian Divide:** Commercial drones modified with payloads now serve in modern irregular and hybrid warfare.

E.g. Myanmar rebels deploy 3D-printed drones for targeted strikes on military outposts.

Challenges in Drone Warfare:

- **Counter-Drone Vulnerabilities:** Drones can be jammed, spoofed, or shot down easily using electromagnetic or kinetic countermeasures.
- **High Attrition in Conflict:** Drone survivability is low when facing layered defences with radar-guided interceptors.
- **Civilian Misuse Risk:** Drones are easily accessible and can be weaponised by terrorists or insurgent groups.

- **Regulatory and Airspace Gaps:** India's drone laws still lack clear mechanisms for seamless civil-military coordination.
- **Slow Domestic Production:** Inconsistent procurement discourages private drone manufacturers from scaling operations.

Way Forward for India:

- **Drone Swarm Development:** Accelerate indigenous swarm drone tech using AI coordination for offensive and defensive ops.
- **Integrated Air Defence:** Expand radar-drone integration under IACCS to pre-empt and neutralize drone threats.
- **Indigenous Ecosystem Push:** Promote startups like Idea Forge and Solar Industries via fast-track defence procurement.
- **Mass Production Infrastructure:** Enable scalable drone production using modular 3D printing and dual-use industry support.
- **AI and Autonomous Upgrades:** Invest in autonomous navigation, terrain-mapping, and EW resilience to bypass defences.

Conclusion:

Drones have revolutionized modern warfare by merging intelligence with strike precision. As India upgrades its drone doctrine, the focus must shift from selective imports to robust, self-sustaining production. Mastery over [drone technology](#) will define India's edge in future conflicts.

PYQ:

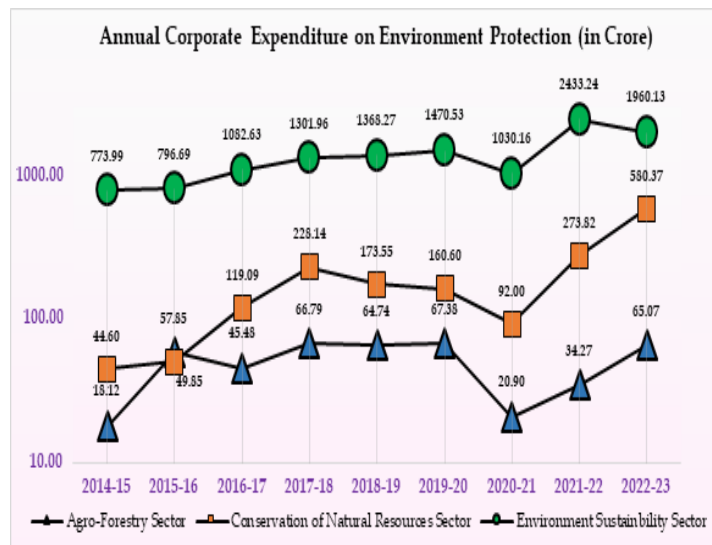
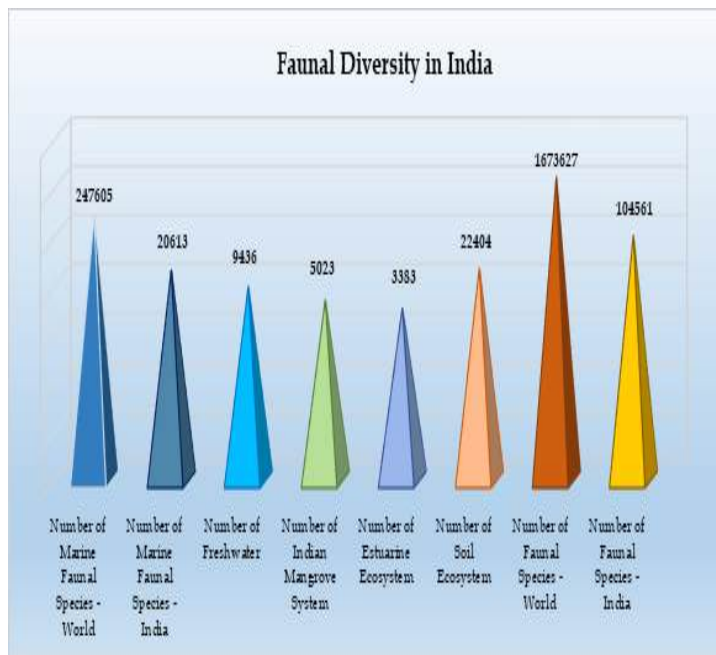
Foreign direct investment in the defence sector is now set to be liberalized. What influence this is expected to have on Indian defence and economy in the short and long run? (2014)

Syllabus: Conservation

ENVISTATS INDIA 2025

Context:

The 8th edition of EnviStats India 2025 was released by MoSPI on 5 June 2025, offering a structured statistical profile of India's environment.



Analysis of the Report:

- **Positives:**
 - **Data-Driven Policymaking:** The structured dataset enhances evidence-based decision-making in climate action and biodiversity protection.
 - **Expanded Indicator Scope:** Inclusion of socio-environmental indicators (e.g., sanitation, Ramsar sites) reflects a holistic approach to sustainability.
 - **Biodiversity Documentation:** India's significant soil and aquatic biodiversity is well-highlighted, reinforcing its global environmental relevance.
 - **Energy Transition Monitoring:** Clear trends in the **growth of renewables** support climate resilience planning and international climate commitments (e.g., Paris Agreement).
- **Negatives:**
 - **Rainfall Variability Lacks Regional Insights:** Absence of state-wise or zonal rainfall trends hinders localized disaster preparedness and water management strategies.
 - **No Impact Assessment:** The report offers statistics but lacks cause-effect insights or policy impact evaluation for sectors like pollution or land use.
 - **Data Lag and Timeliness:** Several datasets are retrospective, reducing their utility for real-time policymaking in dynamic sectors like air quality or urban sprawl.
 - **Inadequate Climate Vulnerability Mapping:** Despite rising temperatures, vulnerability analysis or adaptation readiness is not covered in depth.

Summary of “EnviStats India 2025: Environment Statistics”:

1. **Thermal and Renewable Energy Growth:** Thermal power generation rose from **7.92 lakh GWh (2013–14)** to **13.26 lakh GWh (2023–24)**, while renewable energy jumped from **65,520 GWh to 2.25 lakh GWh** in the same period.
2. **Inland and Marine Fish Production:** Inland fish output surged from **61.36 lakh tonnes to 139.07 lakh tonnes**, while marine fish production rose to **44.95 lakh tonnes (2013–2024)**.
3. **Temperature Trends:** Annual mean temperature increased from **25.05°C (2001)** to **25.74°C (2024)**, with both minimum and maximum temperatures showing a similar upward trend.
4. **Rainfall Patterns:** Year-to-year rainfall variability continues without a definite **long-term rising or falling trend**, underscoring erratic monsoonal behaviour.
5. **Faunal Diversity:** India hosts **1,04,561 faunal species**, contributing significantly to global biodiversity, including **22,404 soil species, 9,436 freshwater species**, and **5,023 mangrove species**.
6. **Environmental Sector Expenditure:** The **Environment Sustainability Sector** received the highest allocation at **₹2,433 crore (2021–22)**, while **Agroforestry** received the least.
7. **New Data Indicators Added:** Indicators like **Ramsar sites, sanitation, transport, and electricity access** were integrated for broader environmental insight.
8. **FDES-Based Structure:** The report follows the **Framework for the Development of Environment Statistics (FDES 2013)**, ensuring global comparability and structured categorization.

Way Forward:

- **Integrate Satellite and Real-Time Data:** Use ISRO's geospatial capabilities and IoT systems for real-time environmental monitoring.
- **Disaggregate Data Regionally:** Ensure state and district-level indicators to support decentralized planning and localised environmental governance.
- **Link Data with SDG Progress:** Map indicators directly to India's SDG targets (Goal 6, 7, 13, 14, 15) to better evaluate sustainability pathways.
- **Enhance Public Accessibility & Visualisation:** Convert data into interactive dashboards and infographics to engage civil society and educational institutions.

Conclusion:

EnviStats India 2025 strengthens India's environmental data landscape by aligning with global standards and tracking emerging trends. However, integrating granular insights and real-time data is essential to bridge the policy-practice gap. A robust, inclusive, and adaptive statistics ecosystem is vital for India's sustainable future.

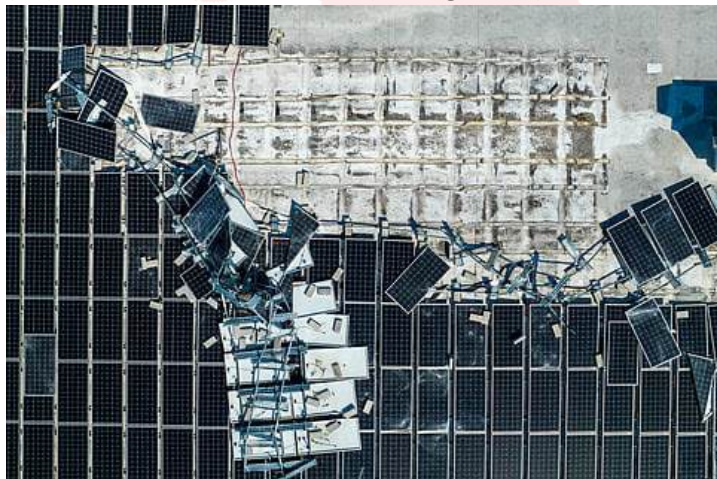
PYQ:

1. How does the draft Environment Impact Assessment (EIA) Notification, 2020 differ from the existing EIA Notification, 2006? (2020)

CPCB DRAFTS INDIA'S FIRST SOLAR WASTE PLAYBOOK

Context:

The Central Pollution Control Board (CPCB) released draft guidelines on June 4, 2025, for managing solar photovoltaic (PV) waste under the E-Waste (Management) Rules, 2022.



About CPCB Drafts India's First Solar Waste Playbook:

What is Solar Waste?

Solar waste refers to end-of-life solar PV modules, panels, or cells discarded from use or manufacturing, now classified as **CEEW 14** under e-waste rules.

India may generate over **34,600 tonnes of solar waste by 2030** due to accelerated installations across rooftops, floating, and ground-mounted parks.

Legal & Policy Framework: E-Waste Rules, 2022:

- **Coverage:** Solar waste is governed under Chapter V of the E-Waste (Management) Rules.
- **Exemption:** Unlike other e-waste, solar panels are **exempt from EPR recycling targets** till 2034–35.
- **Obligations:** Producers must register, file annual returns, maintain collection systems, and comply with CPCB SOPs.
- **Hazard Classification:** Solar waste contains **hazardous elements** like cadmium, lead, arsenic, gallium, and tellurium.

Issues Surrounding Solar Waste in India:

1. **Environmental Risks:** Toxic heavy metals may leach into soil/water or release fumes if panels are burnt or dumped.
2. **Health Hazards:** Informal or unsafe handling may cause respiratory, skin, or neurological ailments among workers.
3. **Data Deficiency:** Lack of granular data on waste quantities, recycling infrastructure, and informal disposal.
4. **Lack of Infrastructure:** Limited certified recyclers with tech to extract and separate silicon, silver, or polymers.
5. **Unregulated Storage:** Stacking in open environments increases fire, contamination, and breakage risk.

Implication of Solar Waste:

Implications on People:

1. **Health Hazards to Informal Workers:** Exposure to toxic elements like lead, cadmium, and arsenic during unregulated dismantling can cause respiratory, skin, and neurological disorders.

E.g. Informal recycling units in states like Gujarat and Maharashtra lack safety protocols, risking worker health.

2. **Community-Level Pollution Exposure:** Improper disposal near residential or agricultural areas contaminates local air, soil, and water, impacting livelihoods.

E.g. Dumping of solar waste in rural dump yards near water bodies raises cancer and birth defect risks.

Implications on Government:

1. **Regulatory Burden and Gaps:** Absence of dedicated solar waste policy creates legal ambiguity and enforcement challenges under existing e-waste and hazardous waste laws.

E.g. CPCB's 2025 draft had to fill critical policy gaps due to absence of mandatory EPR targets for solar.

2. **Undermining Green Credentials:** Mismanagement of solar waste contradicts India's global leadership in clean energy and hinders [SDG commitments](#) on sustainable cities and responsible consumption.

E.g. India risks international scrutiny under UNFCCC and SDG 12 if recycling remains poor.

Implications on Environment:

1. **Soil and Groundwater Contamination:** Toxic leachates from solar panel metals like selenium and tellurium pollute soil and aquifers when dumped unscientifically.

E.g. Studies show that cadmium telluride leaching from panels can persist in soil for years.

2. **Air Pollution from Burning Panels:** Burning polymer back-sheets and soldering metals release hazardous fumes, worsening air quality and ecosystem health.

E.g. Incineration without filters emits dioxins and furans, known carcinogens under Stockholm Convention.

Solutions and Key Measures from Draft Guidelines:

1. **Safe Storage Infrastructure:**
 - Use covered, ventilated, dry storage areas with **impervious, non-leachable floors** to avoid soil/water contamination.
 - Stack panels only up to **20 layers or 2 metres height**.
2. **Collection Mechanism & Take-Back:**
 - Mandatory take-back programmes by producers, with websites, helplines, and pickup logistics.
 - Consumer database to facilitate EOL (End-of-Life) recovery.
3. **Transportation Standards:**
 - Use only **covered trucks**, preferably **hazardous waste-compliant vehicles**, to move waste to recycling centres.
 - Follow the [Hazardous Waste Rules, 2016](#) for final disposal.
4. **Labeling & Inventory:** All containers must be clearly labelled with solar waste type; periodic inspections and inventories are mandated.
5. **Emergency & Fire Safety:** Install fire protection systems, ERP protocols, and clear emergency exits in storage zones.
6. **Public Participation:** CPCB has invited comments till June 25, 2025, ensuring participatory policy

formulation.

Conclusion:

India's solar success must be balanced with circular waste practices to maintain sustainability. The [CPCB's draft guidelines](#) are a proactive attempt to institutionalise safe, scientific, and inclusive solar waste management. Effective implementation will be key to aligning India's green ambitions with ecological responsibility.

TECHNOLOGY INDUSTRY AND CLIMATE GOALS

Context:

A landmark study by Microsoft and WSP Global has shown that advanced cooling technologies can significantly [reduce emissions](#), energy, and water use in data centres.



About Technology Industry and Climate Goals:

- **What it is?**
 - The tech industry, a major global emitter, is adopting climate-smart practices to reduce its carbon footprint, particularly from data centres and supply chains.
- **Climate Goals:**
 - Cut greenhouse gas emissions by 42% by 2030 (from 2015 levels)
 - Achieve net-zero emissions by mid-century
 - Shift to 100% renewable energy in operations (e.g., Google by 2030)

How the Tech Industry Is Meeting Climate Goals?

- **Advanced Cooling Systems:** Microsoft's cold plate and immersion cooling tech reduce emissions by 15–21% and water usage by up to 52%.
- **Carbon Credits Adoption:** Companies like Google and Netflix use verified carbon credits to offset emissions and invest in conservation projects.
- **Blockchain in Carbon Markets:** Ensures transparency in credit issuance; supported by Gold Standard and used by Indian tech firms for ESG compliance.

- **Renewable Energy Integration:** Tech giants commit to sourcing 100% renewable power—Amazon, Apple, and Meta already operate some green campuses.
- **Indian Tech Industry Leadership:** Infosys, Reliance, and Tech Mahindra pioneer sustainable tech via AI, blockchain, and energy-efficient operations.

Challenges Ahead:

- **Lifecycle Trade-offs:** Cooling tech may reduce emissions but could shift the burden through coolant production impacts.
- **High Capital Cost:** Green retrofitting of data centres and R&D for emerging tech are expensive and time-intensive.
- **Regulatory Bottlenecks:** Lack of global [standards for coolant fluids](#) and fragmented carbon credit policies hamper scalability.
- **Dependence on Grid Power:** If the electricity source remains coal-based, tech improvements have limited climate benefits.
- **Deployment Lag:** Complex design and supply chain issues slow adoption of green cooling systems and renewable transitions.

Way Forward:

- **Promote Life Cycle Assessments (LCAs):** Encourage all firms to assess environmental trade-offs across the full lifespan of technology solutions.
- **Unified Global Framework:** Harmonise carbon credit certification and climate disclosures for global tech companies.
- **Government Incentives:** Offer tax credits, subsidies, and green finance for early adopters of sustainable tech.
- **Strengthen R&D in Cooling:** Focus on low-impact fluids, scalable designs, and AI-based cooling control systems.
- **Public-Private Collaboration:** Foster innovation ecosystems where governments, startups, and tech majors co-develop climate solutions.

Conclusion:

The tech sector is at a critical juncture—balancing innovation with climate responsibility. Carbon credits, clean cooling, and renewables are proving pivotal to climate-smart operations. With policy push and tech-led innovation, the industry can steer global [sustainability goals](#).

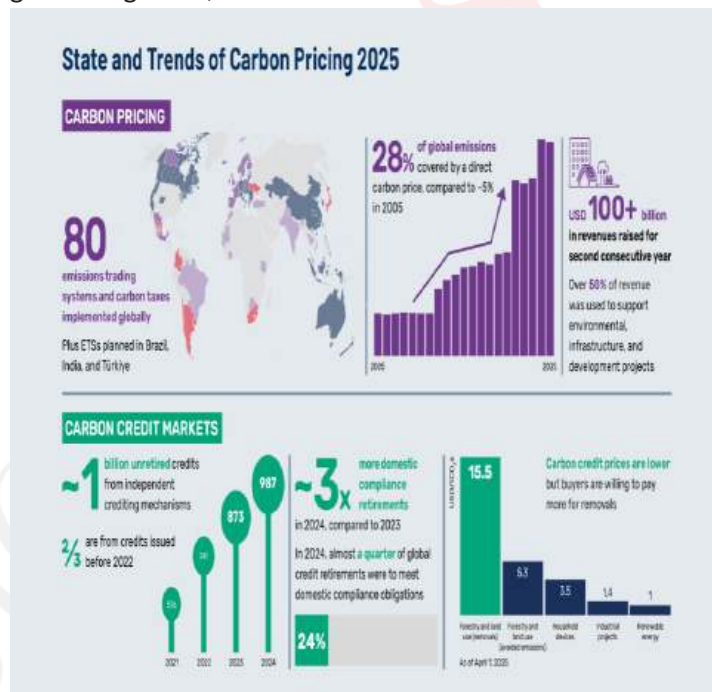
PYQ:

‘Climate Change’ is a global problem. How India will be affected by climate change? How Himalayan and coastal states of India will be affected by climate change? (2017)

STATE AND TRENDS OF CARBON PRICING 2025

Context:

The [World Bank](#) released its State and Trends of Carbon Pricing 2025 at a time when carbon pricing mechanisms are covering nearly 28% of global GHG emissions and generating over \$100 billion in revenue.



About State and Trends of Carbon Pricing 2025:

- **What is Carbon Pricing?**
 - Carbon pricing is an economic tool that attaches a cost to the emission of greenhouse gases, incentivizing emission reductions while internalizing climate-related externalities (e.g., floods, health costs).
- **Types of Carbon Pricing Mechanisms:**
 - **Carbon Tax:** A fixed price per tonne of CO₂ emissions (e.g., ₹ per tonne of fossil fuel carbon content).
 - **Emissions Trading System (ETS):** A cap-and-trade model where emitters buy/sell emission permits under a pre-set limit.
 - **Carbon Credit/Crediting Mechanism:** Tradeable credits are issued for verifiable emission reduction/removal (e.g., afforestation or methane capture).
- **Importance of Carbon Pricing:**
 - **Environmental:** Reduces [GHG emissions](#) by creating economic disincentives.
 - **Economic:** Raises public revenue (over \$100 billion globally in 2024).
 - **Social:** Funds adaptation, green jobs, and energy transition in vulnerable sectors.

Trends in Carbon Pricing in 2025:

1. **Expansion of Instruments:** The number of carbon pricing tools has increased from **5 in 2005 to 80 in 2025**, comprising **43 carbon taxes** and **37 ETSs**.
2. **Coverage Growth:** Carbon pricing now covers **~28% of global GHG emissions**, up from earlier years.
3. **Regional Adoption Rising:** **India, Brazil, and Türkiye** are developing domestic carbon pricing frameworks.
4. **India's ETS Framework:** India's upcoming ETS (2024) uses **benchmark-based intensity limits** rather than a hard emission cap.
5. **Revenue Mobilization:** Globally, [carbon pricing](#) generated **\$100+ billion** in public revenues.
6. **Sectoral Application Hierarchy:** Power sector has the highest coverage, followed by industry and aviation, with agriculture and waste largely uncovered.
7. **Nature-Based Credit Dominance:** In Q1–Q3 2024, **\$14 billion** was raised mainly through **afforestation and land restoration** projects.
8. **Growth in Engineered Removals:** Technologies like **Direct Air Capture** and Enhanced Rock Weathering are gaining interest.
9. **Delivery Lag in Engineered Removals:** Out of **8 million tons committed**, only **318,000 tons** of engineered removals were delivered.

Challenges in Carbon Pricing Mechanism:

- **Uneven Sectoral Inclusion:** Sectors like **agriculture and waste** are mostly excluded from pricing frameworks.
- **Volatility in Voluntary Markets:** [Voluntary carbon credit](#) markets showed demand fluctuations in **2023**, despite climate urgency.
- **Delivery Deficit in Removal Projects:** There's a major gap between **commitments and actual carbon removals** delivered.

E.g. Technologies like DAC are still in early stages and require scaling.

- **Data and Monitoring Weaknesses:** Developing nations lack strong **MRV systems** (Monitoring, Reporting, Verification).
- **Equity and Social Burden:** Carbon costs may **indirectly affect poor households** through higher fuel or utility prices.

Recommendations:

- **Broaden Sector Coverage:** Bring agriculture and waste into the pricing framework using context-specific methods.
- **Strengthen Monitoring Systems:** Use blockchain or satellite verification to improve transparency and credit reliability.
- **Stabilize Voluntary Markets:** Standardize rules

across crediting bodies like Verra and Gold Standard.

- **Scale Direct Removals:** [Public-private partnerships](#) needed for tech-based removals like Direct Air Capture.
- **Leverage Revenue for Justice:** Reinvest carbon pricing revenues into clean energy subsidies, health care, and vulnerable group protection.

Conclusion:

The 2025 carbon pricing report marks significant global progress but highlights glaring implementation and equity gaps. As climate threats intensify, robust pricing backed by transparent [governance](#) and inclusive policies will be key to a just transition.

PYQ:

The adoption of electric vehicles is rapidly growing worldwide. How do electric vehicles contribute to reducing carbon emissions and what are the key benefits they offer compared to traditional combustion engine vehicles? (2023)

UNEP LAUNCHED THE NDC COOLING GUIDELINES 2025

Context:

The UNEP launched the NDC Cooling Guidelines 2025 to help countries integrate sustainable cooling into Nationally Determined Contributions ([NDCs](#)), addressing rising emissions and heat-related vulnerabilities.

About UNEP launched the NDC Cooling Guidelines 2025:

- **What it is?**
 - A global framework offering countries a structured process to include cooling measures in climate plans (NDCs) to balance mitigation, adaptation, and development goals.
- **Developed by:** UNEP Cool Coalition NDC Working Group with partners like UNDP.
- **Objectives:**
 - Integrate sustainable cooling in NDCs.
 - Cut sector emissions by 60% by 2050.
 - Improve access to life-saving cooling for 1.1 billion people.
 - Strengthen MRV (Monitoring, Reporting, Verification) for cooling measures.
 - Align with Kigali Amendment and Global Cooling Pledge.

Data & Stats from the Report:

- **Cooling = 7% of global GHG emissions** today and

could exceed 10% by 2050.

- **1.1 billion people lack access to cooling**, risking lives, food security, and health.
- **Cooling uses 20% of building electricity** worldwide and over 50% in UAE buildings.
- By doubling appliance efficiency, cooling access can grow 6 times without proportional rise in emissions.

Key Challenges to Cooling Worldwide:

1. **High Emissions:** Without urgent interventions, **cooling-related emissions could double by 2050**, exacerbating climate change and energy demand.
2. **Access Gaps:** Over **1.1 billion people globally** lack affordable access to sustainable cooling, putting lives, food security, and healthcare at risk.
3. **Vicious Cooling Cycle:** Rising heat drives demand for inefficient cooling, which increases emissions — a self-reinforcing “vicious cycle” of climate impacts.
4. **Policy Gaps:** Only **27% of updated NDCs** include concrete energy efficiency targets for cooling, revealing gaps in national climate planning.
5. **Gender Inequity:** Women, particularly in rural and low-income settings, **face higher health risks** from inadequate cooling and extreme heat.

UNEP Cooling Guidelines Summary:

Six-Stage Action Framework

1. **Baseline Definition:** Countries must assess current **HFC emissions and energy use** in the cooling sector to identify priority actions.
2. **Target Formulation:** Set **measurable, time-bound cooling targets** aligned with their NDCs to guide policy and investment.
3. **MRV Systems:** Develop robust **Monitoring, Reporting, and Verification (MRV)** tools to transparently track progress and outcomes.
4. **Policy Actions:** Adopt **Minimum Energy Performance Standards (MEPS)**, Kigali-compliant refrigerant phase-down, urban greening, and passive cooling.
5. **Governance:** Create **cross-ministerial, gender-responsive coordination** mechanisms for effective cooling policy implementation.
6. **Finance & Access:** Mobilise finance and prioritise policies to ensure **equitable access** to affordable, sustainable cooling technologies.

Figure 7: Categories of policy options as presented by CCAC



Source: UNEP-Covered Climate and Clean Air Coalition Secretariat 2024, adjusted for style

Country Examples:

- **Nigeria:** Integrated National Cooling Action Plan (**NCAP**) into NDCs with focus on **heat-resilient rural infrastructure**.
- **UAE:** Prioritised **district cooling systems** and highly energy-efficient ACs in **NDC 3.0** roadmap.
- **Grenada:** Committed to becoming the world's **first HFC-free nation** by targeting complete phase-down

Conclusion:

The **UNEP NDC Cooling Guidelines** empower nations to transform cooling from a growing climate risk into an opportunity for equitable low-carbon growth. Integrating sustainable cooling in NDCs ensures climate resilience, human well-being, and progress towards SDGs. This is vital for India and global South nations facing extreme heat challenges.

[Syllabus: Disaster Management](#)

STAMPEDE

Context:

A stampede at Bengaluru's Chinnaswamy Stadium during RCB's IPL victory parade on June 4, 2025, led to the tragic death of 11 people and injured over 30, exposing critical flaws in crowd management.

About Stampede:

What is a Stampede?

A stampede is a sudden, uncontrolled rush of a crowd, typically caused by fear, panic, or excitement in a confined or unregulated space. It can result in severe injuries or fatalities due to crushing, suffocation, or trampling.

Stampede Incident	Location & Date	Brief Description
RCB Parade Stampede	Bengaluru, 2025	11 people died in a crowd surge outside Chinnaswamy Stadium during RCB's IPL victory parade.
Sri Lairai Temple Stampede	Goa, 2025	6 people died and 100 injured during an annual temple festival at Shigao village.
Tirumala Vaikunta Darshanam Stampede	Tirumala, 2025	6 devotees were killed in a rush for darshan tickets at Lord Venkateswara Temple.
Delhi Railway Station Stampede	New Delhi, 2025	18 pilgrims died and 15 injured on platforms 14–15 amid Maha Kumbh rush.
Maha Kumbh Sangam Stampede	Prayagraj, 2025	30 killed, 60 injured as pilgrims jostled for space on Mauni Amavasya.

Causes of Stampede in India:

- **Overcrowding:** Events often attract far more people than the venue can accommodate, breaching safe capacity limits.

E.g. Bengaluru's [Chinnaswamy Stadium](#) saw 3 lakh people at a venue meant for 35,000.

- **Poor Planning & Regulation:** Lack of risk assessment, delayed police presence, and no crowd flow strategy worsen chaos.

E.g. Bengaluru incident saw late deployment of police forces despite known high footfall.

- **Communication Gaps:** Panic due to rumors, unclear announcements, or miscommunication often trigger crowd surges.

E.g. Allahabad Railway Station stampede was caused by a last-minute platform change.

- **Infrastructure Bottlenecks:** Narrow gates, blocked exits, poor signage, and barricades create choke points during surges.

E.g. Elphinstone FOB stampede escalated due to waterlogging and lack of movement space.

- **Lack of Emergency Protocols:** Absence of trained personnel, medics, and rescue SOPs hinders swift response during crises.

Impact of Stampede Incidents:

- **Loss of Lives:** Stampedes frequently cause fatalities and permanent injuries, especially to vulnerable groups.
- **Public Fear and Distrust:** Recurrent crowd disasters reduce citizens' trust in public event safety and government response.
- **Administrative Fallout:** Officials face backlash, inquiries, and blame games, often leading to suspensions or resignations.
- **Economic Damage:** Stampedes lead to [compensation payouts](#), revenue loss from event

cancellations, and tourism decline.

- **Legal Scrutiny:** Organizers and government bodies may face lawsuits, PILs, or criminal cases for negligence.

NDMA Guidelines on Crowd & Stampede Management:

- **Pre-Event Planning:** Organizers must assess site capacity, plan movement routes, and prepare emergency response blueprints.
- **Access Control:** Use of barricades, ticketing systems, and security checks ensures regulated entry and exit.
- **Trained Personnel:** Deploy trained marshals, police, and volunteers to guide crowds and handle emergencies on-site.
- **Communication Strategy:** Install multilingual signage, public address systems, and real-time alerts to prevent confusion.
- **Emergency Preparedness:** Set up first-aid booths, deploy ambulances nearby, and rehearse SOPs with teams for rapid response.
- **Real-Time Surveillance:** Leverage CCTV, drones, and heat-map sensors to monitor crowd density and detect hotspots early.

Solutions to Prevent Future Stampedes:

- **Smart Crowd Monitoring:** Deploy AI-powered surveillance, drones, and thermal mapping to detect dangerous crowd patterns.
- **Venue Decongestion Measures:** Use satellite screens, digital ticket limits, and controlled entry to prevent excessive crowding.
- **Strict Enforcement of Capacity Norms:** Legal caps on crowd size must be enforced with fines for violations by event organizers.
- **Mock Drills and Training:** Routine simulation exercises for police and volunteers ensure effective evacuation readiness.
- **Public Education:** Campaigns through social and local media should inform citizens about safe behaviour in crowds.

Conclusion:

The Bengaluru stampede is a painful reminder that celebration without safety can lead to catastrophe. India needs to shift from reactive disaster handling to preventive crowd governance. Only then can mass gatherings be both joyful and secure.

PYQ:

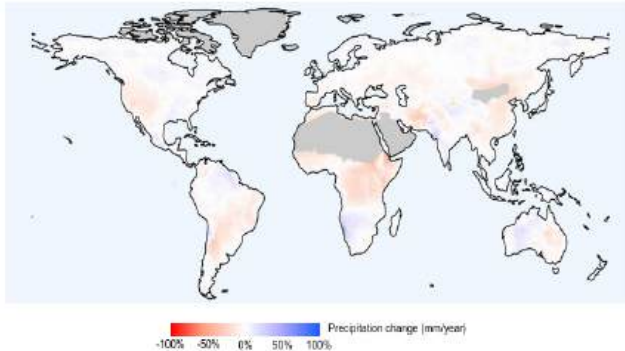
1. Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach. (2020)

GLOBAL DROUGHT OUTLOOK 2025

Context:

The OECD released its latest report “Global Drought Outlook 2025” warning of worsening drought impacts globally, with 40% of the planet now experiencing more frequent and intense droughts

Change in average annual precipitation (mm/year) between the periods 1950-2000 and 2000-2020



About Global Drought Outlook 2025:

- **What it is:** A global assessment of evolving drought trends, impacts, and adaptation policies.
- **Published by:** OECD — Global Drought Outlook: Trends, Impacts and Policies to Adapt to a Drier World, 2025.

What is Drought and Its Types:

- **Definition:** Drought is a [hydrological imbalance](#) — prolonged periods of “drier-than-normal” conditions affecting soil moisture, surface, and groundwater.
- **Types of Droughts:**
 - **Meteorological Drought:** Occurs when an area receives significantly below-average rainfall, leading to prolonged dry conditions.
 - **Agricultural Drought:** Results when soil moisture becomes insufficient to meet the needs of crops and vegetation, affecting yields.
 - **Hydrological Drought:** Arises when rivers, lakes, and groundwater levels decline below normal, impacting water supply for ecosystems and human use.

Trends in Drought Across the Globe:

- **Affected Land:** The share of global land exposed to drought has doubled since 1900, due to climate change and land use pressures.
- **Current Impact:** In 2023, nearly 48% of the world’s land area faced at least one month of extreme drought, severely straining ecosystems and communities.

- **Regional Hotspots:** Persistent and severe droughts are increasingly common in the Western United States, South America, Europe, Africa, and Australia.
- **Water Resources:** Around 62% of monitored aquifers show declining trends, with major rivers experiencing reduced flow, threatening [water security](#).
- **Future Projections:** If global warming reaches +4°C, droughts could become 7 times more frequent and severe by 2100, posing systemic global risks.

Impact of Drought:

- **Ecosystem:**
 - 37% of global soils show significant drying since 1980.
 - Declining river flows, [groundwater depletion](#).
- **Economic:**
 - Drought costs rising 3–7.5% annually.
 - Average drought today is twice as costly as in 2000; 35% cost increase projected by 2035.
 - Agriculture hit worst — crop yields can fall 22% in dry years.
 - **Trade & Energy:** 40% reduction in fluvial trade, 25% decline in hydropower in severe drought.
- **Social:**
 - 34% of disaster-related deaths are drought-driven (only 6% of disasters are droughts).
 - Major driver of **hunger, displacement, and migration** in Sub-Saharan Africa.
 - Political instability and social unrest linked to resource scarcity.

Measures to Counter Drought:

- **Integrated Water Resource Management:** Efficient use, equitable allocation, restoring balance between withdrawal and renewal.
- **Nature-based Solutions (NbS):** Urban de-sealing, landscape restoration.
- **Sustainable Agriculture:** Drought-tolerant crops, efficient irrigation — can cut water use by up to 76%.
- **Urban Planning:** De-sealing cities restores aquifers (US examples show 780 mn m³/yr recovery).
- **Early Warning Systems:** Better monitoring, risk mapping.
- **Policy Integration:** Embedding climate adaptation into water policies and land-use planning.
- **Cross-Sector Collaboration:** Involving energy, transport, construction, health sectors.
- **Investment Returns:** Every dollar spent on drought

resilience yields **2x–10x** benefits.

Conclusion:

As climate change escalates, droughts are no longer isolated events but global systemic risks affecting water, food, energy, and human security. The [OECD](#) urges nations to adopt proactive, integrated strategies to build resilience. Timely investment and cross-sector action can secure sustainable water futures for coming generations

PYQ:

Drought has been recognized as a disaster in view of its spatial expense, temporal duration, slow onset and lasting effect on various vulnerable sections. With a focus on the September 2010 guidelines from the National disaster management authority, discuss the mechanism for preparedness to deal with the El Nino and La Nina fallouts in India. (2014)

Syllabus: Internal Security & its Challenges

SIPRI YEARBOOK 2025

Context:

The SIPRI Yearbook 2025 revealed that India now possesses more nuclear warheads than Pakistan, but significantly fewer than China.

- The report warns of an emerging global nuclear arms race amid weakened arms control regimes.

WORLD NUCLEAR FORCES, JANUARY 2025

	Military stockpile ^a			Retired warheads ^d	Total inventory ^e
	Deployed warheads ^b	Stored warheads ^c	Total		
USA	1 770	1 930	3 700	1 477	5 177
Russia	1 718	2 591	4 309	1 150	5 459
UK	120	105	225	–	225
France	280	10	290	–	290
China	24	576	600	–	600
India	–	180	180	–	180
Pakistan	–	170	170	–	170
North Korea	–	50	50	–	50
Israel	–	90	90	–	90
Total	3 912	5 702	9 614	2 627	12 241

About SIPRI Yearbook 2025:

India's Status in SIPRI Yearbook 2025:

- Total Warheads:** India has **180 stored nuclear warheads** as of January 2025.
- Modernization:** India continues to **develop new nuclear delivery systems**, including canisterised missiles capable of carrying multiple warheads.
- Triad Development:** India's nuclear capability is

structured into a **mature nuclear triad**—land-based missiles, aircraft, and [sea-based submarines](#) (SSBNs).

- Strategic Shift:** Indications suggest a move toward **mating warheads with launchers** in peacetime, changing India's traditional de-alerted posture.

Pakistan's Nuclear Capability:

- Total Warheads:** Estimated at **170 warheads** as of January 2025.
- Trends:** Pakistan is expanding [fissile material production](#) and developing **new delivery systems**, with the arsenal likely to grow this decade.
- Primary Focus:** Pakistan's nuclear strategy remains centered on **detering India**, with emphasis on short-range tactical weapons.

China's Expanding Arsenal:

- Total Warheads:** China has **600 nuclear warheads**, growing at **~100 per year** since 2023.
- ICBM Silos:** Around 350 new [ICBM](#) silos developed across desert and mountain bases.
- Shift in Posture:** China may now keep warheads mounted on missiles during peacetime, departing from past practices.

Global Trends in Nuclear Forces:

- Total Global Inventory:** 12,241 nuclear warheads globally and ~9,614 in military stockpiles.
- Top Powers:** Russia (5,459) and USA (5,177) hold over 90% of global warheads.
- Deployment Rate:** Around **2,100 warheads** are in high operational alert states.
- Modernization Across Board:** All 9 nuclear powers—including UK, France, Israel, and North Korea—are actively upgrading or expanding their arsenals.
- Arms Control Crisis:** The New START treaty expires in 2026, with no successor in sight, risking unregulated nuclear growth.

Rising Risk of Nuclear Conflict:

- Regional Flashpoints:** Early 2025 saw India-Pakistan tensions over Operation Sindoor, risking escalation

due to strikes on nuclear-linked sites.

- **Technology Multipliers:** Use of AI, cyberwarfare, quantum systems, and space assets is making nuclear deterrence more fragile and unpredictable.
- **Escalation Risk:** Disinformation and compressed decision-making timelines increase chances of miscalculation or accidental conflict.
- **Misinformation Warfare:** The spread of disinformation and propaganda during conflicts can distort threat perceptions.

Policy Implications:

- **India's Defence Posture:** Must balance deterrence and restraint, avoiding crisis instability while modernizing delivery systems.
- **Need for Dialogue:** Reviving arms control talks and regional nuclear risk reduction measures is urgent amid global mistrust.
- **Strategic Autonomy:** India should enhance indigenous technological capabilities to reduce dependency and maintain credible minimum deterrence.
- **Global Governance Role:** India, as a responsible nuclear power, should actively engage in non-proliferation and disarmament forums.

Conclusion:

The SIPRI Yearbook 2025 signals an alarming return to nuclear arms build-up amidst weakening control frameworks. India's measured but firm modernization must go hand-in-hand with global advocacy for nuclear restraint and multilateral security dialogue. Nuclear security today is no longer about numbers alone—but about speed, misinformation, and emerging tech risks.

PYQ:

The use of unmanned aerial vehicles (UAVs) by our adversaries across the borders. to ferry arms / ammunitions, drugs, etc., is a serious threat to the internal security. Comment on the measures being taken to tackle this threat. (2023)

GENERAL STUDIES - 4

Syllabus: Ethics and Human Interface

ETHICAL DEBATE ON SELF-DEFENCE

Context:

Israel's recent pre-emptive strikes on Iran's nuclear program, citing "self-defence," ahead of scheduled US-Iran talks, have reignited the global debate on the ethical and legal boundaries of self-defence in international relations.



About Ethical debate on Self-Defence:

- **Self-defence** is the use of force by a state or individual to repel an imminent threat to life or sovereignty.

Ethical Dilemmas in Self-Defence:

- **Imminent threat vs uncertainty:** Acting in self-defence often involves incomplete intelligence, making it ethically complex to determine the right timing for intervention.
- **National interest vs global stability:** A state may protect its own citizens through pre-emptive force, but such actions risk undermining international peace and collective security frameworks.
- **Self-defence vs civilian harm:** Even justified defensive actions can lead to civilian casualties, raising ethical questions about proportionality and the moral limits of collateral damage.
- **Legal frameworks vs emerging threats:** In the face of cyber or asymmetric threats, states may act without clear legal sanction, creating dilemmas between respecting legal norms and ensuring moral responsibility.
- **Short-term prevention vs long-term escalation:** Immediate self-defence may deter threats but can also provoke retaliation, escalating conflict instead

of promoting lasting peace.

Ethical Ground Behind Self-Defence in International Relations:

- **Sovereignty protection:** States have an inherent ethical right to protect territorial integrity and civilian life.
- **Just War Doctrine:** Proportionality and necessity must guide defensive actions—not unchecked military power.
- **UN Charter Article 51:** Codifies the right to self-defence until the UN Security Council intervenes.
- **Civilian safeguarding:** Democracies argue they hold an **ethical duty** to shield civilians from existential threats.
- **Moral legitimacy:** For a defensive strike to be ethical, it must have **global legitimacy** and legal backing.

Ethical Challenges to Self-Defence

- **Ambiguity of imminence:** Defining ‘**imminent threat**’ remains contentious—often misused to launch wars.
- **Cycle of violence:** Pre-emptive attacks risk triggering **retaliatory spirals**, worsening instability (e.g., Israel-Iran exchange).
- **Civilian casualties:** Collateral damage to non-combatants raises grave humanitarian and moral concerns.
- **Dilution of norms:** Frequent misuse erodes **international legal norms** around legitimate self-defence.
- **Moral hazard:** Over-reliance on pre-emptive self-defence sets a dangerous precedent for future conflicts.

Balancing Self-Defence with Ethics:

- **Proportionality principle:** Use only the **minimum necessary force** to neutralize the threat.
- **Necessity test:** All **peaceful avenues** must be attempted before military response.
- **Transparency:** States must provide **clear, verifiable evidence** of imminent threats to justify actions.
- **Accountability:** **International law** mechanisms should hold violators of the self-defence norm responsible.
- **Moral restraint:** Political leadership should uphold **humanitarian values**, protecting innocent civilians even in warfare.

Quotes:

1. “The supreme art of war is to subdue the enemy without fighting.” — Sun Tzu
2. “An eye for an eye ends up making the whole world blind.” — Mahatma Gandhi

Ethical Philosophers’ Theories:

1. Michael Walzer — Just War Theory

Walzer argues that war is morally permissible only when it meets *jus ad bellum* (right to war — just cause, last resort, proportionality) and *jus in bello* (just conduct during war — discrimination, non-combatant immunity).

2. Thomas Aquinas — Natural Law

Aquinas held that war must serve the common good, be waged by legitimate authority, and be driven by right intention — war for vengeance or greed is unethical.

Conclusion:

The doctrine of **self-defence** remains vital but must not become a cover for pre-emptive aggression. Ethical safeguards—proportionality, necessity, and respect for human rights—are crucial to ensure that self-defence in international relations serves justice, not power politics. The [Israel-Iran episode](#) underlines this urgent global imperative.

UK PARLIAMENT HAS PASSED THE TERMINALLY ILL ADULTS (END OF LIFE) BILL

Context:

The UK Parliament has passed the Terminally Ill Adults (End of Life) Bill in the House of Commons, which allows terminally ill patients with less than six months to live to opt for assisted dying in England and Wales.



About UK Terminally Ill Adults (End of Life) Bill:

- **What It Is?**
 - A legislation that enables **terminally ill adults** to legally end their life under strict medical and legal oversight.
- **Features of the Bill:**
 - Applicable in **England and Wales**.
 - Restricted to patients with less than **6 months to live**.
 - Requires approval by **two doctors**, a

psychiatrist, a senior lawyer, and a social worker.

What is Euthanasia?

The word “**Euthanasia**” comes from Greek, meaning “**good death**”. It refers to the **intentional act of ending a person’s life** to relieve them from **unbearable pain or terminal illness**, usually when there is no hope of recovery.

Types of Euthanasia:

1. Active Euthanasia

- A **deliberate action** taken to cause a patient’s death (such as giving a lethal injection).
- Example: Administering a dose of drugs to end suffering.

2. Passive Euthanasia

- **Withholding or withdrawing medical treatments** that prolong life (like removing a ventilator), allowing natural death to occur.
- Example: Discontinuing life support for patients in a permanent vegetative state.

3. Voluntary Euthanasia

- The patient **consents** and **requests** to end their life to escape suffering.
- Example: Terminally ill patient formally requesting euthanasia.

4. Involuntary Euthanasia:

- Life is ended **without the patient’s consent**.
- This is considered **illegal and unethical** (akin to murder).

Ethical Debate on Euthanasia

Arguments For:

1. **Right to Autonomy:** Every individual should have the right to make decisions regarding their own body, including when and how to die, as an expression of personal freedom.
2. **Compassion:** Euthanasia allows for relief from intractable pain and terminal suffering, fulfilling the moral duty to prevent unnecessary agony.
3. **Dignity in Death:** It enables terminally ill patients to choose a **peaceful and dignified death**, rather than enduring a prolonged and degrading illness.
4. **Relief for Family & Caregivers:** Families often suffer watching their loved ones in pain, euthanasia can spare emotional **trauma** and financial strain on families.
5. **Medical Resource Allocation:** Permitting euthanasia may help better allocate scarce medical resources toward patients with a chance of recovery.

Arguments Against:

1. **Sanctity of Life:** Human life is inherently sacred,

and intentional killing — even to relieve suffering — violates core ethical and religious principles.

2. **Risk of Coercion:** Vulnerable individuals, such as the elderly or disabled, may feel pressured by family or society to choose euthanasia to avoid being a burden.
3. **Palliative Care Alternatives:** Modern **palliative and hospice care** can effectively manage most pain and symptoms, offering compassionate alternatives to euthanasia.
4. **Slippery Slope Argument:** Legalising euthanasia could erode ethical boundaries and lead to abuse, where non-terminal or unwilling patients are put at risk.
5. **Doctor-Patient Trust:** Introducing euthanasia compromises the traditional role of doctors as healers and undermines patient trust in medical professionals.

Supreme Court Judgements:

- **Gian Kaur v. State of Punjab (1996):** Denied “Right to Die” under Article 21.
- **Aruna Shanbaug v. Union of India (2011):** Allowed Passive Euthanasia under strict conditions.
- **Common Cause v. Union of India (2018):** Recognised **Right to Die with Dignity** under Article 21 and permitted **Advance Directives** for terminally ill patients.

Two Ethical Unknown Philosophies on Euthanasia

- **Antoine de Saint-Exupéry’s Humanism:** Advocated valuing “meaningful existence” over biological continuation.
- **Hans Jonas’ Ethics of Responsibility:** Warned of technological overreach in medicine that may diminish respect for life’s natural course.

Quotes:

1. “It is not death that a man should fear, but he should fear never beginning to live.” — **Marcus Aurelius**
2. “To die will be an awfully big adventure.” — **J.M. Barrie, Peter Pan**

Conclusion:

Euthanasia debates globally reflect tensions between personal autonomy, ethical limits of medical practice, and **societal values**. As more countries revisit their laws, India too must balance dignity, compassion, and caution in this sensitive issue. Judicial clarity and public awareness will be key to shaping humane policy.

CORPORATE GOVERNANCE

Context:

India has witnessed a surge in corporate governance failures, with recent scandals involving Gensol Engineering, BluSmart, BharatPe, GoMechanic, and DHFL.



About Corporate Governance:

What is Corporate Governance?

- **Corporate governance** refers to the system of **rules, practices, and processes** that direct and control companies.
- It ensures **accountability, transparency, and integrity** in managing stakeholder interests, particularly in financial and ethical decision-making.

Core Principles of Corporate Governance

- **Fairness:** All stakeholders—including shareholders, employees, suppliers, and communities—must be treated equitably and with integrity, ensuring no undue advantage to any party.

E.g. Equal voting rights for [minority shareholders](#).

- **Transparency:** Companies must maintain open and timely disclosure of material information such as financials, risks, and conflicts of interest to stakeholders.

E.g. Quarterly audited statements improve trust and

accountability.

- **Risk Management:** Boards and management must identify, evaluate, and mitigate financial, operational, and reputational risks, and communicate these to relevant stakeholders.

E.g. [ESG risk](#) disclosures mandated under SEBI norms.

- **Responsibility:** The board has the duty to **oversee management**, ensure long-term company performance, and act in the best interests of shareholders.

E.g. CEO appointment and strategic direction fall under board responsibility.

- **Accountability:** Company leadership must be **answerable for performance outcomes**, strategic choices, and the company's adherence to ethical and financial standards.

E.g. Annual general meetings promote board accountability.

Reasons Behind Corporate Governance Failures:

- **Diversion of Investor Funds:** Misuse of funds for **personal expenses** instead of core business goals.

E.g. Gensol promoters allegedly used EV funds to buy luxury residences.

- **Non-disclosure of Related-Party Transactions:** Funds routed through promoter-controlled shell companies.

E.g. BluSmart diverted capital using opaque loops, breaking disclosure norms.

- **Falsified Financial Reporting:** Misstated revenues and forged documents to attract funding.

E.g. GoMechanic admitted to inflating revenue figures; Satyam did the same at scale.

- **Weak Board Supervision:** Lack of independent checks due to promoter-controlled boards.

E.g. Directors lacked authority to intervene in fraudulent activities.

- **Lack of Compliance Systems:** No real-time monitoring of transactions or compliance red flags.

E.g. No internal control detected Gensol's lifestyle fund misuse.

- **Information Asymmetry:** Investors misled by **false representations** and lacked due diligence.

E.g. Gensol investors loaned large sums without verifying financial claims.

Measures to Improve Corporate Governance:

- **Independent Board Oversight:** Mandatory inclusion of independent, empowered board members to counter promoter influence.
- **Tiered Financial Controls:** Escalation protocols for high-value or strategic transactions to ensure checks and balances.
- **External Audits and Audit Committees:** Regular audits by reputed third parties and active audit committee oversight.
- **Whistle-blower Mechanism:** Anonymous reporting with anti-retaliation safeguards to detect internal fraud early.
- **Conflict of Interest Declarations:** Mandatory declarations and board reviews of any related-party dealings.
- **Ethics as Strategy:** Promote governance not just as compliance, but a core element of sustainable strategy.

Conclusion:

The recent wave of governance scandals highlights that growth without integrity is unsustainable. For companies, robust governance is no longer optional—it is a strategic necessity. Embedding transparency, accountability, and ethical leadership is key to rebuilding public trust and investor confidence.

PYQ:

1. What do you understand by 'moral integrity' and 'professional efficiency' in the context of corporate governance in India? Illustrate with suitable examples. (2023)

Syllabus: Probity in Governance

CORRUPTION

Context:

An IAS officer, Dhiman Chakma, was caught red-handed by Odisha Vigilance for accepting a ₹10 lakh bribe to allegedly

prevent the closure of a business unit.

About Corruption:

What is Corruption?

Corruption is the misuse of public office or power for personal gain. It erodes trust in governance, distorts policymaking, and diverts resources away from essential services.

Types of Corruption:

- **Bribery:** Exchange of money or favours to influence a public official's decision or action.

E.g. IAS officer in Odisha demanded ₹10 lakh to avoid shutting a business unit.

- **Embezzlement:** Misappropriation or theft of public funds by those in power.

E.g. Public servants divert government funds into private accounts.

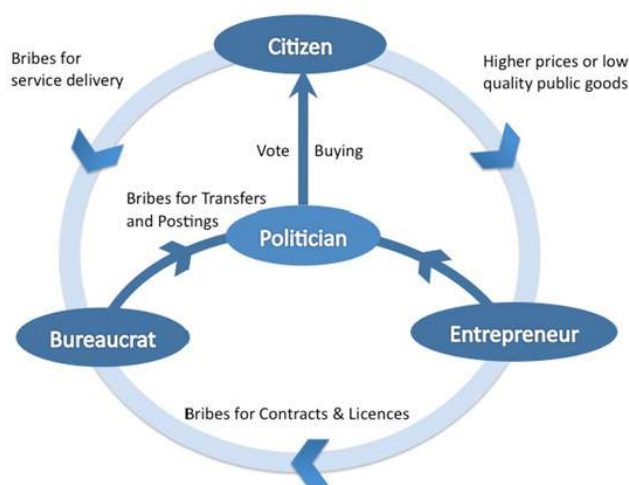
- **Nepotism:** Favouritism towards relatives or close associates in appointments or contracts.

E.g. Civic tenders awarded to kin of local politicians without competitive bids.

- **Collusive Corruption:** A secret pact between public officials and private entities to mutually benefit.

E.g. Contractors colluding with officials to inflate costs in Smart City projects.

THE WHEEL OF CORRUPTION



Reasons Behind Corruption in India:

- **Election Expenditure Pressure:** Huge campaign funding needs create a quid pro quo culture with businesses.

E.g. ₹1 lakh crore was reportedly spent in 2024 Lok Sabha elections (CMS data).

- **Weak Institutional Checks:** [Lokpal and Lokayukta's](#) exist but remain ineffective in most states.
- **Red Tape and Discretion:** Overregulation and lack of standard timelines allow room for rent-seeking.
- **Inequality and Rising Aspirations:** Income disparity pushes officials to misuse power for a better lifestyle.

E.g. Low-paid officials seek bribes to afford expensive consumer goods.

- **Lack of Public Awareness:** Many citizens don't use RTI or grievance portals to hold officials accountable.

Government Initiatives:

- **Vigilance Raids:** Anti-corruption agencies have intensified trap cases and cash recovery missions.

E.g. Odisha Vigilance arrested an IAS officer with ₹57 lakh unaccounted cash.

- **Digital Systems:** e-Tendering, [PFMS](#), DBT reduce human discretion and payment leakage.

E.g. PDS benefits now go directly to beneficiaries' bank accounts.

- **Whistleblower Act:** Offers protection to those who report corruption in public interest.
- **RTI Act:** Ensures citizen access to government records, enhancing transparency.
- **Mandatory Asset Declarations:** Government officials are required to annually disclose their assets.

Way Ahead:

- **Revive Lokpal and Lokayuktas:** Empower these institutions with funding, independence, and

oversight.

E.g. Mandatory reports and regular audits can boost their credibility and impact.

- **Cap Political Funding:** Introduce limits on campaign spending and regulate donations.

E.g. Ban cash contributions and disclose all electoral bond donors.

- **Use AI Surveillance:** Deploy AI to detect anomalies in tender approvals, property registrations, etc.

E.g. AI-based tracking of sand mining in Rajasthan flagged illegal operations.

- **Guarantee Time-bound Services:** Enforce [service delivery](#) laws with penalties for delays.

E.g. Delhi's RTS Act levies fines on officers for exceeding delivery timelines.

- **Empower Citizens:** Strengthen online portals, social audits, and local watchdog committees.

E.g. Civic participation keeps street-level corruption under constant check.

Conclusion:

India's battle against corruption is complex, requiring institutional overhaul and public vigilance. Technology and strong laws can deter wrongdoers, but citizen pressure is equally vital. A clean civic system rests on transparency, timely justice, and [moral accountability](#).

PYQ:

"Corruption is the manifestation of the failure of core values in the society." In your opinion, what measures can be adopted to uplift the core values in the society? (UPSC-2023)

FACTS FOR PRELIMS (FFP) GS -I:

Syllabus: Indian Culture-Salient aspects of Art Forms

EARLY HARAPPAN BURIAL DISCOVERY IN GUJARAT'S LAKHAPAR

Context:

A 5,300-year-old Early Harappan settlement and burial discovered in Lakhapar village, Kutch, is shedding new light on cultural exchanges between Early Harappan and Chalcolithic groups.



About Early Harappan Burial Discovery in Gujarat's Lakhapar:

- **Location:**
 - The site is located in **Lakhapar village**, Kutch district, **Gujarat**.
 - Excavation conducted by University of Kerala's Department of Archaeology.
- **What is the Discovery?**
 - A newly excavated **Early Harappan habitation and burial site** dated to c. **3300–2600 BCE**.
 - Builds on previous work at **Juna Khatiya**, another Early Harappan cemetery excavated nearby.
- **Key Findings:**
 - **Human Burial with Pre-Prabhas Pottery:**
 - First of its kind in Gujarat—buried directly in a pit with no markers or architecture.
 - Pottery type links it to **Chalcolithic cultures** of Saurashtra (e.g.,

Prabhas Patan, Dadrana).

- **Harappan-Style Architecture:** Sandstone and shale structures indicating planned construction and social organization.
- **Cultural Interaction Evidence:** Ceramics and habitation layers resemble Early Harappan sites in Sindh, pointing to cross-regional exchanges.
- **Interconnected Settlement Network:** Together with Juna Khatiya (197 burials), Lakhapar suggests a larger cultural sphere in Early Harappan Gujarat.
- **Significance of the Discovery:**
 - **Expands Early Harappan Geography:** Shows Harappan influence extended deeper into Western India than previously thought.
 - **Earliest Burial with Pre-Prabhas Pottery:** Links Gujarat's Chalcolithic and [Harappan cultures](#).
 - **Challenges Linear History Models:** Highlights co-existence of foragers, agro-pastoralists, and urban precursors.
 - **Fills Data Gaps:** Most Harappan burials are from Mature phase and this adds rare **pre-urban** insights.
 - **Strengthens Cultural Chronology:** Reinforces Gujarat's role as a **cultural bridge** between Sindh and peninsular India.

GHUMOT

Context:

Goa's traditional percussion instrument Ghumot is witnessing revival debates around heritage conservation and [wildlife protection](#), after it was declared the State Heritage Instrument in 2019.



About Ghumot:

- **What It Is?**
 - A traditional **mud-based membranophone percussion instrument** of Goa, crafted from clay with one side covered by animal skin.
- **Origin:** Migrated to Goa through tribal communities and early settlers and deeply embedded in oral histories.
- **Types:** Variants in size and form for children, women, amateurs, and professionals.
- **Caste Associations:** Historically crafted by [tribal potters](#) and played by both Hindu and Christian communities—showcasing Goa’s syncretic cultural ethos.
- **How it is made?**
 - **Clay Pot Shaping:** Crafted from special refined clay; shaped as a pumpkin-like earthen pot in 3 parts and tapped to remove air bubbles.
 - **Firing:** The pot is sun-dried and kiln-fired for durability and resonance.
 - **Membrane Preparation:** Traditionally used monitor [lizard skin](#) (now banned) and replaced with goat, buffalo skin, or synthetic materials.
 - **Assembly & Tuning:** Membrane is stretched, tied with coir rope, and tuned for the desired sound quality.
- **Features:**
 - **Construction:** Handmade clay pot (ghumat), tuned skin membrane (earlier monitor lizard skin, now goat or synthetic).
 - **Sound:** Produces **sharp, earthy beats** integral to **Goan folk music**.
 - **Techniques:** Requires skilled tapping to achieve **perfect resonance**—knowledge of rhythm crucial.
 - **Legal Shift:** Post-2019, usage of monitor lizard skin prohibited under Wildlife Protection Act, 1972 and artisans adapted to legal alternatives.
 - **Ghumot is neither a [Hindustani classical](#) nor a [Carnatic classical](#) music instrument** in the strict sense.
- **Importance of Ghumot in Music:**
 - **Cultural Symbol:** Central to Goa’s folk identity—played in [Sao Joao festival](#), Ganesh Chaturthi, Shigmo, Mandos, and Catholic pre-wedding rituals.
 - **Secular Role:** Used across religious, caste, and social groups—bridging communities through music.
 - **Revival Efforts:** Artisans and cultural curators promote Ghumot with new designs, legal skins, and international

showcases.

- **Socio-economic Relevance:** Revitalizing Ghumot-making can support local artisans and preserve Goa’s intangible heritage.

KOLHAPURI CHAPPAL

Context:

India’s traditional Kolhapuri chappal makers have objected to luxury brand Prada’s 2026 collection, alleging unauthorised imitation of their heritage footwear design.



About Kolhapuri Chappal:

- **What it is?**
 - Kolhapuri chappals are **handcrafted leather sandals**, known for their durability, intricate design, and distinct open-toe, T-strap structure.
- **Region of Origin:** Traditionally made in **Kolhapur and adjoining districts** in Maharashtra and parts of **Karnataka**, such as Belgaum, Bagalkot, and Dharwad.
- **GI Tag:**
 - Received [Geographical Indication](#) (GI) status in **2019**.
 - Jointly registered by artisans from **Maharashtra and Karnataka**.
 - The GI tag ensures only registered producers can market products under the “Kolhapuri” name.
- **History & Cultural Significance:**
 - Traces back to **13th century** during the rule of King Bijjala and Basavanna.
 - Symbolizes [rural craftsmanship](#) and **sustainable fashion**, often passed down through generations.
- **Unique Features:**

- Made using **vegetable-tanned buffalo hide** without nails.
- Designs include traditional motifs and braided leather straps.
- The chappals are **eco-friendly**, breathable, and long-lasting.
- **GI Issue:**
 - GI laws protect origin-linked naming and collective practices.
 - However, **monetary compensation** isn't permitted unless **name or production process** is misused.
 - Since Prada didn't use the term [Kolhapuri](#), infringement claims are weak under current frameworks.
 - **Structural IP Issues:**
 - IP laws favour individual ownership, not community-based traditions.
 - Traditional crafts lack documentation, novelty, and defined ownership—making them ineligible under patents or copyrights.

AMBUBACHI MELA 2025

Context:

Thousands of devotees are attending the Ambubachi Mela 2025 at Assam's Kamakhya Temple, which celebrates the annual menstruation of [Goddess Kamakhya](#), a key event in Tantrik Shaktism.



About Ambubachi Mela 2025:

- **What is it?**
 - **Ambubachi Mela** is an annual religious festival held at **Kamakhya Temple**, Guwahati.
 - It marks the **menstrual cycle of Goddess Kamakhya**, symbolising the fertility of the earth.
 - The term "Ambubachi" means "water flowing," linking the festival with **monsoon**

rains and fertility.

- **Uniqueness of Ambubachi Mela:**
 - No idol is worshipped—the **natural process of menstruation** is revered.
 - Temple remains closed during the period and reopens ceremonially.
 - Fertility and agriculture-related practices pause during this time, highlighting the festival's deep socio-cultural significance.
 - **Cloth pieces stained with symbolic marks** are distributed as protective amulets.

About Kamakhya Temple:

- **What is it?**
 - One of the most sacred **Shakti Peethas** and a major Tantric worship site in India.
 - Symbolises the union of Aryan and non-Aryan spiritual practices.
- **Location:** Situated on **Nilachal Hills**, around 7 km from Guwahati city, Assam.
- **Built by:**
 - The original structure was destroyed by **Kala Pahar**.
 - Reconstructed in **1565** by **Chilarai**, king of the [Koch dynasty](#).
- **History & Legends:**
 - Linked to the legend of **Sati**, whose reproductive organ is believed to have fallen here.
 - Associated with Goddess Kali and other forms of Shakti—Sundari, Tripura, Tara, Bagalamukhi, Chinnamasta, among others.
- **Architecture:**
 - Comprises **three chambers**:
 - Rectangular western chamber
 - Square middle chamber (with inscriptions and images of Naranarayana)
 - Inner cave-like chamber housing the **yni-shaped cleft** with a natural spring flowing through.
 - Also houses temples dedicated to [Lord Shiva](#) (five temples) and **Lord Vishnu** (Kedara, Gadadhara, Pandunath).

Syllabus: Modern History

SERVANTS OF INDIA SOCIETY

Context:

The [Gokhale Institute of Politics and Economics](#) (GIPE) has demanded the appointment of a neutral administrator for

the Servants of India Society (SIS), citing alleged financial mismanagement.



About Servants of India Society:

- **What is SIS?**
 - The Servants of India Society (SIS) is a historic socio-political organisation committed to public service, civic engagement, and national education. It aimed to build a cadre of selfless leaders devoted to the upliftment of India.
- **Established on:** June 12, 1905 (2025 marks its 120th Anniversary as well)
- **Place:** Pune, Maharashtra
- **Founders:** [Gopal Krishna Gokhale](#), G.K. Devadhar, A.V. Patwardhan, N.A. Dravid
- **Objectives:**
 - Train individuals for public service in a religious and nationalistic spirit.
 - Promote education, civic duty, and political awareness through constitutional means.
 - Encourage youth engagement in national development.
- **Activities in Pre-Independence Era:**
 - Played a pivotal role in India's freedom movement through political education.
 - Produced leaders like V.S. Srinivasa Sastri, Hriday Nath Kunzru, A.V. Thakkar.
 - Gokhale mentored Gandhi and also funded Sabarmati Ashram's setup.
 - Advocated constitutional reforms, social service, and nation-first ethics.
- **Post-Independence Contributions:**
 - Expanded focus to education, [women's rights](#), rural upliftment, and disaster relief.
 - Operates schools, rural development programs, and child welfare initiatives.
 - Promotes sustainable agriculture, clean

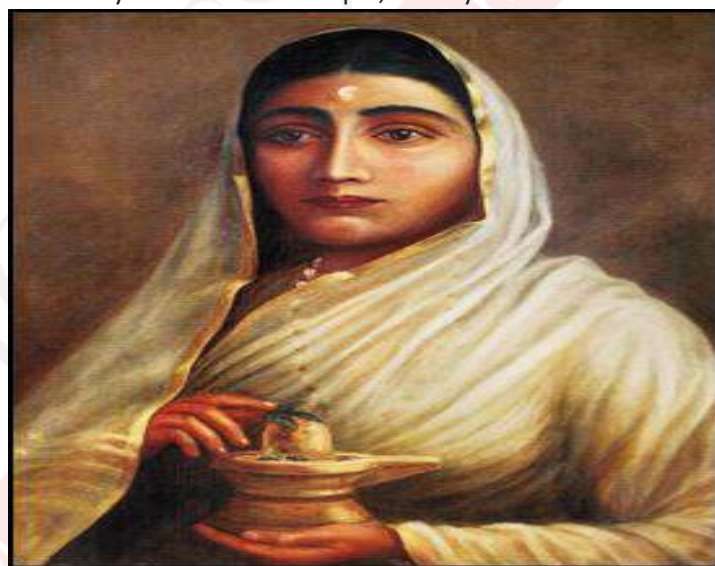
water access, and healthcare camps.

- Stands for gender justice, fighting child marriage, widow discrimination, and inheritance inequality.
- Gokhale Institute of Politics and Economics, a [UGC](#)-affiliated body founded under Servants of India Society.

LOKMATA DEVI AHILYABAI HOLKAR

Context:

Prime Minister of India addressed the Mahila Sashaktikaran Mahasammelan on the 300th birth anniversary of Lokmata Devi Ahilyabai Holkar in Bhopal, Madhya Pradesh.



About Lokmata Devi Ahilyabai Holkar:

- **Born:** 31 May 1725, Chondi village, Ahmednagar (Maharashtra).
- **Father:** Mankoji Rao Shinde, village head who educated her.
- **Married:** Khanderao Holkar, son of **Malhar Rao Holkar** of the Malwa kingdom.
- Became ruler of Malwa in **1767** after approval from the [Peshwa](#).
- **Kingdom and Reign:**
 - Ruled over the [Malwa region](#), capital at **Maheshwar (Madhya Pradesh)**.
 - Known for wise, just, and inclusive governance during politically volatile times.
 - Personally led military campaigns and **founded the Holkar army** in 1792.
- **Administrative & Governance:**
 - Held **daily public audiences** to address people's grievances.
 - Introduced **public welfare reforms** focusing on: Farmers, Artisans, and Tribal communities.

- Promoted **irrigation**, [crop diversity](#), and **rural entrepreneurship**.
- **Cultural & Religious Contributions:**
 - Rebuilt and restored **hundreds of temples**, including: Kashi Vishwanath Temple (1780) and Somnath Temple (Old Juna Mandir).
 - Commissioned **ghats, tanks, wells, and dharamshalas** across India.
 - Built two **Jyotirlinga temples** and extended religious support nationally.
- **Social Reforms & Women Empowerment:**
 - Advocated:
 - Raising minimum age of marriage for girls
 - Property rights for women
 - Widow remarriage
 - Formed **women's army** and village-level **safety units**.
- **Nation-Building Initiatives:**
 - Constructed roads and **rest houses** across pilgrimage routes: Rameshwaram, Haridwar, Kashi, Somnath
 - Established **gurukuls and schools** to promote **education**.
- **Legacy:**
 - **Died:** 13 August 1795, aged 70.
 - Founded the **Maheshwari saree textile industry**, still famous today.
 - Known as the '[Philosopher Queen](#)' for her wisdom and spiritual outlook.
 - Remembered for combining **development with dharma (duty)**.
 - Her work continues to influence India's **cultural preservation** and **grassroots governance**.



About Bhagwan Birsa Munda:

- **Who Was Birsa Munda?**
 - A revered tribal freedom fighter, reformer, and folk hero, also called "Dharti Aaba" (Father of the Earth).
 - Born on 15 November 1875 in Ulihatu, Chotanagpur Plateau (present-day Jharkhand), he belonged to the Munda tribe.
- **Early Life and Influences:**
 - Educated in Christian missionary schools in **Chaibasa**, later disillusioned with British influence.
 - Deeply inspired by [Vaishnavism](#) and tribal spiritual traditions, he established the **Birsait sect**, attracting tribal masses.
- **Contribution to the Freedom Movement:**
 - **Fought Against Zamindari Exploitation:** Exposed how the British-imposed zamindari system destroyed the Khuntkatti tribal land ownership, turning tribals into landless bonded labourers.
 - **Defended Tribal Land Rights:** Mobilized tribals against forced labour (beth begari), forest exploitation, and revenue policies that stripped them of community-owned resources.
 - **Cultural and Spiritual Revivalist:** Founded the **Birsait sect**, blending tribal traditions with Vaishnavism, and condemned social evils like black magic and alcoholism among tribes.
 - **Educated Tribals on Colonial Injustice:** Raised **consciousness about British atrocities**, urging tribal pride, self-rule, and cultural resistance to Dikus (outsiders).
 - **Symbol of Tribal Unity and Justice:** Emerged as a **voice of resistance** for tribal dignity, inspiring regional revolts and a vision for an egalitarian tribal raj rooted in indigenous systems.

BHAGWAN BIRSA MUNDA

Context:

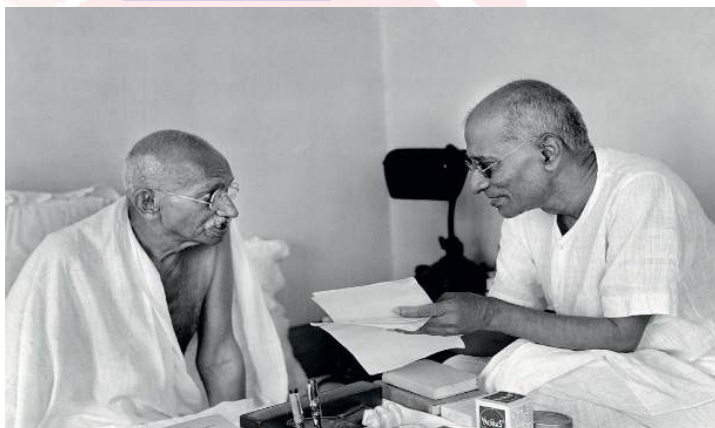
Prime Minister of India paid tribute to Bhagwan Birsa Munda on his 125th death anniversary (Balidan Diwas), praising his role in tribal empowerment and anti-colonial resistance.

- **Ulgulan Movement – The Great Tumult (1895–1900):**
 - **Launched Anti-British Rebellion:** Led the Ulgulan (Great Tumult) to fight colonial oppression across Jharkhand, Odisha, and Bengal, mobilizing Munda, Oraon, and Kharia tribes.
 - **Used Guerrilla Warfare:** Adopted guerrilla tactics to target British outposts, churches, and police stations, attacking the symbols of colonial and missionary power.
 - **Propagated a Vision of Tribal Raj:** Raised the iconic slogan: “Abua Raj setar jana, Maharani Raj tundu jana” (“End the Queen’s rule, let our rule begin”), calling for self-governance.
 - **Symbolic Use of Tribal Identity:** Used traditional tribal attire, drums, and flags to unify people and restore pride in their ancestral customs and governance systems.
 - **Martyrdom and Aftermath:** Arrested in 1895 and died in Ranchi Jail in 1900. His movement influenced the [Chotanagpur Tenancy Act \(1908\)](#), securing tribal land rights.
- **Legacy & Recognition:**
 - Honoured as “**Bhagwan**” for his courage and cultural leadership.
 - Institutions named after him: Birsa Agricultural University, Birsa Institute of Technology, etc.
 - Government of India declared **November 15 as Janjatiya Gaurav Diwas (Tribal Pride Day)** in 2021.

SREE NARAYANA GURU

Context:

Prime Minister will inaugurate the centenary celebration of the historic 1925 conversation between Sree Narayana Guru and [Mahatma Gandhi](#).



About Sree Narayana Guru:

- **Who He Was?**
 - **Sree Narayana Guru (1856–1928)** was a **saint, philosopher, poet, and social reformer** from Kerala.
 - A key figure in the movement against the caste system and untouchability in India.
- **Birth:**
 - Born in **Chempazhanthy**, near **Thiruvananthapuram, Kerala**.
 - Belonged to the [Ezhava community](#), a lower-caste group subject to discrimination.
- **Contribution in Freedom Struggle:**
 - His reformist ideals inspired **national leaders** like **Mahatma Gandhi** and influenced Kerala’s **anti-caste and anti-untouchability movements**.
 - Played an important role in [Vaikom Satyagraha](#), a key event in the freedom struggle linked to civil rights.
 - Advocated **non-violence** and **equality** aligning with the broader values of India’s independence movement.
- **Philosophies:**
 - Preached **universal brotherhood**: “One Caste, One Religion, One God for humanity.”
 - Emphasised **education, spiritual growth, and moral upliftment**.
 - Advocated religious harmony: “Whichever be the religion of a man, it suffices if it makes him a better man.”
- **Major Social Reforms:**
 - **Consecrated a Shiva Lingam** at [Aruvippuram](#) (1888), breaking Brahmin monopoly in temple worship.
 - Founded **over 40 temples** across Kerala, accessible to all castes.
 - Established **Sivagiri Mutt** (1904) and **Aluva Ashram** (1914) to promote education and comparative religion studies.
 - Founded [SNDP Yogam](#) (1903), an organisation for the social and economic upliftment of lower castes.
 - Championed education for the marginalised through **schools, colleges, libraries, and literary clubs**.
- **Literary Works:**
 - Narayana Guru authored important philosophical and devotional works such as *Advaitha Deepika*, *Atmavilasam*, *Daiva Dasakam*, and *Brahmavidya Panchakam*.

Syllabus: Post-Independence-consolidation and Reorganisation

50TH ANNIVERSARY OF THE DECLARATION OF EMERGENCY

Context:

25 June 2025 marks the 50th anniversary of the declaration of Emergency (1975–77), prompting national reflection on its impact on India's democracy and constitutional framework.



About 50th anniversary of the declaration of Emergency:

- **What it is?**
 - The Emergency was declared under [Article 352](#) on **25 June 1975**, citing “internal disturbance”, suspending civil liberties and altering governance structures across India.
- **Period:** Lasted from 25 June 1975 to 21 March 1977.
- **Events Leading to the Emergency:**
 - Growing unrest from **student agitations**, inflation, unemployment and corruption allegations.
 - Major protests led by **Jayaprakash Narayan (Total Revolution)** across Bihar and Gujarat.
 - **Allahabad High Court (12 June 1975)** convicted PM Indira Gandhi of electoral malpractice; calls for her resignation intensified.
- **Key Events During the Emergency:**
 - **Article 358 & 359** invoked — suspending **Fundamental Rights** (Articles 14, 19, 21, 22).
 - Over **35,000 political prisoners** detained under MISA.
 - **Severe media censorship** enforced and newspapers and films tightly controlled.
 - **Sterilisation campaign:** Over **1.07 crore procedures** conducted (1975–77), with coercion reported.

- **42nd Constitutional Amendment:** Strengthened executive, curtailed judicial review, extended Lok Sabha terms to **6 years**.

- **Post-Emergency Developments:**

- Emergency ended in **March 1977** after Congress party's electoral defeat.
- **Shah Commission (1977)** exposed abuses — arbitrary arrests, forced sterilisation, media suppression.
- **44th Constitutional Amendment (1978):** Tightened Emergency provisions — replaced “internal disturbance” with “**armed rebellion**”, restored judicial oversight.

PRIME MINISTERS MUSEUM AND LIBRARY

Context:

The Prime Ministers Museum and Library (PMML) resolved to pursue legal action for the return of Jawaharlal Nehru's Private Papers taken by Sonia Gandhi in 2008, calling them a national treasure.



About Prime Ministers Museum and Library (PMML):

- **What it is?**
 - PMML is a premier autonomous institution in New Delhi dedicated to advanced research on modern and contemporary Indian history, housing extensive archival collections.
- **Established in:** Founded in **1966** by the Government of India.
 - Formally inaugurated on November 14, 1964, as the [Nehru Memorial Museum](#), dedicated to India's first Prime Minister.
- **Governance structure:**
 - Governed by the **Prime Ministers Museum and Library Society** under the **Ministry of Culture**.

- President and Vice-President of the Society are **nominated by the Central Government**.
- **Objective:**
 - To **preserve, document, and promote** scholarly research on modern Indian history and [governance](#).
 - To foster understanding of **Jawaharlal Nehru's ideals** and India's independence movement.
- **History:**
 - Located at the [Teen Murti House](#), erstwhile residence of Nehru (1948–1964).
 - Library building added in **1974**, Annexe and Centre for Contemporary Studies in **1989–1990**.
- **Functions:**
 - Curates **Private Papers** of over **1,000 national figures** (e.g., Gandhi, Ambedkar, Azad).
 - Hosts lectures, seminars, and publications on modern history and public policy.
 - Provides public access to archives for **Indian and international scholars**.
 - Manages significant collections, including official correspondence, manuscripts, rare books, and personal papers.
- **Significance:**
 - It is India's foremost academic centre on modern history and the evolution of its polity.
 - Acts as a repository of national memory, shaping public discourse and democratic thought.
 - Enhances public awareness of the [Constitutional values](#) and contributions of key leaders.

[Syllabus: Women, Social Empowerment, Communalism, Regionalism & Secularism.](#)

GLOBAL GENDER GAP REPORT 2025

Context:

India slipped to 131st position out of 148 countries in the Global Gender Gap Report 2025, released by the [World Economic Forum](#) (WEF), highlighting persistent challenges in gender equality.

Race to equality

The report said the global gender gap has closed to 68.8%. Below are the rankings of select countries:



Top 10 countries

1	Iceland
2	Finland
3	Norway
4	United Kingdom
5	New Zealand
6	Sweden
7	Republic of Moldova
8	Namibia
9	Germany
10	Ireland

India and its neighbours

Bangladesh	24
Bhutan	119
Nepal	125
Sri Lanka	130
India	131
Maldives	138
Pakistan	148

Bangladesh, with a ranking of 24, emerged as the best performer in South Asia

Report said full parity remains **123 years** away at current rates

About Global Gender Gap Report 2025:

- **What It Is?**
 - An annual report that benchmarks gender parity across countries, helping track progress toward closing gender gaps.
- **Published By:** World Economic Forum (WEF)
- **Assessment Criteria:** Economic Participation and Opportunity, Educational Attainment, Health and Survival, and [Political Empowerment](#).
- **Features:**
 - **19th edition** covering **148 economies**
 - Global gender gap **closed to 68.8%**, but **full parity still 123 years away**
 - Aims to **inform policy** by highlighting both progress and setbacks
 - Uses a **parity score** (0–100%) to reflect gender equality across sectors

About India's Status in Global Gender Gap Report 2025:

- **Current Rank:**
 - 131st out of 148 countries (slipped from 129th in 2024)
 - **Parity Score:** 64.1% (among the lowest in South Asia)
- **Positives:**
 - [Economic Participation](#) improved by **0.9 points** to **40.7%**, with earned income parity rising to 29.9%

- **Educational Attainment** score reached **97.1%**, driven by improved female literacy and tertiary enrolment
- **Health and Survival** showed gains due to better **sex ratio at birth** and **healthy life expectancy**
- **Negatives:**
 - **Political Empowerment** fell for the **second consecutive year**
 - Female MPs dropped from **14.7% to 13.8%**
 - Women ministers fell from **6.5% to 5.6%**
 - Overall gender parity **worsened**, with declining representation in public **leadership** roles
- **Regional Comparison:**
 - **Bangladesh:** Best in South Asia, ranked **24th globally**
 - **Other Neighbours:** Nepal (125), Sri Lanka (130), Bhutan (119), Maldives (138), Pakistan (148 - last)

Syllabus: Miscellaneous

ICC CRICKET HALL OF FAME 2025

Context:

Former India [captain MS Dhoni](#) has been inducted into the ICC Cricket Hall of Fame 2025, becoming the **11th Indian** to receive this global honour.

- He joins six other cricketing legends, including two women players, in the elite 2025 inductee list.



About ICC Cricket Hall of Fame 2025:

- **What is It?**
 - The ICC Hall of Fame is a prestigious global recognition platform that honours cricketing legends for their historic contributions to the game across generations and countries.
- **Establishment:**
 - **Launched on January 2, 2009** by the [International Cricket Council](#) (ICC) in partnership with the Federation of International Cricketers' Associations (FICA).
 - It absorbed **55 players** initially honoured by FICA (1999–2003), plus 5 new additions in 2009.
- **Eligibility & Criteria:**
 - Cricketers become eligible **five years after retirement** from international cricket.
 - Induction is based on **overall impact, records, consistency, leadership, and influence** on the game.
 - Both men and women across formats are eligible.
- **Key Features:**
 - **Recognition across eras:** The Hall of Fame includes legends from pre- and [post-World War](#) cricket history.
 - **Global representation:** Celebrates players from all Test-playing nations, including emerging women cricketers.
 - **Commemorative Cap:** Each inductee receives a special **Hall of Fame cap** symbolizing their legacy.
 - **Annual Ceremony:** Inductions are announced annually, often around ICC events or milestones.
- **Indian Cricketers in the ICC Hall of Fame**
 - **Total Indian inductees:** 11
 - **Notable names include:** Bishan Singh Bedi (2009), Kapil Dev (2009), Sunil Gavaskar (2009), Anil Kumble (2015), Rahul Dravid (2018), Sachin Tendulkar (2019), Vinoo Mankad (2021), Virender Sehwag (2023), and MS Dhoni (2025).
 - **Women Inductees from India:**
 - Diana Edulji (2023)
 - Neetu David (2023)

FACTS FOR PRELIMS

(FFP) GS-2:

Syllabus: Federalism & Related Issues

BANAKACHERLA PROJECT

Context:

A new inter-state water conflict has emerged between Telangana and Andhra Pradesh over the Banakacherla reservoir project, with Telangana alleging violation of the Andhra Pradesh Reorganisation Act, 2014.



About Banakacherla Project:

- The Banakacherla Reservoir Project is a proposed irrigation infrastructure by the Andhra Pradesh government aimed at diverting surplus [Godavari River water](#) to address drought conditions in Rayalaseema.
- **Location:**
 - Banakacherla, Nandyal district, Andhra Pradesh
 - The project plans to channel water from the **Godavari** via the **Krishna River system**.
- **States Involved:** Andhra Pradesh (Project implementing state) and Telangana (Objecting state).
- **Project Features:**
 - **River Diversion Plan:**
 - Enhances the [Polavaram Right Main Canal](#) capacity (from 17,500 to 38,000 cusecs).
 - Increases **Thatipudi Lift Canal** capacity (from 1,400 to 10,000 cusecs).
 - Constructs a reservoir at **Bollapalli** to lift and channel water to Banakacherla via a tunnel through **Nallamala forest**.

○ **Lift Points:**

- Five major lift stations: Harischandrapuram, Lingapuram, Vyyandana, Gangireddypalem, and Nakirekallu.

○ **Linking Rivers:**

- Connects **Godavari** to [Krishna](#) to **Penna**, aiding water transfer to Rayalaseema.

• **Key Issues Raised by Telangana:**

- **Violation of Reorganisation Act:** Telangana claims the project violates the [AP Reorganisation Act, 2014](#), which mandates prior approvals for such inter-basin projects.
- **Lack of Regulatory Approvals:** The project hasn't received clearance from the Krishna River Management Board (KRMB), Godavari River Management Board (GRMB), or the Central Water Commission (CWC).
- **Godavari Tribunal Allocation Ignored:** Telangana was allocated 968 TMCft out of 1,486 TMCft by the Godavari Water Disputes Tribunal, and surplus estimation hasn't been formalized.
- **Threat to Telangana Projects:** Telangana fears that diversion would impact its own irrigation schemes and reservoirs dependent on Godavari water.

Syllabus: Constitutional, Statutory, Quasi-Judicial Bodies

ELECTION COMMISSION OF INDIA VOTER TURNOUT REFORM

Context:

The Election Commission of India (ECI) has announced a new digital reform to report voter turnout in real-time using its ECINET app.



About Election Commission of India Voter Turnout Reform:

- **What is the Reform?**

- A tech-driven voter turnout reporting system allowing real-time updates from each polling booth directly through the ECINET app.
- Aims to eliminate manual data relay delays and strengthen public trust in the electoral process.

- **App Used:**

- ECINET is the Election Commission's integrated mobile application, consolidating 40+ internal apps and platforms.
- It allows presiding officers to update voter turnout every two hours, directly from polling stations.
- Data can be uploaded offline and synced later, ensuring coverage even in low-network areas.

- **Key Features of the New System:**

- Presiding officers will enter data directly into ECINET instead of routing through sector and returning officers.
- Automatic constituency-level aggregation ensures faster and accurate display of polling trends.
- Approximate turnout percentages will now be public shortly after polls close, subject to connectivity.
- System significantly reduces the time lag from hours/days to real-time or near-real-time visibility.
- Manual delays from previous elections, where data was updated days later, will be minimized.

- **Significance for Governance:**

- **Enhances Electoral Transparency:** Responds to public and political concerns of data manipulation.
- **Promotes Digital Governance:** Aligned with India's e-governance initiatives in democratic processes.
- **Boosts Voter Trust:** Quick data visibility builds public confidence in ECI's impartiality.
- **Strengthens Institutional Credibility:** Reaffirms ECI's commitment to free and fair elections.
- **Improves Data Accuracy:** Direct digital entry reduces human error and inconsistent reporting.

LOKPAL OF INDIA

Context:

The Full Bench of the Lokpal of India adopted a new motto: "Empower Citizens, Expose Corruption".

- The new motto replaces the older one as part of efforts to enhance institutional visibility and public outreach.



About Lokpal of India:

- **What is it?**

- The Lokpal of India is an independent statutory body established under the Lokpal and Lokayuktas Act, 2013 to inquire into allegations of corruption against public functionaries.

- **Establishment:** The Act came into effect on 16th January 2014, after decades of legislative deliberation and public demand for a central anti-corruption authority.

- **Headquarters:** Located at Vasant Kunj, New Delhi.

- **Motto:**

- **Old Motto:** *Ma Gridhah Kasyasvid Dhanam* (Do not be greedy for anyone's wealth)
- **New Motto:** "Empower Citizens, Expose Corruption"

- **Composition:**

- One **Chairperson** (former CJI or Supreme Court Judge).
- Up to **8 Members** (4 Judicial + 4 non-judicial).
- Appointed by the President based on recommendations from a high-level **Selection Committee**.

- **Jurisdiction:**

- Can investigate complaints against:
 - **Prime Minister**, Ministers, MPs
 - **Group A–D central government employees**

- Officials of bodies partially/fully funded by the Government of India
- Individuals or entities receiving foreign contributions (above ₹1 crore/year)
- **Functions & Powers:**
 - Inquire into corruption cases under the [Prevention of Corruption Act, 1988](#).
 - Authorised to **sanction prosecution, attach property, and recommend suspension or transfer** of officials.
 - Can **summon witnesses, seize documents, and exercise civil court powers**.
 - Supervises **CBI** in cases it refers for investigation.
 - Engages with other government agencies for inquiry and enforcement.

SPECIAL INTENSIVE REVISION OF ELECTORAL ROLLS

Context:

The [Election Commission of India](#) (ECI) has initiated a Special Intensive Revision (SIR) of electoral rolls in Bihar, requiring all voters to submit enumeration forms, and post-2003 entrants to provide proof of [citizenship](#).



About Special Intensive Revision of Electoral Rolls:

- **What is SIR?**
 - A **comprehensive, house-to-house verification process** to update electoral rolls afresh, ensuring accuracy and **citizenship validation**.
 - Legally enabled under **Section 21(3) of the Representation of the People Act, 1950**, and governed by [Article 324\(1\)](#) of the Constitution.

• **Objective:**

- To **weed out ineligible or duplicate voters**, including illegal immigrants.
- To **ensure only genuine Indian citizens** above 18 years are on the rolls.

• **Why It's Needed?**

- Massive additions and deletions over 20 years.
- Urbanisation and migration have led to **multiple registrations** by individuals.
- Concerns about **illegal immigrants and demographic manipulation** in border states like Bihar.

• **Key Features:**

- **Applies to all voters**, with added scrutiny for those registered post-2003.
- Requires **enumeration forms and proof of birth/citizenship** (passport, birth certificate, parental documents, etc.).
- **Voters born:**
 - **Before July 1, 1987:** Own birth document.
 - **1987–2004:** Personal + one parent's proof.
 - **Post-2004:** Personal + both parents' documents.
- **Digital Options:** Forms available via [ECINET app](#) or official ECI website for online submission.
- **Significance:**
 - Ensures electoral roll integrity, a vital part of democratic functioning.
 - Strengthens public trust in elections and prevents voter fraud.
 - Paves the way for a nationwide [voter verification](#) drive post-Bihar.

16TH FINANCE COMMISSION

Context:

Shri T. Rabi Sankar, Deputy Governor of RBI, has been appointed as a part-time Member of the 16th Finance Commission (XVIFC) following the resignation of Shri Ajay Narayan Jha.

About 16th Finance Commission:

What is the Finance Commission?

- A constitutional body constituted under Article 280 of the Indian Constitution.
- It recommends the distribution of tax revenues

between the Union and States and evaluates fiscal needs of local bodies.

Establishment and Tenure:

- The 16th Finance Commission (XVIFC) was set up on 31 December 2023.
- It is tasked with giving recommendations for the **award period from 1 April 2026 to 31 March 2031**.

Composition of 16th Finance Commission:

Member Name	Designation
Dr. Arvind Panagariya	Chairman, Former NITI Aayog Vice-Chairman
Dr. Manoj Panda	Full-time Member, Economist
Smt. Annie George Mathew	Full-time Member, Ex-Spl. Secretary, Finance
Dr. Soumya Kanti Ghosh	Full-time Member, Group Chief Economist, SBI
Shri T. Rabi Sankar	Part-time Member, Deputy Governor, RBI

Terms Of Reference for 16th Finance Commission:

- Distribution of Tax Revenues** between Centre and States under Part XII of the Constitution.
- Principles for Grant-in-aid** under Article 275 for revenue support (excluding specific purposes).
- Measures to augment State Consolidated Funds** to support Panchayats and Municipalities, as per State Finance Commission's recommendations.

Administrative Details:

- Qualifications for Members (As per Finance Commission Act, 1951):**
 - Members must have:
 - Judicial or high court experience, or
 - Expertise in finance, economics, administration, or
 - Knowledge of government finance and accounts.
- Disqualifications:**
 - A person is disqualified if:
 - Of **unsound mind, undischarged insolvent**, or
 - Convicted of **moral turpitude**, or
 - Holds **conflicting financial interests** affecting impartiality.
- Term of Office:**
 - Tenure as per Presidential notification and eligible for **reappointment**.
 - Members can **resign via letter** to the President.
- Powers And Functions:**
 - The Commission acts with **civil court powers** under **Code of Civil Procedure, 1908**, for: Summoning witnesses, requiring documents, requisitioning records, and seeking public authority cooperation.
 - Can demand information from individuals and institutions relevant to its mandate.
 - Has jurisdiction **across India**.

AIRCRAFT ACCIDENT INVESTIGATION BUREAU (AAIB)

Context:

A tragic Air India aircraft crash near [Ahmedabad airport](#) has prompted the Aircraft Accident Investigation Bureau (AAIB) to launch a formal probe, following global ICAO standards.



About Aircraft Accident Investigation Bureau (AAIB):

- What is AAIB?**
 - A statutory investigative body responsible for probing aircraft accidents and serious incidents in Indian airspace.
- Headquarters:** New Delhi
- Ministry:** Ministry of Civil Aviation
- Established:** 30 July 2012
- Legal Basis:** Aircraft (Investigation of Accidents and Incidents) Rules, 2017
- Global Linkage:** Annex 13 of the [Chicago Convention \(1944\)](#) under ICAO
- Mandate and Jurisdiction:**
 - Investigates **accidents/serious incidents** involving:
 - Aircraft with **AUW > 2,250 kg**
 - All **turbojet aircraft**
 - May investigate smaller aircraft cases if necessary for public safety.
- Core Functions:**
 - Investigation & Classification:** Categorises aviation occurrences into accidents, serious incidents, and incidents.
 - Final Reports:** Prepares public reports after DG's approval; forwarded to ICAO and affected States.
 - Safety Recommendations:** Sent to [DGCA](#) or foreign regulators for policy-level implementation.
 - Safety Studies:** Analyzes systemic aviation risks and recommends long-term reforms.
 - Legal Support:** Assists courts and assessors as per Rule 12 of 2017 Rules.

IREL (INDIA) LIMITED

Context:

India has directed IREL (India) Ltd to suspend its 13-year-old rare earth supply agreement with Japan, aiming to prioritize domestic needs and reduce dependence on Chinese processing chains.



About IREL (India) Limited:

- **What It Is?**
 - IREL (India) Limited is a Public Sector Undertaking (PSU) under the Department of Atomic Energy, engaged in mining, separation, processing, and extraction of rare earths and atomic minerals.
- **Established In:**
 - **Incorporated:** 18 August 1950 (as Indian Rare Earths Limited)
 - Became a full Government of India enterprise in **1963**
- **Headquarters:** Mumbai, Maharashtra
- **Ministry:** Administrative control of the **Department of Atomic Energy (DAE)**
- **Status & Recognition:**
 - Recognized as a profit-making CPSE (Central Public Sector Enterprise) since 1997–98
 - Notified as a Mini Ratna Category-I PSU
- **Core Objective:** To explore, mine, process, and commercialize rare earths and strategic minerals essential for India's energy, defence, electronics, and EV sectors.
- **Key Functions & Roles:**
 - **Mineral Separation Units:** Operates major complexes like **OSCOM** (Odisha), **Chavara** (Kerala), and **MK** (Tamil Nadu)
 - **Rare Earth Extraction & Refining:**
 - Odisha unit produces ~11,000 tonnes of rare earth concentrate
 - Aluva (Kerala) plant refines **high-**

purity **rare earth oxides**

- **Support to Indigenous Industry:**
 - Supplies minerals like **Ilmenite, Zircon, Rutile, Sillimanite, Garnet**
 - Facilitating value-chain industries in **Rare Earths and Titanium** (e.g., Theme Park in Bhopal)
- **Research & Development:** In-house R&D division at Kollam, Kerala supports innovation in mineral and chemical processing.
- **Exports & Trade:**
 - Exported ₹962 crore worth of minerals in FY 2023–24.
 - Previously supplied **neodymium** and other critical materials to Japan for high-tech and **EV industries**.

NATIONAL TURMERIC BOARD INAUGURATED IN TELANGANA

Context:

The Union Home Minister inaugurated the headquarters of the National Turmeric Board in Nizamabad, Telangana, fulfilling a 40-year-old demand of turmeric farmers.



About National Turmeric Board Inaugurated in Telangana:

- **What is it?**
 - A specialized statutory body set up by the Government of India to promote, regulate, and support the turmeric sector, from production to export.
- **Headquarters:** Nizamabad, Telangana – a key **turmeric**-producing region known as the “Turmeric Capital of India.”
- **Ministry Involved:** Operates under the Ministry of Commerce and Industry with coordination from Ministry of AYUSH, Agriculture, Pharmaceuticals, and Cooperation.

- **Governing Body (Composition):**
 - Chairperson appointed by the **Central Government**
 - Secretary from the **Department of Commerce**
 - **Members from:**
 - Ministries of **AYUSH, Agriculture, Commerce, Pharmaceuticals**
 - Representatives from **top turmeric-producing states** (Telangana, Maharashtra, Meghalaya)
 - Turmeric farmer representatives, exporters, and research institutions
- **Objectives:**
 - Facilitate value addition, branding, and marketing of turmeric products
 - Eliminate middlemen and enhance farmer income
 - Promote global awareness of turmeric's medicinal properties
 - Enhance logistics and quality standards to match international benchmarks
 - Provide training, skill development, and research for [turmeric cultivation](#) and usage
- **Key Functions:**
 - Develop end-to-end export infrastructure for turmeric.
 - Promote [GI-tagged](#) organic turmeric.
 - Ensure compliance with international food and safety standards.
 - Coordinate with Spices Board and cooperatives like National Cooperative Exports Limited and National Cooperative Exports Limited for turmeric exports.

About Status of Turmeric in India:

- **What is Turmeric?**
 - Turmeric (*Curcuma longa*) is a **rhizomatous herbaceous plant** known for its culinary, dyeing, and medicinal uses. It is called the "**Golden Spice**" and is central to Indian agriculture and [Ayurveda](#).
- **Regions Where It is Grown:**
 - Grown across **20+ Indian states**.
 - **Major producers:** Maharashtra, Telangana, Karnataka, Tamil Nadu, Andhra Pradesh, Meghalaya
- **Climatic Conditions Required:**
 - Tropical crop requiring **20–30°C temperature** and **high annual rainfall**
 - Grows in **well-drained loamy soil**
 - Cultivation occurs in both **rain-fed and irrigated areas**

- **Production Overview:**
 - India produces over 75% of global turmeric, with 30+ indigenous varieties
 - **Area under cultivation (2022–23):** 3.24 lakh hectares
 - **Production (2022–23):** 11.61 lakh tonnes
 - **Export (2022–23):** 1.53 lakh tonnes valued at USD 207.45 million
 - **Export Targets:** USD 1 billion by 2030
 - **Major export destinations:** Bangladesh, UAE, USA, Malaysia

Syllabus: Parliament & State Legislatures

ESTIMATE COMMITTEE

Context:

Lok Sabha Speaker inaugurated the [National Conference of Estimates Committees](#) in Mumbai to commemorate 75 years of the Parliamentary Estimates Committee.



About Estimate Committee:

- **What it is?**
 - A key **financial oversight committee** of the Parliament of India that examines how government funds are allocated and spent, ensuring **economy, efficiency, and accountability**.
- **Established in:** 1950, post-Constitution, under the **Rules of Procedure of Lok Sabha**.
- **Members:** Consists of **30 Members of Parliament (Lok Sabha)** but Ministers are excluded.
- **Selection Process:** Members are **elected annually** by Lok Sabha members, through **proportional representation by means of a single transferable vote**.
 - The **Chairperson** is appointed by the **Lok Sabha Speaker**.
- **Term:** One-year term and term are renewable in nature

• **Key Functions**

- **Review government estimates:** Examines how money is allocated and suggests reforms for **economy and efficiency**.
- **Recommend policy improvements:** Proposes **alternative policies** for better public administration and budget management.
- **Evaluate spending efficacy:** Assesses whether public funds are being spent effectively as per **approved policies**.
- **Suggest improvements in presentation:** Recommends ways to improve how budget estimates are presented in Parliament.
- **Exclusions:** Does not review **Public Undertakings**—covered by a separate committee.

• **Working Process:**

- Committee selects estimates from **Ministries/Departments/statutory bodies** for scrutiny.
- Calls for information from **government and non-official sources**.
- Conducts **Study Visits** (on-ground assessments) with prior approval.
- Holds **formal evidence sessions** at Parliament.
- Publishes **Reports** to Lok Sabha with findings and recommendations.
- Government must respond within **six months** via **Action Taken Reports (ATR)**.

• **Achievements:**

- Since inception in **1950**, the Committee has presented **1184 reports**:
 - 656 Original Reports
 - 528 Action Taken Reports
- Covered almost all major Ministries and Departments.
- Contributed significantly to strengthening **financial oversight** and promoting fiscal accountability.

Syllabus: Government Policies & Interventions

REGISTRAR-GENERAL OF INDIA

Context:

The Registrar-General of India has issued a formal notification for conducting the [Census 2027](#), initiating boundary freezing and preparations.



About Registrar-General of India:

• **Who is the Registrar-General of India?**

- The Registrar-General and Census Commissioner of India (RGI) is the top authority for managing Census operations and civil registration across the country.
- Currently held by a senior [civil servant](#) of the rank of Additional Secretary, Ministry of Home Affairs.

- **Establishment & Ministry:** The post was formally established in **1961** under the **Ministry of Home Affairs**, Government of India.

• **Historical Background:**

- India's **first Census** was conducted in **1872**, and the first **synchronous decennial Census** was held in **1881**.
- Until 1961, the census was conducted via ad hoc arrangements, after which the RGI office became a permanent institution.

• **Key Functions of the RGI Office:**

○ **Population & Housing Census:**

- Conducts the decennial [Census of India](#) under the **Census Act, 1948**.
- Responsible for data planning, enumeration, tabulation, and dissemination.

○ **Civil Registration System (CRS):**

- Oversees compulsory **registration of births and deaths** under the **RBD Act, 1969**.
- Coordinates vital statistics with States and UTs.

○ **Sample Registration System (SRS):**

- Conducts **bi-annual sample surveys** to provide reliable estimates of **birth rate, death rate, IMR, and MMR**.
- Key source for demographic indicators at the state level.

- **National Population Register (NPR):**
 - Developed under the **Citizenship Act, 1955**, and **Citizenship Rules, 2003**.
 - Records details of all usual residents and currently includes **119 crore entries**.
- **Mother Tongue Survey of India:**
 - Documents consistently used **mother tongues across Census decades**.
 - Preserves India's linguistic diversity by mapping phonetic and cultural traits.

RELAXED KEY PROVISIONS OF THE SEZ RULES, 2006

Context:

The Government of India has relaxed key provisions of the SEZ Rules, 2006 to encourage semiconductor and electronics manufacturing.

- These changes aim to simplify land requirements, ease approvals, and enable domestic supply.

NEW SEZ APPROVALS FOR HIGH-TECH MANUFACTURING:



- 01 **Micron Semiconductor Technology India SEZ:**
 - **Location:** Sanand, Gujarat (37.64 ha)
 - **Investment:** ₹13,000 Cr (~US\$1.5 bn)
 - **Focus:** End-to-end semiconductor fabrication, assembly, testing —boosting India's chip-making capacity.
- 02 **Aequs (Hubballi Durable Goods Cluster) SEZ:**
 - **Location:** Dharwad, Karnataka (11.55 ha)
 - **Investment:** ₹100 Cr
 - **Focus:** Electronics-component manufacturing for domestic and export markets

About Relaxed Key Provisions of the SEZ Rules, 2006:

- SEZs are designated zones with special economic regulations that differ from the rest of the country to attract foreign and domestic investment, promote exports, and boost manufacturing.
- **Established under:** Special Economic Zones Act, 2005.
- **Administered by:** Ministry of Commerce and Industry, Government of India.
- **Governing Law:** Governed by the [SEZ Act, 2005](#) and

SEZ Rules, 2006.

Key Features of SEZ Rules, 2006:

- **Minimum Land Requirement:** Mandated minimum contiguous land area of 50 hectares for general SEZs and varied for sector-specific SEZs.
- **Export-Oriented Units:** SEZ units must primarily export their output, with net foreign exchange earnings as a key criterion.
- **Single-Window Clearance:** Ensures fast-track approvals and simplified compliance through a unified authority (Board of Approval).
- **Tax Incentives:** Income tax exemptions, customs duty waivers, and GST-related benefits for SEZ developers and units.
- **Encumbrance-Free Land:** Required land to be free from legal disputes or ownership issues for SEZ development.
- **Separate Customs Territory:** SEZs are treated as deemed foreign territory for trade operations, duties, and tariffs.
- **Recent Relaxations in SEZ Rules:**
 - **Land Requirement Eased:** Minimum land size reduced from 50 hectares to 10 hectares for semiconductor/electronic component SEZs.
 - **Encumbrance-Free Clause Relaxed:** SEZs can now be set up on land even with pending legal or administrative charges.
 - **Domestic Supply Permitted:** SEZ units in semiconductor and electronic sectors allowed to sell within India after paying duties.

NEW FASTAG-BASED ANNUAL PASS

Context:

Union Minister of Road Transportation announced that the new FASTag-based annual pass will roll out on August 15, offering smoother toll payments and reduced congestion for private vehicles on [national highways](#).



About New FASTag-Based Annual Pass:

- **What is FASTag?**
 - An electronic toll collection system that allows vehicles to pay highway tolls automatically using **RFID-based technology**, avoiding stops at toll booths.
- **Launched in:** Pilot in **2014** on the Ahmedabad-Mumbai corridor
- **Mandatory Since:** February 15, 2021 for all four-wheelers
- **Ministry Involved:** Ministry of Road Transport and Highways (MoRTH)
- **Implementing Agency:** National Highways Authority of India (NHAI)
- **Working Principle:**
 - FASTag is a **RFID-enabled sticker** fixed to a vehicle's windshield.
 - Linked to a **prepaid wallet or bank account**.
 - Toll amount is auto-deducted as the vehicle passes a **toll plaza**.
- **Key Features of FASTag:**
 - **Cashless & Contactless Tolling:** Enables automatic toll payments through RFID scanning, eliminating the need for cash transactions or stopping at toll booths.
 - **Reduced Congestion & Fuel Savings:** Speeds up vehicle movement at toll plazas, cutting idle time and reducing fuel wastage.
 - **Boosts Digital Transactions:** Encourages a fully digital toll payment ecosystem, aligned with India's Digital India vision.
 - **Vehicle-Specific & Non-Transferable:** Each **FASTag** is uniquely linked to a particular vehicle and cannot be transferred or used across multiple vehicles.
 - **Multiple Channels for Purchase:** FASTags are widely available via authorised banks, e-commerce platforms, mobile apps, and NHAI outlets, making it easy for users to obtain and recharge.

About FASTag-Based Annual Pass:

- **What is it?**
 - A prepaid toll passes worth ₹3,000 for non-commercial private vehicles such as cars, jeeps, and vans.
- **Key Features:**
 - **Validity:** 1 year from activation or **200 highway trips**, whichever is earlier.
 - Activated via **Rajmarg Yatra app** and **NHAI/MoRTH websites**.
 - **Reduces toll payments** in short stretches (within 60 km gaps between toll plazas).

- Lowers waiting time, congestion, and disputes at toll booths.
- Aims to simplify highway travel for frequent private vehicle users.

POLICY REFORMS TO BOOST THE EASE OF DOING RESEARCH

Context:

The Union Minister of Science & Technology announced sweeping policy reforms to boost the Ease of Innovation, Ease of Doing Research, and Ease of Science in India.



About Policy Reforms to Boost the Ease of Doing Research:

- **What is It?**
 - 'Ease of Doing Research' refers to removing bureaucratic hurdles and enabling faster, smoother, and more autonomous research activities in India's academic and scientific institutions.
- **Key Policy Launches & Features**
 - **Non-GeM Procurement Allowed:** Research bodies can now bypass the Government e-Marketplace (GeM) for **specialised scientific equipment**, speeding up procurement for unique tools not listed on GeM.
 - **Autonomy for Institutional Heads:** Directors and Vice-Chancellors are now empowered to approve **Global Tender Enquiries** (GTEs) up to ₹200 crore, enhancing decision-making flexibility.
 - **Enhanced Financial Ceilings:**
 - **Direct purchase limit** doubled: ₹1 lakh to ₹2 lakh
 - **Departmental committee purchase limit** raised: ₹1–10 lakh to ₹2–25 lakh
 - **Limited/advertised tenders cap** increased: ₹50 lakh to ₹1 crore
 - **Reduced Delays in R&D:** Reforms address major complaints of researchers regarding procurement bottlenecks, approval delays,

and slow exemption processes.

- **Trust-Based Governance Model:** The reforms emphasize trust in science leadership, coupled with accountability, to drive responsible autonomy in research spending.
- **Significance of the Reform:**
 - **Faster Project Execution:** Reduced bureaucratic delays accelerate scientific breakthroughs.
 - **Boost to Startups & Scholars:** Enables smoother access to high-end tools and equipment, motivating young innovators.
 - **Promotes R&D Investment:** Signals a policy environment conducive to both public and private R&D partnerships.
 - **Supports NEP 2020 Goals:** Aligns with the National Education Policy's focus on interdisciplinary research and student-led inquiry.
 - **Builds a \$100 Billion Science Economy:** Aims to replicate the success of space and nuclear liberalisation across all research domains.

Syllabus: Government Schemes & Programmes

GUIDELINES FOR THE SCHEME TO PROMOTE MANUFACTURING OF ELECTRIC PASSENGER CARS IN INDIA

Context:

The Ministry of Heavy Industries (MHI) has issued comprehensive guidelines for the Scheme to Promote Manufacturing of Electric Passenger Cars in India (SPMEPCI).



Summary of Guidelines for the Scheme to Promote Manufacturing of Electric Passenger Cars in India:

- Companies can import **up to 8,000 fully built electric cars per year** at a reduced 15% customs

duty (for five years), provided each vehicle's **CIF value is at least USD 35,000**.

- To qualify, applicants must **invest at least ₹4,150 crore within 3 years**, set up manufacturing units, and start local production.
- The scheme mandates a **Domestic Value Addition (DVA)** of **25% within 3 years** and **50% within 5 years**.
- A **bank guarantee** matching the **duty foregone** or **₹4,150 crore**, whichever is higher, must be submitted and will be refunded upon fulfilling the investment and DVA conditions.
- The **duty concession cap** is ₹6,484 crore or the actual investment—**whichever is lower**.
- **Land cost is excluded**, but **charging infrastructure expenses** are allowed up to **5%** of investment.
- Only companies with a **minimum global automotive revenue of ₹10,000 crore** and **fixed assets worth ₹3,000 crore** are eligible.

About the Electric Passenger Vehicle Manufacturing Scheme:

- **What It Is?**
 - A central government scheme to incentivize **domestic and global EV manufacturers** to establish **EV car production** capabilities in India by offering **tax benefits and investment-linked incentives**.
- **Launched In:** March 2024, officially notified in June 2025.
- **Nodal Ministry:** Ministry of Heavy Industries (MHI)
- **Implementation Agency:** Project Management Agency (PMA)
- **Objectives:**
 - Attract **foreign direct investment (FDI)** in EVs.
 - Promote India as a **global EV manufacturing destination**.
 - Boost **employment, clean technology adoption, and self-reliance in the EV sector**.
 - Reduce dependency on **crude oil imports** and promote **climate goals** (net zero by 2070).

WASTE PICKER ENUMERATION APP

Context:

The Ministry of Social Justice and Empowerment launched a Nationwide Waste Picker Enumeration App under the **NAMASTE scheme** to formalize, empower, and provide social security to waste pickers.



About NAMASTE Scheme:

- **What is it?**
 - National Action for Mechanised Sanitation Ecosystem (NAMASTE) is a Central Sector Scheme launched to formalize and rehabilitate sanitation workers engaged in hazardous cleaning and solid waste management.
- **Launched In:** July 2023
- **Ministries Involved:**
 - Ministry of Social Justice and Empowerment (Nodal Ministry)
 - Ministry of Housing and Urban Affairs (MoHUA) (Convergence Partner)
 - **Implementing agency:** National Safai Karamcharis Finance & Development Corporation
- **Aim:**
 - To ensure dignity, safety, and livelihood for sewer workers, septic tank cleaners, and now, waste pickers
 - To eliminate [manual scavenging](#) and promote mechanized, skilled sanitation services

About the Waste Picker Enumeration App:

- **What is it?**
 - A **digital platform** to enumerate, identify, and support waste pickers through social security and livelihood-based interventions under the **NAMASTE Scheme**.
- **Ministry Involved:**
 - Ministry of Social Justice and Empowerment (MoSJE)
 - In collaboration with Ministry of Housing and Urban Affairs (MoHUA)
 - Implemented via National Safai Karamcharis Finance & Development Corporation ([NSKFDC](#))
- **Objective:**
 - To recognize waste pickers as essential workers in India's solid waste management system
 - To provide them with identity, protection, and integration into formal urban systems
- **Key Features:**
- **Large-Scale Profiling:** Targets enumeration of 2.5 lakh waste pickers and issue's occupational identity cards for formal recognition.
- **Health and Safety Coverage:** Provides health insurance under Ayushman Bharat and distributes personal protective equipment and seasonal safety kits.
- **Skill and Livelihood Support:** Offers skill development training and capital subsidy for waste collection vehicles to promote sustainable livelihoods.
- **Strengthening Waste Management Systems:** Supports formation of waste picker collectives to manage 750 dry waste collection centres across urban areas.
- **Knowledge-Based Empowerment:** Releases key resources like the Mainstreaming Waste Picker Collectives Guide and Charting Change socio-economic insights report.

UMEED PORTAL

Context:

The Centre will launch the UMEED Portal on 6 June 2025 to digitize and streamline Waqf property registration in line with the Waqf (Amendment) Act, 2025.



About UMEED Portal:

- **What It Is?**
 - UMEED stands for Unified Waqf Management, Empowerment, Efficiency, and Development. It is a **centralized digital platform** for registering and regulating Waqf properties across India.

- **Nodal Ministry:** Ministry of Minority Affairs, in coordination with State [Waqf Boards](#) and judicial authorities.
- **Objectives of the Portal:**
 - Ensure **transparent and time-bound registration** of Waqf properties.
 - Empower beneficiaries with **digital access to rights, obligations, and legal safeguards**.
 - Resolve **long-standing property disputes** and [enhance accountability](#).
 - Facilitate **policy-level insights** through real-time data and geotagged mapping.
- **Key Features of UMEED Portal:**
 - **Time-Bound Registration:** All Waqf properties must be registered within 6 months of launch.
 - **Geotagging and Digitization:** Properties must include precise measurements and geolocation data during registration.
 - **Dispute Resolution Trigger:** Unregistered properties after deadline will be declared disputed and sent to Waqf Tribunal.
 - **User Support Services:** Provides legal awareness tools and clarifies rights under amended law.
 - **Women-Centric Provision:** Properties under women's names cannot be designated as Waqf, but women, children, and EWS will remain eligible beneficiaries.

[About Waqf Properties:](#)

- **What is Waqf?**
 - Waqf is a **permanent charitable endowment** under Islamic law where property is donated for religious or public welfare use. It cannot be sold, inherited, or transferred.
- **Key Reforms in [Waqf \(Amendment\) Act, 2025:](#)**
 - **Appeals Mechanism Introduced:** Decisions of Waqf Tribunals are now appealable in High Courts within 90 days—ensuring judicial oversight.
 - **Mandatory Digital Registration:** Introduced a strict 6-month deadline for all Waqf property registrations.
 - **Tribunal Empowerment:** Unregistered properties post-deadline will be automatically **flagged as disputed** and adjudicated by Waqf Tribunals.
 - **Stronger Government Oversight:** Enhanced monitoring by State Waqf Boards and increased regulation of trusteeship.

NATIONAL E-VIDHAN APPLICATION (NEVA)

[Context:](#)

Union Minister will inaugurate the National e-Vidhan Application ([NeVA](#)) for Puducherry Legislative Assembly on 9th June 2025.



One Nation One Application

[About National e-Vidhan Application \(NeVA\):](#)

- **What is NeVA?**
 - NeVA is a **digital platform** that enables **paperless conduct** of legislative business across India's State and UT legislatures.
 - It embodies the vision of '**One Nation – One Application**' by integrating all houses on a single interface.
- **Developed and Implemented By:**
 - Developed by the **Ministry of Parliamentary Affairs (MoPA)**.
 - Supported by MeitY and powered by BHASHINI for AI-based translation.
- **Established in:** Approved by the **Public Investment Board** on **15 January 2020**.
- **Total project cost:** ₹673.94 crore, under a **centrally sponsored model** for equitable state support.
- **Aim of NeVA:**
 - To digitize legislative proceedings and make Houses paperless.
 - To create a unified national repository of all legislative data on one platform.
- **Key Features of NeVA:**
 - **End-to-End Paperless Functioning:** NeVA enables complete digitization of legislative business including uploading of agenda, bills, speeches, and responses.
 - **AI/ML-Powered Real-Time Translation via BHASHINI:** Integrated with BHASHINI, NeVA provides instant translation of speeches and documents into multiple Indian languages.
 - **Unified Digital Workspace:** NeVA creates

- a single digital platform for legislators, government departments, and Assembly secretariats.
- **Secure Document Management & Searchable Archives:** All records are digitally stored with multi-layered security and role-based access control.
- **Training Modules & Simplified Workflows:** The application includes hands-on training for MLAs and staff to ensure smooth adoption.

GYAN POST SERVICE

Context:

India Post launched the 'Gyan Post' service to deliver educational books and socio-cultural literature at affordable rates across India.

- The initiative supports the vision of 'Har Ghar Gyan, Har Sapne Ko Udaan'.



About Gyan Post Service:

- **What is Gyan Post?**
 - Gyan Post is a postal delivery service introduced by the Department of Posts under the Ministry of Communications to deliver non-commercial educational and socio-cultural material at subsidized rates.
- **Objectives:**
 - Promote **inclusive access** to educational content across rural and urban India.
 - Support students and competitive exam aspirants by ensuring **low-cost, last-mile connectivity**.
 - Encourage dissemination of **cultural and religious literature** aligned with Indian laws.
- **How It Works?**
 - Operates through **surface transport** (road or rail) to keep costs minimal.

- Parcels must be marked "**Gyan Post**" and are **subject to inspection** by postal officials.
- Items are booked at **post office counters only** (retail, not bulk).
- Tracking is enabled, with optional add-ons like **Proof of Delivery** and **Insurance**.
- **Key Features:**
 - Only printed educational, social, religious, or cultural content is permitted.
 - **Magazines, advertisements, or commercial publications are excluded.**
 - Each book must carry the **printer/publisher's name** and be free of promotional content.
 - **Packaging** must allow for easy inspection (unsealed envelopes or open wrapping).
 - No personal communication or handwritten letters are allowed inside.
- **Eligibility Criteria:**
 - Materials must be from recognized boards, universities, or statutory institutions.
 - Content should be legally compliant and used for academic or cultural purposes only.
 - Sender must mention the receiver's and sender's full address with PIN codes.
 - Books should not be periodically issued like journals or weeklies.
- **Weight & Dimension Limits:**
 - **Minimum Weight:** 300 grams
 - **Maximum Weight:** 5 kilograms
 - Allowed in both **roll and non-roll formats** within defined dimension tolerances.
- **Pricing:** The pricing structure used in Gyan Post is called a **slab-based pricing** model or weight-based tiered pricing.

SUGAMYA BHARAT APP

Context:

The Sugamya Bharat App has been revamped with new AI features and an intuitive interface to improve accessibility support for **persons with disabilities** (Divyangjan) and senior citizens.



About Sugamya Bharat App:

- **What is it?**
 - Sugamya Bharat App is a **crowdsourced mobile platform** that allows users to report accessibility-related barriers in public infrastructure, transport, and ICT systems.
- **Launched by:** Department of Empowerment of Persons with Disabilities (DEPwD), under the **Ministry of Social Justice and Empowerment**.
- **Launched in: 2021**, as part of the broader [Accessible India Campaign](#) (Sugamya Bharat Abhiyan).
- **Primary Objective:** To enable citizens to report accessibility challenges, promote inclusive infrastructure, and strengthen citizen participation ([Jan-Bhagidari](#)) in building a barrier-free India.

Key Features of the Revamped App:

- **User-Friendly Design:** Intuitive navigation and simplified user experience for persons with disabilities and the elderly.
- **AI-Powered Chatbot:** Offers **instant support** and **real-time information** on various government schemes and initiatives for Divyangjan.
- **Real-time Circulars and Notifications:** Updates on latest policies, accessibility programs, and DEPwD announcements.
- **Complaint Redressal System:**
 - Citizens can upload **geo-tagged photos** to report non-accessible infrastructure.
 - Out of **2,705 total complaints**, 1,897 have been resolved till June 2025.

IPPB RECEIVED THE PRESTIGIOUS DIGITAL PAYMENTS AWARD

Context:

India Post Payments Bank (IPPB) received the prestigious Digital Payments Award 2024-25 from the Ministry of Finance for its remarkable role in advancing digital payments and financial inclusion across India.



About IPPB Received the prestigious Digital Payments Award:

- **What is Digital Payment Award?**
 - An award instituted by the **Department of Financial Services (DFS), Ministry of Finance** to recognize outstanding efforts in promoting digital payment ecosystems across India.
- **Eligibility:** Open to **banks, payments banks**, fintech companies, and other financial service providers demonstrating innovation and impact in digital payments.
- **Key Features:**
 - Recognizes inclusive digital banking initiatives.
 - Rewards entities that contribute to financial literacy, accessibility, and secure payments.
 - Benchmarks entities on performance index, innovation, and outreach.

About India Post Payments Bank (IPPB):

- **What It Is?**
 - IPPB is a payments bank fully owned by the Government of India, established under the Department of Posts, Ministry of Communications.
- **Established On:** 1st September 2018.
- **Ministry:** Operates under the **Ministry of Communications**.
- **Objectives:**
 - Drive financial inclusion at scale.
 - Provide affordable, accessible, and trusted banking services to every citizen.
 - Bridge the urban-rural divide in banking.
- **Key Functions:**
 - Offers **paperless, cashless, presence-less banking** via India Stack.
 - Uses a robust **doorstep banking model** — over 2 lakh Postmen and Gramin Dak Sevaks deliver banking services to households.
 - Provides multilingual digital interfaces in **13 languages**.
 - Facilitates services like **money transfers, bill payments, digital savings, and financial literacy programs**.
 - Contributes to [Digital India](#) and a **less-cash economy**.

NATIONAL SAMPLE SURVEY (NSS)

Context:

The National Sample Survey (NSS) is in the news due to the

celebration of 75 years of its establishment during the 19th National Statistics Day.



About National Sample Survey (NSS):

- **What is NSS?**
 - The National Sample Survey (NSS) is a nation-wide, large-scale socio-economic data collection program conducted by the National Sample Survey Office ([NSSO](#)) under the **Ministry of Statistics and Programme Implementation (MoSPI)**.
 - It serves as the principal data source for policy planning, development programs, and research in India.
- **Established In:** The NSS was launched in 1950, inspired by the vision of Prof. P.C. Mahalanobis, to provide reliable, timely, and comparable socio-economic statistics through sample surveys.
- **Objectives of NSS:**
 - **Generate high-quality socio-economic data** for informed policy formulation.
 - **Conduct household surveys** covering consumption, employment, health, education, etc.
 - **Undertake [Annual Survey of Industries \(ASI\)](#)** to assess industrial performance.
 - **Support crop statistics** by supervising area and yield estimation.
 - **Provide data on price movements** in rural and urban sectors.
- **Key Features of NSS:**
 - **All-India Coverage:** Surveys conducted across rural and urban India using scientific sampling techniques.
 - **Four Major Divisions**
 - **[Survey Design & Research Division \(SDRD\)](#):** Technical planning and survey design (Kolkata).
 - **[Field Operations Division \(FOD\)](#):** Data collection via 170+ field offices (HQ in Delhi/Faridabad).

- **[Data Processing Division \(DPD\)](#):** Responsible for **data validation, tabulation, software**, and processing of [PLFS](#) & ASI data.
- **[Survey Coordination Division \(SCD\)](#):** Coordinates NSS activities and publishes **Sarvekshana** journal.
 - **[Multi-Thematic Surveys](#):** Covers areas such as consumption, employment, health, education, migration, and [informal](#) sector data.
 - **[Support to Agricultural and Industrial Statistics](#):** Enhances crop estimation surveys and validates industrial datasets via the ASI web portal.
 - **[Integrated Data Framework](#):** Maintains urban area sampling frames, and increasingly incorporates digital tools and real-time processing.

BIHAR LAUNCHES INDIA'S FIRST MOBILE E-VOTING SYSTEM IN LOCAL BODY POLLS

Context:

Bihar has become the first Indian state to implement mobile phone-based e-voting in local body elections, recording 70.2% participation via the app-based platform.



About Bihar Launches India's First Mobile e-Voting System in Local Body Polls:

- **What is It?**
 - A **mobile-based electronic voting system** allowing eligible voters to cast their votes remotely using a secure mobile application, **E-SECBHR**, during Bihar's urban local body elections.
- **Developed By:** The e-voting app and system were developed by the Centre for Development of Advanced Computing ([C-DAC](#)).
- **Objective:**

- Enable **inclusive, accessible, and contactless voting**.
- Improve voter turnout among the **elderly, disabled, pregnant women**, and those unable to travel to booths.
- Promote **digital empowerment and electoral convenience**.

• **How It Works?**

- Voter downloads the **E-SECBHR mobile app** (currently Android only).
- Links mobile number as per the **electoral roll**.
- Upon verification via [Voter ID](#), user gains access to vote through the app or official SEC website.
- Voting is permitted only **on election day**.

• **Key Features:**

- **User-Friendly Mobile App:** Secure, intuitive UI designed for quick voting.
- **Remote Voting Capability:** Empowers people who cannot physically visit polling booths.
- **Biometric Verification:** Uses [facial recognition](#) to verify voter identity.
- **Real-Time Monitoring:** Backend tracks system health and user access in real time.
- **Multilingual Support:** Accessible to a wider user base across linguistic barriers.

• **Methods to Prevent Tampering:**

- **Blockchain Technology:** Ensures all votes are **securely recorded and immutable**.
- **Facial Recognition:** Matches real-time image with stored data to confirm identity.
- **Login Restrictions:** Only **two users per mobile number** and unique Voter ID required for authentication.
- **Digital Audit Trail:** Every action is logged for accountability and transparency.

• **Impact and Significance:**

- **Bibha Kumari** from East Champaran became the **first Indian voter** to cast her vote through a mobile phone.
- Sets the precedent for **digital electoral reform** and [smart governance](#).
- Could inform future implementations at state or national election levels.

Building Programme, to train 128 officers in modern urban land survey techniques.



About NAKSHA Capacity Building Programme:

• **What is NAKSHA?**

- NAKSHA (National Geospatial Knowledge-Based Land Survey of Urban Habitations) is a **technology-driven initiative** to modernise **urban land records** using **geospatial tools** and digital platforms.

• **Developed By:** [Department of Land Resources](#) (DoLR), Ministry of Rural Development

• **In collaboration with:** Survey of India (technical partner), MPSeDC (Web-GIS development), and NICS (Data storage and platform support).

• **Launched In:**

- Pilot initiated in **2024** across 157 Urban Local Bodies (ULBs) in 27 States and 3 Union Territories.
- Official inauguration in Raisen, Madhya Pradesh.

• **Objectives:**

- [Digitally map](#), record, and update land parcels in urban and semi-urban areas.
- Improve ease of living by providing reliable and accurate land ownership data.
- Promote transparency, dispute resolution, and urban planning through verified land documentation.

• **Key Features:**

- **End-to-end Web-GIS system** for land data mapping and storage.
- Use of [Global Navigation Satellite System \(GNSS\)](#) and **Electronic Total Station (ETS)** for precision surveying.
- Aerial imagery provided through **orthorectified drone surveys** by third-party vendors.
- Capacity building of [Urban Local Body \(ULB\) officers](#) at four National Centres of Excellence.
- Training covers legal frameworks, land mapping, and geospatial applications.

NAKSHA CAPACITY BUILDING PROGRAMME

Context: The second batch of Phase 2 of the NAKSHA Capacity

- **Significance:**
 - Enables citizen empowerment through access to clear land titles.
 - Supports sustainable urban development via updated land-use planning.
 - Reduces scope for land-related fraud and disputes.

CENTRE'S NEW REGULATIONS FOR LADAKH

Context:

The Central Government has notified five new regulations for the Union Territory of Ladakh.

- These rules aim to address long-standing demands related to domicile rights, local employment, cultural identity, and administrative reforms.



About Centre's New Regulations for Ladakh:

- **What are these regulations?**
 - The Union Government, under **Article 240 of the Constitution**, which empowers the President to frame regulations for Union Territories without legislatures, has introduced a set of executive rules tailored to Ladakh's unique socio-cultural context.
- **Summary of Key Regulations:**
 - **Ladakh Civil Services Decentralization and Recruitment (Amendment) Regulation, 2025:**
 - Introduces **domicile-based job reservations** in government employment.
 - Domicile defined as residents of 15 years, students with 7 years of schooling and local exams, and children of long-term Central Government employees.
 - **Ladakh Civil Services Domicile Certificate Rules, 2025:**
 - Details **procedure for domicile**

certificate issuance, including physical and online application modes.

- Tehsildar as issuing authority; Deputy Commissioner as appellate authority.
- **Union Territory of Ladakh Reservation (Amendment) Regulation, 2025:**
 - Increases caste-based reservation in public employment and professional institutions (e.g., medical, engineering) to **85%**, excluding **10% for Economically Weaker Sections (EWS)**.
- **Ladakh Official Languages Regulation, 2025:**
 - Recognises **English, Hindi, Urdu, Bhoti, and Purgi** as official languages.
 - Promotes **Shina, Brokskat, Balti, and Ladakhi** to preserve linguistic and tribal heritage.
- **Ladakh Autonomous Hill Development Councils (Amendment) Regulation, 2025:**
 - Reserves **one-third of LAHDC seats for women**, using a rotational system.
- **Significance of the New Legal Framework:**
 - **First Indigenous Legal Architecture:** These are the first **region-specific laws** post-bifurcation, distinct from borrowed J&K regulations.
 - **Protects Local Interests:** Domicile clause in jobs and language recognition meet core public demands.
 - **Empowers Women:** Political participation of women institutionalised through reservation in hill development councils.
 - **Cultural Inclusion:** Recognition of tribal dialects addresses identity and heritage concerns in a plural society.

BHASHINI

Context:

The Ministry of Panchayati Raj signed an MoU with Bhashini to integrate AI-enabled multilingual tools into **rural governance platforms**, enhancing access to services for citizens in their native languages.



About Bhashini:

- **What it is?**
 - Bhashini is the National Language Translation Mission (NLTN) — a digital public infrastructure enabling real-time AI-powered language translation across Indian languages.
- **Developed by:** Ministry of Electronics and Information Technology (MeitY)
- **Ministries Involved in MoU:**
 - Ministry of Panchayati Raj (MoPR) and Ministry of Electronics and Information Technology (MeitY)
- **Objective:**
 - To create an inclusive, multilingual e-governance ecosystem for [Panchayati Raj Institutions](#) (PRIs).
 - To bridge language barriers in rural governance and promote participatory democracy.
- **Key Features:**
 - **AI-Driven Translation:** Real-time speech-to-text and text-to-text conversion in major Indian languages.
 - **Integration with MoPR Portals:** Seamless language access for platforms like eGramSwaraj and rural governance tools.
 - **Citizen-Centric:** Enables citizens to interact with services in their local language, improving [service delivery](#).
 - **Promotes Digital Inclusion:** Supports rural digital literacy by making interfaces language-accessible.

- **Enhances Transparency:** Facilitates better information dissemination and boosts trust in local governance.

16TH CENSUS OF INDIA

Context:

The Government of India has announced that the 16th Census will conclude by March 2027, marking the first digital and caste-based census in Independent India.

To be counted

India will be counting its people after a gap of 16 years in the first digital Census which will also include caste enumeration



Crucial numbers: An enumerator at a household in Hyderabad during the 2011 Census. FILE PHOTO

October 1, 2026:

Reference date for Union Territory of Ladakh and the non-synchronous snow-bound areas of the U.T. of Jammu and Kashmir and States of Himachal Pradesh and Uttarakhand

March 1, 2027: Reference date set for remaining parts of the country

Around 24 lakh enumeration blocks (EB) finalised for the 2011 Census are likely to be used for the 2027 Census. Each EB usually comprises 150-180 houses or 650-800 people

About 16th Census of India:

- **What is Census in India?**
 - A **Census** is the official enumeration of population, providing **vital statistics** on demography, economy, and socio-cultural aspects at every administrative level.
 - Conducted **every 10 years** under the supervision of the **Registrar General and Census Commissioner of India**, Ministry of Home Affairs.
- **Legal and Constitutional Backing:**
 - Backed by [Census Act, 1948](#) and [Census Rules, 1990](#).
 - Falls under **Union List Entry 69, Seventh Schedule** of the Constitution.
- **History of Census in India:**
 - **First non-synchronous Census:** 1872
 - **First complete synchronous Census:** 1881 by W.C. Plowden
 - Last Census conducted in 2011 and 2021 delayed due to COVID-19
 - Upcoming Census will be the **16th in series and 8th since Independence**
- **Features of the Upcoming Census (2026–27):**
 - **First Digital Census:** Data collection will be done through a **mobile application** replacing paper schedules.
 - **Caste Enumeration Included:** For the first

time since Independence, **caste data will be collected** alongside SC/ST data.

- **Self-Enumeration Option:** Households with updated [National Population Registry](#) details may use an **online portal** for self-enumeration.
- **Two-Phase Enumeration:**
 - **Phase 1:** House-listing and housing schedule
 - **Phase 2:** Population enumeration (includes caste data)
- **Reference Dates:**
 - **Oct 1, 2026:** Snow-bound areas (e.g., J&K, Ladakh, Himachal)
 - **March 1, 2027:** Rest of India
- **Administrative Training:** Over 30 lakh enumerators will be trained for digital enumeration.
- **Delimitation Impact:** This Census will guide delimitation of Lok Sabha/Assembly seats post-2026, replacing the 1971 Census base.

Indian Institute of Public Administration (IIPA)

- **Objective:**
 - Empower Panchayats to become financially self-reliant.
 - Equip trainers with strategies for sustainable OSR generation.
 - Promote leadership, innovation, and accountability at the Panchayat level.
- **Key Features:**
 - Implemented under [Rashtriya Gram Swaraj Abhiyan](#) (RGSA).
 - Focus on behavioural insights, strategic revenue planning, and local innovation.
 - Trains **Master Trainers** from 16 States/UTs, with future sessions planned.
 - Lays the groundwork for a **Model OSR Rules Framework** and **Digital Tax Collection Portal**.

About Rashtriya Gram Swaraj Abhiyan (RGSA):

- **What is it?**
 - An umbrella **Centrally Sponsored Scheme (CSS)** to develop and strengthen the **Panchayati Raj System** across rural India.
- **Launched in:** Originally launched in **2018** and revamped for the period **2022-23 to 2025-26**.
- **Objectives:**
 - Build governance capacity of **Panchayati Raj Institutions (PRIs)** to achieve **Sustainable Development Goals (SDGs)**.
 - Empower Panchayat representatives for effective leadership roles.
 - Enhance OSR generation and financial planning capacity of Panchayats.
 - Promote **inclusive local governance** through optimum resource utilisation and convergence of schemes.
 - Strengthen **Gram Sabhas** as forums of citizen participation.

TRAINING OF TRAINERS (TOT) PROGRAMME

Context:

The Ministry of [Panchayati Raj](#) (MoPR), in partnership with IIM Ahmedabad, has launched a Training of Trainers (ToT) programme to strengthen Panchayats' capacity to generate Own Source Revenue (OSR) under the Rashtriya Gram Swaraj Abhiyan (RGSA).



About Training of Trainers (ToT) programme:

- **What is it?**
 - A new training initiative to strengthen the financial autonomy of Panchayats by enhancing their capability to generate [Own Source Revenue](#) (OSR).
- **Ministry:**
 - Ministry of Panchayati Raj (MoPR)
 - In collaboration with **IIM Ahmedabad** and

- **Key Features:**
 - Focus on capacity-building for elected representatives.
 - Encourages decentralisation and devolution of powers in line with [PESA Act 1996](#).
 - Integrates technology-driven solutions for good governance.
 - Recognises and rewards best-performing Panchayats.
 - Promotes exchange of ideas through partnerships with international and national bodies.

INDIA WILL CONDUCT ITS FIRST COMPREHENSIVE HOUSEHOLD INCOME SURVEY IN 2026

Context:

The Ministry of Statistics and Programme Implementation (MoSPI) has announced that India will conduct its first comprehensive Household Income Survey in 2026.



Government of India
 Ministry of Statistics and
 Programme Implementation

About India will conduct its first comprehensive Household Income Survey in 2026:

- **What is it?**
 - A nationwide **Household Income Survey** aimed at generating robust and reliable data on income distribution across India for the first time.
- **Ministry & Organisations Involved:**
 - Ministry of Statistics and Programme Implementation (MoSPI)
 - National Sample Survey ([NSS](#))
 - Technical Expert Group (TEG) led by Dr. Surjit S. Bhalla.
- **History of Past Efforts:**
 - **1950:** NSS established and began large-scale household surveys.
 - **1955–1970:** Experimental surveys in the 9th, 14th, 19th, and 24th rounds, but faced underreporting issues.
 - **1983–84:** Pilot study on household income again failed to yield scalable results.
 - Income estimates consistently fell below actual [consumption and savings](#) figures, deterring full-fledged surveys.
- **Features of the 2026 Survey:**
 - First nationwide survey solely focused on household income distribution.
 - Overseen by Technical Expert Group (TEG) to incorporate global best practices.

- Focus on developing conceptual clarity, sampling design, and estimation methodology.
- Incorporates digital tools to improve accuracy and capture impact of technology on wages and income.
- Builds on MoSPI's recent statistical innovations (unincorporated sector surveys, services sector, [private capital expenditure](#), and tourism data).

- **Significance:**

- Fills a critical data gap in understanding India's evolving income patterns.
- Provides robust evidence to shape welfare policies and assess inclusive growth.
- Enhances India's statistical infrastructure to match global standards.
- Supports effective economic planning and targeted fiscal interventions.

Syllabus: Social Sector Services relating to Health, Education

SEVA SE SEEKHEN CAMPAIGN

Context:

Youth volunteers will begin their 15-day engagement at Jan Aushadhi Kendras under the Government of India's Seva Se Seekhen campaign.



About Seva Se Seekhen Campaign:

- **What is It?**
 - A **youth engagement and hands-on learning campaign** designed to involve young citizens in public service environments like [Jan Aushadhi Kendras](#) (JAKs).
- **Launched In:** Introduced in **2025**, as part of India's National Youth Development Framework.

- **Nodal Ministries:**
 - Ministry of Youth Affairs and Sports
 - Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers
- **Objectives:**
 - Foster **experiential learning** by placing youth in service environments.
 - Enhance **public health awareness** and generic medicine outreach.
 - Develop **soft and technical skills** related to inventory, logistics, and community service.
 - Encourage **nation-building values** like discipline, empathy, and grassroots engagement.
- **Key Features:**
 - **Nationwide Deployment:**
 - Five youth volunteers per **district**, embedded in **five Jan Aushadhi Kendras** each.
 - Total outreach expected across **all Indian states and UTs**.
 - **Target Groups:** Volunteers drawn from **MY Bharat, NSS, pharmacy colleges**, and other youth platforms.
 - **Roles and Activities:**
 - Supporting day-to-day operations and customer service.
 - Promoting generic medicine literacy.
 - Learning inventory, stock, and logistics management.
 - Engaging in **community health** awareness campaigns.
 - **Duration:** **15-day structured internship** with guided tasks and observations.

About 11th International Day of Yoga:

- **What it is?**
 - An annual **global observance** promoting yoga as a **holistic health practice** for mind-body balance, harmony with nature, and sustainable well-being.
- **Celebrated Since:** Officially recognised by **UNGA** resolution 69/131 on Dec 11, 2014.
- First celebrated globally on June 21, 2015.
- **Theme (2025):** “Yoga for One Earth, One Health” — emphasising the link between personal well-being and planetary health, aligned with India’s **G20 One Earth vision**.
- **Objectives:**
 - Promote **physical, mental, emotional well-being** through yoga.
 - Foster **global awareness** on yoga’s health and environmental benefits.
 - Encourage integration of **yoga into daily life** for sustainable living.
 - Strengthen **India’s cultural diplomacy** globally.
- **Key Features:**
 - **Global Movement:** Adopted by 175 UN member states and participation grown to 24.53 crore globally in 2024.
 - **Mass Participation:** Led by Ministry of **AYUSH**, with support from state govts, embassies, UN bodies.
 - **Inclusive Message:** Logo and theme promote unity, harmony with nature, and mind-body integration.
 - **Cultural Diplomacy:** Strengthens India’s image as the cradle of yoga tradition and global wellness leader.
 - **Sustainability Alignment:** Highlights yoga’s role in health, climate consciousness, and sustainable development.
- **Significance:**
 - Promotes a **low-cost, accessible wellness practice** worldwide.
 - Builds **soft power** and **cultural leadership** for India.
 - Reinforces the connection between **individual well-being and environmental stewardship**.

11TH INTERNATIONAL DAY OF YOGA

Context:

The 11th International Day of Yoga (IDY) will be observed on June 21, 2025, with the theme “Yoga for One Earth, One Health”; global participation has grown from 9 crore in 2018 to 24.53 crore in 2024.

INTERNATIONAL DAY OF



AYUSH NIVESH SAARTHI PORTAL

Context:

India launched the ‘Ayush Nivesh Saarthi’ portal to attract investment in the Ayush sector. It aims to promote India as

a global destination for [traditional medicine](#) and wellness entrepreneurship.



About Ayush Nivesh Saarthi Portal:

- **What is it?**
 - A dedicated digital platform for investors to explore and invest in India's Ayush (Ayurveda, Yoga, Naturopathy, Unani, Siddha, and Homeopathy) sector.
- **Ministry Involved:**
 - **Ministry of Ayush** (Lead Ministry)
 - Developed in partnership with **Invest India**
- **Objective:**
 - To **ease investment** in Ayush-based ventures.
 - To promote **FDI and private participation** in traditional medicine.
 - To integrate **policy, incentives, and market access** in one portal.
- **Key Features:**
 - **Investor-Centric Design:** Simplified navigation and support.
 - **Unified Interface:** Combines policies, incentives, and investment-ready projects.
 - **Real-time Facilitation:** Dynamic dashboard for guidance and approvals.
 - **Global Outreach:** Targets domestic and international stakeholders.
 - **Ease of Doing Business:** Aligned with **100% FDI via automatic route** in the Ayush sector.
- **Significance:**
 - **Promotes Traditional Medicine Economy:** Boosts the Ayush industry which grew 17% annually (2014–2020).
 - **Medical Value Travel (MVT):** Strengthens India's USD 13 billion MVT sector.
 - **Supports Startups & MSMEs:** Creates pathways for entrepreneurs in natural health products.
 - **Global Health Diplomacy:** Projects India as a trusted wellness leader.

- **Sustainable Health Ecosystem:** Encourages preventive and wellness-based healthcare.

NEW-GENERATION WEIGHT-LOSS DRUGS

Context:

A recent U.S. study published in the journal [Obesity](#) reveals that new weight-loss drugs like semaglutide and tirzepatide show reduced effectiveness in real-world settings compared to clinical trials.



About New-Generation Weight-Loss Drugs:

- **What are They?**
 - **Injectable GLP-1 receptor agonists** originally developed to manage **Type 2 diabetes**, now repurposed for **chronic weight management**.
- **Key Drugs:**
 - **Semaglutide** (branded as Ozempic/Wegovy) – developed by **Novo Nordisk**
 - **Tirzepatide** (branded as Mounjaro/Zepbound) – developed by **Eli Lilly**
- **Features:**
 - Mimic the action of **GLP-1 (glucagon-like peptide-1)** to suppress appetite and slow digestion.
 - Shown to cause **10-15% body weight loss** in controlled clinical trials.
 - Approved by **US FDA** also recently introduced in **India** for obesity management.
- **Limitations:**
 - **Low adherence in real life:** Many patients discontinue treatment early or reduce dosage due to cost, side effects, or lack of follow-up.
 - **Economic constraints:** High cost of GLP-1 drugs limits long-term use, especially in developing countries like India [where out-](#)

[of-pocket expenditure](#) is high.

- **Dependency for sustained impact:** Weight regain occurs quickly after discontinuation, making long-term adherence essential for benefit.

PRADHAN MANTRI SURAKSHIT MATRITVA ABHIYAN (PMSMA)

Context:

The Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) marks 9 impactful years in improving maternal health outcomes across India.



About Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA):

- **What is PMSMA?**
 - PMSMA is a flagship maternal health programme of the Government of India.
 - Launched in **June 2016** by the **Ministry of Health & Family Welfare**, it provides free and [quality antenatal care](#) (ANC) to pregnant women on the 9th of every month.
- **Objectives of PMSMA:**
 - Ensure **at least one ANC check-up** in the 2nd or 3rd trimester by a trained specialist.
 - Promote **early detection and management** of high-risk pregnancies (HRPs).
 - Improve quality of care through diagnostics, counselling, and risk stratification.
 - Identify and track HRPs through a **name-based monitoring system**.
 - Raise awareness and **mobilize private sector participation** to supplement public services.
- **Key Features of PMSMA:**
 - **Fixed ANC Days:** Pregnant women receive a standard package of ANC services every 9th of the month at government health facilities.
 - **Specialist-Driven:** Services provided by

OB-GYNs, radiologists, and physicians, including private doctors volunteering in public hospitals.

- **Single Window Service:** Provides investigations (e.g., ultrasound), IFA/ calcium supplements, and counselling in one visit.
- **Risk Tagging:** Use of green stickers (no risk) and red stickers (HRP) on MCP cards to classify pregnancies.
- **Digital Monitoring:** Operates through a national portal and mobile app, ensuring transparency and follow-up.
- **About Extended Pradhan Mantri Surakshit Matritva Abhiyan (e-PMSMA):**
 - **Launched in:** January 2022, the initiative strengthens maternal health surveillance by ensuring continuous monitoring of high-risk pregnancies up to **45 days** after delivery.
- **Features:**
 - It enables a **digital follow-up mechanism** through **automated SMS alerts** sent to both pregnant women and ASHAs for timely check-ups.
 - **Financial incentives** are provided to pregnant women and [ASHAs](#) who successfully complete three additional antenatal care visits beyond the standard coverage.
 - The programme allows **up to four antenatal care sessions per month** in vulnerable or underserved areas to ensure better coverage and timely intervention.

NATIONAL POLIO SURVEILLANCE NETWORK (NPSN)

Context:

The Government of India, in coordination with [WHO](#), plans to gradually phase out the National Polio Surveillance Network (NPSN) starting June 2025, reducing the number of centres from 280 to 140 by 2026–27.



About National Polio Surveillance Network (NPSN):

- **What is NPSN?**
 - The **National Polio Surveillance Network** is India's key disease surveillance mechanism for detecting and controlling polio and other vaccine-preventable diseases.
- **When was it established?**
 - **Year:** 1997
 - **Initiative:** Originally called the National Polio Surveillance Project (NPSP)
- **Organizations Involved:**
 - World Health Organization (WHO)
 - Ministry of Health and Family Welfare (MoHFW), Government of India
- **Objective:**
 - To support **polio eradication** by identifying and investigating cases of **Acute Flaccid Paralysis (AFP)**.
 - To **monitor immunisation campaigns** and ensure **zero transmission** of wild polio virus.
- **Key Functions:**
 - **Disease Surveillance:** Tracks AFP cases and conducts lab-confirmed verification.
 - **Vaccination Support:** Assists in pulse polio campaigns and routine immunisation.
 - **Capacity Building:** Trains state and district health officials on surveillance protocols.
 - **Integrated Health Role:** Now supports **measles-rubella elimination** and control of other Vaccine-Preventable Diseases.
 - **Staff Deployment:** Over 200 field units led by Surveillance Medical Officers (SMOs) spread across all states and union territories.
- This will eventually integrate with the **Integrated Disease Surveillance Programme (IDSP)**.

SALMONELLA OUTBREAK

Context:

A Salmonella outbreak in the US has infected 79 people and led to a recall of 1.7 million egg cartons by the California-based August Egg Company.



About Salmonella Outbreak:

- **What is Salmonella?**
 - Salmonella is a **bacterial infection** that causes **salmonellosis**, a foodborne illness affecting the intestinal tract.
 - It spreads through contaminated food, water, or direct contact with infected humans or animals.
- **Causes of Salmonella Infection:**
 - **Raw or undercooked eggs** and poultry (especially chicken).
 - **Contaminated meat**, dairy, fruits, vegetables, and even processed items like nut butters.
 - **Pets and reptiles** can carry and spread the **bacteria**.
 - **Poor hygiene** during food preparation or after bathroom use.
- **Symptoms of Infection:**
 - According to CDC, symptoms usually appear **12–96 hours after exposure** and include:
 - **Diarrhoea** (possibly bloody), Stomach cramps and nausea, Fever and chills, Headache and vomiting, and Loss of appetite
- **Is Salmonella Contagious?**
 - It **spreads person-to-person** via contaminated hands, surfaces, and utensils.
 - **Close contact** with infected individuals or animals increases risk, especially in **poor hygiene** conditions.
- **Prevention Strategy:**
 - **Practice safe cooking:** Thoroughly cook meat, poultry, and eggs; avoid raw dough or egg-based foods.
 - **Maintain hygiene:** Wash hands before meals, after bathroom use, and after handling pets or raw food.

NAVYA INITIATIVE

Context:

The Government of India will launch 'NAVYA', a pilot initiative to skill adolescent girls, in Uttar Pradesh, under the Viksit Bharat@2047 Vision.

About NAVYA Initiative:

- **What is NAVYA?**
 - NAVYA stands for "**Nurturing Aspirations through Vocational Training for Young Adolescent Girls**." It is a new government pilot programme focused on skilling girls aged 16–18 years through vocational

training.

- **Ministries Involved:**

- Ministry of Women and Child Development (MWCD)
- Ministry of Skill Development and Entrepreneurship (MSDE)

- **Objectives:**

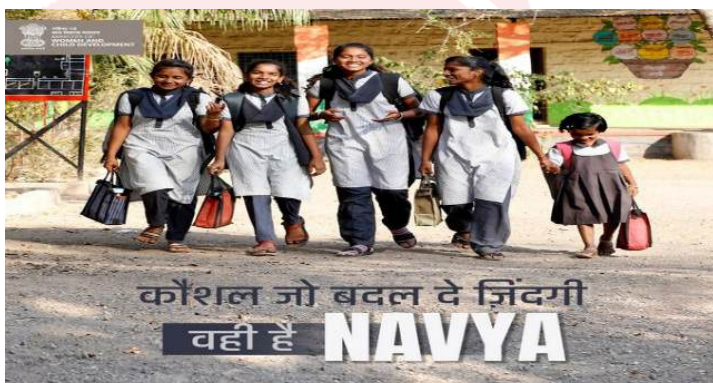
- Empower adolescent girls with market-relevant vocational skills.
- Focus on **non-traditional job roles** to promote gender parity in new sectors.
- Build self-confidence, career aspirations, and economic independence among girls.

- **Key Features:**

- Targets girls aged 16–18 with at least Class 10 qualification.
- Will be implemented in **27 districts** (including Aspirational Districts and North-Eastern States) across **19 States**.
- Leverages existing skill platforms like **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)** and **PM Vishwakarma Yojana**.
- Institutionalised convergence between MWCD and MSDE for coordinated skilling efforts.
- Certification under **PMKVY** to enhance employability.
- Pilot launch event includes interactions with trainees and certificate distribution.

- **Significance:**

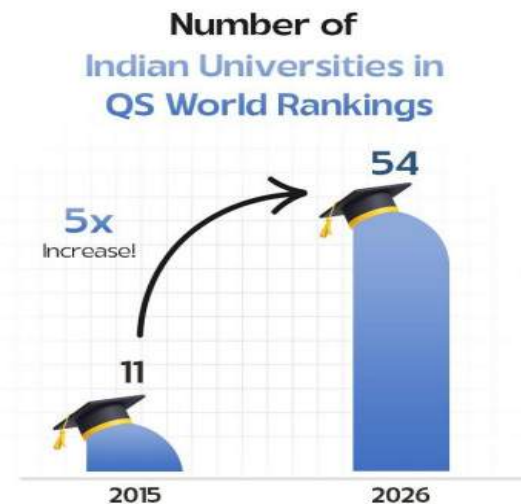
- **Bridges the gender gap** in non-traditional skills and industries.
- Focuses on **underserved regions and vulnerable groups**.
- Contributes to **women-led development** under the **Viksit Bharat@2047** Vision.
- Aligns with the goal of a **self-reliant and inclusive India**.
- Enhances participation of girls in economic growth and nation-building.



QS WORLD UNIVERSITY RANKINGS 2026

Context:

The QS World University Rankings 2026 were released, highlighting global trends in higher education quality and competitiveness; several Indian institutions showed notable improvements.



About QS World University Rankings 2026:

- **What it is?**
- An annual **global ranking of universities** that evaluates academic performance, employability, sustainability, and global impact across higher education institutions.
- **Launched by:** Developed and published by **Quacquarelli Symonds (QS)**, a global education services firm based in the UK.
- **Objective:**
 - To provide transparent insights into the **global standing of universities**.
 - To guide students on **university selection** based on multiple performance indicators.
 - To encourage universities to enhance **research, teaching, internationalization**, and impact.
- **Key Insights from QS World University Rankings 2026:**
 - India has 54 universities in the QS World University Rankings 2026, making it the fourth most represented country.
 - Only the United States (192), the United Kingdom (90), and Mainland China (72) have more universities ranked than India.
 - Eight Indian institutions have entered the rankings for the first time. This is the highest number of new entrants from any country this year.
 - The number of **Indian universities** in the

rankings has grown from 11 in 2015 to 54 in 2026. This marks a five-fold increase in just over a decade.

- 48 percent of India's ranked universities improved their positions compared to the previous year.
- Six Indian institutions feature in the global top 250.
- IIT Delhi leads the Indian contingent. It is ranked 123rd globally, rising from 150th in 2025.
- IIT Madras recorded one of the biggest jumps, rising 47 places from 227 in 2025 to 180 in 2026.
- A total of 12 Indian Institutes of Technology (IITs) feature in the list, highlighting their strong presence in global academia.

Syllabus: International Relations

OPERATION SPIDER'S WEB

Context:

Ukraine executed Operation Spider's Web, its largest drone offensive, destroying \$7 billion worth of Russian aircraft.



About Operation Spider's Web:

- **What is Operation Spider's Web?**
 - Operation Spider's Web is a high-precision, long-range [drone operation](#) launched by Ukraine targeting Russian airbases deep within enemy territory.
- **Nations Involved:**
 - **Ukraine:** Executing the offensive through its military and intelligence agencies.
 - **Russia:** The target of the drone assault, which affected strategic airpower assets.
- **Objective:**
 - To **cripple Russia's strategic bomber fleet**, especially aircraft capable of launching cruise missiles and nuclear payloads.

- To **showcase deep-strike capability** and shift tactical momentum ahead of peace negotiations.

- **Key Features of Operation Spider's Web:**

- **Scale:** Planned over **18 months** by the Security Service of Ukraine (SBU).
- **Drone Deployment:**
 - **117 explosive-laden drones** launched.
 - **Aircraft types hit:** Tu-95, Tu-160, Tu-22M bombers and A-50 early-warning planes.
- **Tactical Innovation:**
 - Drones were concealed in wooden sheds on civilian trucks—a tactic likened to the [Trojan Horse](#).
 - Drones were **remotely launched** after being placed near airbases across multiple Russian time zones.
- **Airbases attacked:** Belaya (Irkutsk), Olenya (Murmansk), Dyagilevo (Ryazan), Ivanovo Severny, and Ukrainka.
- **Timing and Symbolism:**
 - Launched just hours after **Russia's deadly [Iskander missile strike](#)** on Dnipropetrovsk.
 - Acted as a **prelude to peace talks**, strengthening Ukraine's bargaining power.

ISRAEL'S LASER BEAM DEFENCE SYSTEM

Context:

Israel has successfully deployed the Magen or laser defence system in live combat, intercepting dozens of [Hezbollah drones](#) during the recent conflict.



About Israel's Laser Beam Defense System:

- **Name of System:**
 - Known as the Magen or Shield of Light.
 - Part of Israel's larger **Iron Beam** laser

weapon program

- **Developed By:** Rafael Advanced Defense Systems (lead developer)
- **How It Works?**
 - Uses [directed high-energy laser beams](#) to **burn and disable aerial threats** like drones and UAVs.
 - Targets are **locked on with optical tracking** and neutralized using **thermal damage** in a matter of seconds.
 - Operates silently, with **no explosion**, making it stealthy and precise.
- **Key Features:**
 - **Speed of Light Interception:** Instantly neutralizes threats and no wait for missile launch or impact.
 - **Ultra-Low Operational Cost:** Each laser shot costs around \$5, compared to \$50,000 per interceptor in [Iron Dome](#).
 - **High Accuracy:** Capable of single-point targeting with minimal collateral damage.
 - **Silent and Invisible:** No audible or visible trace, preserving tactical surprise.
 - **AI-Integrated Threat Assessment:** The system can autonomously prioritize targets and switch to conventional missiles when needed.
- **Strategic Significance:**
 - **Global First:** Israel becomes the first nation to use combat laser defence effectively in real war conditions.
 - **Future-Proofing Warfare:** Paves way for vehicle-mounted, naval, and airborne laser systems, with upcoming models like Lite Beam and Naval Iron Beam.

About Samson Option:

- **What It Is?**
 - A [nuclear deterrence doctrine](#) of massive retaliation by Israel, aimed at ensuring national survival in case of an existential threat.
- **Nation Involved:** Israel (undeclared but presumed nuclear power).
- **Objective:** To signal that any attempt to annihilate [Israel](#) will trigger catastrophic nuclear retaliation, ensuring mutual destruction of the aggressor.
- **Key Features**
 - **Strategic ambiguity:** Israel has neither confirmed nor denied its nuclear arsenal (estimated 80–400 warheads).
 - **Massive retaliation policy:** Targets adversaries in case of existential threats—not for routine deterrence.
 - **Multi-platform capability:** Includes land-based missiles, aircraft delivery, and sea-based systems.
 - **Psychological warfare:** Designed more as a [psychological deterrent](#) than an operational war plan.
 - **Biblical symbolism:** Named after Samson's self-sacrificial act, underscoring Israel's readiness for ultimate retaliation if cornered.
- **Significance:**
 - Reinforces Israel's **strategic depth** in a volatile region where it remains the only nuclear-armed state.
 - Adds uncertainty in ongoing conflicts like the [Iran-Israel standoff](#), Hezbollah's mobilisation, and Red Sea tensions.
 - Shapes **regional military planning** and arms procurement by adversaries and allies alike.

SAMSON OPTION

Context:

Israel's controversial Samson Option nuclear doctrine is back in global focus amid escalating strikes on Iran's nuclear facilities during Operation Rising Lion.



NATO 5% GDP DEFENCE SPENDING TARGET

Context:

NATO members, at The Hague Summit, is expected to adopt a new 5% GDP defence spending target amid rising security concerns from Russia's war in [Ukraine](#).



About NATO's 5% GDP Defence Spending Target:

- **What it is?**
 - NATO countries will now aim to allocate **5% of their GDP** on combined defence and security investments.
- **New Target Structure:**
 - **3.5% GDP** for core military spending — personnel, equipment, operations.
 - **1.5% GDP** for broader security — cyber defence, infrastructure upgrades, energy protection.
- **Existing Target:** Earlier commitment (since 2014 Wales Summit): **2% of GDP** for core defence and only **22 of 32 members** met this by 2024.

About NATO (North Atlantic Treaty Organization):

- **What It Is?**
 - An intergovernmental military and political alliance, NATO ensures collective defence under Article 5—an attack on one is an attack on all.
- **Established in:** 1949 ([North Atlantic Treaty](#), Washington D.C.)
- **Headquarters:** Brussels, Belgium
- **Members:** **32 countries** from Europe and North America. **Latest entrant:** Sweden.
- **Objectives:**
 - **Collective Defence (Article 5):** An attack on one is an attack on all.
 - **Crisis management and global peacekeeping.**
 - **Cooperative security** through political dialogue and partnerships.
- **History:**
 - **Cold War Formation (1949):** Created to counter Soviet expansion and ensure transatlantic security post-WWII through collective defence.
 - **Korean War Era:** NATO strengthened political cohesion and military readiness during the Korean conflict, marking its early operational relevance.
 - **1950s–60s Nuclear Doctrine:** Adopted nuclear deterrence to balance Soviet conventional superiority.
 - **Post-Cold War (1990s):** Shifted focus to **crisis management and peacekeeping**, notably in the Balkans and Kosovo.
 - **21st Century:** Took on broader roles in **counter-terrorism** (Afghanistan, 2001–2021) and global security partnerships beyond Europe.
- **Functions & Roles:**

- **North Atlantic Council:** The alliance's top political decision-making body, meets regularly to set strategic priorities.
- **Strategic Commands:** Direct operational planning through [Allied Command Operations](#) (ACO) and Allied Command Transformation (ACT).
- **Integrated Military Forces:** Develops joint forces to ensure operational interoperability and swift crisis response.
- **Cybersecurity:** Coordinates NATO-wide cyber defence policies to counter hybrid threats and cyberattacks.
- **Energy Security:** Works on protecting critical infrastructure and ensuring energy resilience of member states.
- **Counterterrorism:** Leads intelligence-sharing, [counter-radicalisation](#) efforts, and military operations against terror groups.

OPERATION TRUE PROMISE 3

Context:

Iran launched Operation True Promise 3, escalating military strikes on Israel for the third consecutive day.



About Operation True Promise 3:

- **What is it?**
 - Operation True Promise 3 is Iran's latest retaliatory military campaign targeting Israeli cities and infrastructure in response to Israeli airstrikes on its nuclear and command facilities.
- **Launched by:** Iran's [Islamic Revolutionary Guard Corps](#) (IRGC) under the directive of Iran's supreme military leadership.
- **Trigger:** It was launched after Israel's pre-emptive strikes that killed several top Iranian generals and damaged nuclear enrichment sites at **Natanz** and **Isfahan**.

- **Impact:**
 - Key Israeli cities like **Tel Aviv, Haifa, and Rehovot** were hit.
 - Power stations, refineries, and scientific institutions were damaged.

About "New Method" Used in Missile Strikes:

- **What is the "New Method"?**
 - The IRGC claimed to have deployed a **novel strike mechanism** wherein multiple missile types were programmed to overwhelm Israel's air defence systems by creating **internal target conflicts**.
- **How It Works?**
 - Simultaneous launches triggered **misaligned threat signatures**, forcing Israel's defence systems (like Iron Dome) to misidentify or intercept each other.
 - Some missiles intentionally mimicked decoys to create **false positives** in radar systems.
- **Features:**
 - **Decoy Saturation:** Overloaded Iron Dome by flooding the airspace with both real and false targets.
 - **Internal Disruption:** Israel's layered defence was made to target itself or malfunction.
 - **Multi-Target Penetration:** Enabled missiles to hit high-density residential zones and economic infrastructure.
 - **AI-assisted Trajectory Alteration:** Enhanced missile agility mid-flight for unpredictable targeting.
- **Strategic Significance:**
 - Signals a tech leap in asymmetric warfare using cyber-kinetic convergence.
 - Raises alarms over vulnerabilities in **multi-layered missile defence** systems.
 - Could alter the future of urban warfare, especially where high-value civilian and economic targets are clustered.

OPERATION MIDNIGHT HAMMER

Context:

The US launched Operation Midnight Hammer, deploying B-2 bombers and bunker-buster bombs in a precision strike on Iran's nuclear sites (**Fordow, Natanz, Isfahan**), claiming significant damage to Iran's nuclear infrastructure.



About Operation Midnight Hammer:

- **What it is?**
 - A classified US military airstrike targeting Iran's key nuclear facilities with precision weapons.
- **Launched by:** US Department of defence.
- **Objective:** To severely degrade Iran's **nuclear weapons** infrastructure and demonstrate US strategic air power.
- **Weapons used:**
 - **B-2 Spirit stealth bombers** with GBU-57A/B Massive Ordnance Penetrator (MOP).
 - Tomahawk Land **Attack Cruise Missiles** launched from a US submarine.
 - Decoy aircraft and support fighter jets for air defence suppression.

About US B-2 Spirit Stealth Bombers:

- **What it is?**
 - An advanced **strategic stealth bomber** of the US Air Force, capable of delivering both nuclear and conventional weapons with minimal radar detection.
- **Developed by:** Northrop Grumman during the late 1980s.
- **Key Features:**
 - **Cost:** \$2.1 billion per unit (most expensive aircraft built)
 - **Range:** Over 6,000 nautical miles without refueling (global reach)
 - **Payload:** Over 40,000 lbs — can carry two GBU-57A/B "bunker-busters" or 16 B83 nuclear bombs
 - **Crew:** Two pilots with advanced automation
 - **Stealth:** Radar cross-section as small as a bird — evades **advanced air defences**
 - **Weapons:**
 - **Massive Ordnance Penetrator (MOP):** 30,000 lbs, penetrates 200+ ft of reinforced concrete
 - JDAM, JSOW, JASSM-ER for varied

- conventional strikes
- **Nuclear capabilities** for deterrence role in US nuclear triad
- **Significance:**
 - Demonstrates **US global strike power** and **technological superiority**.
 - Capable of precision strikes on heavily fortified underground targets.
 - Plays a vital role in **deterrence, first-strike, and strategic military operations**.
 - Proven effectiveness across theatres: [Afghanistan](#), Libya, Iran.

- iii. Camp Buehring (Iraq War staging post)
- **Significance:** Supports **troop deployments** into Iraq and Syria.

4. **United Arab Emirates:**

- **Base:** Al Dhafra Air Base (shared with UAE Air Force)
- **Port:** Jebel Ali Port (major US Navy logistics hub)
- **Significance:** Supports air operations against **ISIS** and key for **US reconnaissance** in the region.

5. **Iraq:**

- **Bases:**
 - i. Ain Al Asad Air Base (western Iraq)
 - ii. Erbil Air Base (Kurdistan region)
- **Significance:** Aids Iraqi forces, key node in [NATO mission](#) and site of Iranian missile strikes in 2020.

6. **Saudi Arabia:**

- **Base:** Prince Sultan Air Base
- **Significance:** Supports US **air and missile defense**, incl. **Patriot** and **THAAD** systems; ~2,300 US troops.

7. **Jordan:**

- **Base:** Muwaffaq al-Salti Air Base (Azraq)
- **Significance:** Base for 332nd Air Expeditionary Wing and covers Levant missions.

NOTE: NO NEED TO MEMORIZE ALL THIS INFORMATION. JUST KNOW THE U.S. AIR BASE NAMES AND THEIR HOST NATIONS, WHICH COULD BE ASKED IN MATCH-THE-FOLLOWING OR PAIR QUESTIONS.

OPERATION SINDHU

Context:

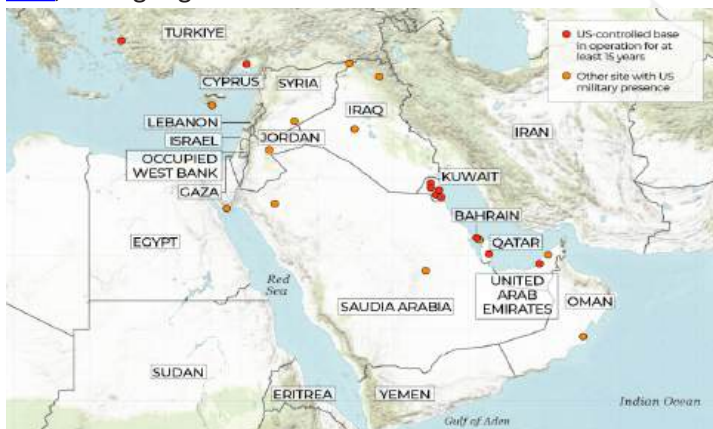
The first flight under Operation Sindhu carrying 110 Indian students evacuated from Iran amid the escalating Iran-Israel conflict landed safely in New Delhi.



US MILITARY BASES IN WEST ASIA

Context:

Following the US airstrikes on Iran's nuclear sites, Tehran has threatened retaliation against US military bases in [West Asia](#), raising regional tensions.



About US military bases in West Asia:

1. **Bahrain:**

- **Base:** Headquarters of the US Navy's **Fifth Fleet**
- **Significance:** Controls US naval operations in the **Gulf, Red Sea, Arabian Sea**, and Indian Ocean.

2. **Qatar:**

- **Base:** Al Udeid Air Base.
- **Significance:** Forward HQ of **US Central Command**; houses ~10,000 troops; critical for operations from **Egypt to Kazakhstan**.

3. **Kuwait:**

- **Bases:**
 - i. Camp Arifjan (HQ of US Army Central)
 - ii. Ali Al Salem Air Base ("The Rock")

About Operation Sindhu:

- **What it is?**
 - Operation Sindhu is a **government-led evacuation mission** to safely bring back Indian nationals trapped in conflict-affected regions of **Iran**.
- **Launched By:**
 - Ministry of External Affairs (MEA), Government of India
 - Supported by **Indian Embassies in Iran and Armenia**
- **Objectives:**
 - To ensure the **safe evacuation** of Indian citizens, especially students, from **war-affected regions of Iran**.
 - To coordinate **safe passage via Armenia** due to volatile conditions inside Iran.
- **Key Features:**
 - **Evacuation Route:** From northern Iran to Yerevan, Armenia to New Delhi.
 - **Priority:** Continuous monitoring by Indian Embassy and active coordination with host governments.
 - **Control Room:** 24/7 MEA Control Room established in New Delhi for assistance.



About Nuclear Non-Proliferation Treaty (NPT):

- **What it is?**
 - NPT is a global treaty that aims to **prevent the spread of nuclear weapons and technology**, while promoting peaceful uses of nuclear energy and global nuclear disarmament.
- **Established in:** Signed in 1968, entered into force in 1970.
- **Members:**
 - **191 countries** are parties to the treaty.
 - **Notable non-signatories:** India, Pakistan, Israel (North Korea withdrew in 2003).
- **Objectives:**
 - **Prevent nuclear weapons proliferation:** Limits the spread of nuclear weapons beyond the five recognised states, ensuring global security.
 - **Promote peaceful nuclear energy:** Supports international cooperation in civilian nuclear technology under strict **IAEA** safeguards.
 - **Work toward global disarmament:** Encourages progressive steps for complete nuclear disarmament through diplomatic and legal means.
- **Key Features:**
 - **Nuclear States Defined:** Recognises only five states (USA, UK, Russia, France, China) that tested nuclear weapons before 1967 as nuclear-weapon states.
 - **Safeguards System:** IAEA monitors civilian nuclear programs to ensure nuclear materials are not diverted to weapons use.
 - **Withdrawal Clause:** Article 10 allows any state to exit the treaty with 3 months' notice if **national security** interests are at risk.
 - **Global Coverage:** With 191 member countries, NPT is one of the world's most universal treaties — despite criticism over

Major Air Evacuation Missions by India:

Mission Name	Aim
Vande Bharat Mission	Evacuation of Indians stranded abroad during COVID-19 (2020)
Operation Devi Shakti	Evacuation from Afghanistan after Taliban takeover (2021)
Operation Ganga	Evacuation of Indians from Ukraine war zones (2022)
Operation Kaveri	Rescue of Indian citizens from Sudan conflict (2023)
Operation Ajay	Return of Indians from Israel during conflict (2023)
Operation Sindhu	Ongoing evacuation from war-hit Iran (2025)

NUCLEAR NON-PROLIFERATION TREATY (NPT)

Context:

Amid escalating conflict with [Israel](#), Iran's Parliament is preparing a Bill that may trigger its withdrawal from the Nuclear Non-Proliferation Treaty (NPT).

the **P5 monopoly**.

- **Verification Mechanism:** IAEA inspectors conduct regular site visits to verify compliance and uphold the integrity of non-proliferation norms.
- **India and NPT:**
 - **India is not a signatory** to the NPT, citing its discriminatory nature (P5 privilege).
 - India maintains a strong **non-proliferation record** through responsible nuclear policy and [NSG engagement](#).

MADLEEN SHIP INCIDENT

Context:

Israel detained the British-flagged aid ship Madleen, backed by the Freedom Flotilla Coalition (FFC), and deported Greta Thunberg for attempting to breach the Gaza blockade.

- This incident revives global memory of the **2010 Mavi Marmara attack**, where Israeli forces killed 10 activists aboard a similar flotilla.



About Madleen Ship Incident:

- **What It Is?**
 - Madleen is a humanitarian ship carrying relief aid to Gaza amidst the ongoing Israeli blockade.
- **Organised By:** Freedom Flotilla Coalition (FFC), a global civil society network advocating against the [Israeli blockade](#).
- **Objective:** Deliver essential supplies like medical kits, baby food, water filters, and prosthetics to war-affected Gazans.
- **Who Was on Board?**
 - 12 unarmed international volunteers, including climate [activist Greta Thunberg](#), MEP Rima Hassan, and journalists from France, Spain, and Brazil.
- **What Happened?**
 - Sailed from **Catania, Italy** on June 1, 2025.
 - Israel **intercepted the vessel** in

international waters and **deported all activists**, including Thunberg.

About Mavi Marmara Incident:

- **What It Is?**
 - A **six-ship flotilla** attempting to deliver 10,000 tonnes of aid to Gaza in defiance of Israel's naval blockade.
- **When:** May 31, 2010
- **Aim:** To challenge the legality of the blockade and deliver humanitarian aid including medical supplies, school kits, and generators.
- **What Happened?**
 - Israeli commandos **stormed the Mavi Marmara** in international waters using helicopters and warships.

About Freedom Flotilla Coalition (FFC):

- **What It Is?**
 - The **Freedom Flotilla Coalition (FFC)** is a global, grassroots movement comprising multiple civil society campaigns that collectively resist the **Israeli blockade on Gaza** through peaceful maritime missions.
- **Established In:** Formed in **2010**, after the deadly Israeli raid on the **Mavi Marmara**.
- **Objectives:**
 - **End the blockade** of the [Gaza Strip](#) imposed by Israel through direct civil resistance.
 - **Promote human rights and dignity** for all, regardless of race, religion, nationality, or political affiliation.
 - **Raise global awareness** about the humanitarian crisis in Gaza through nonviolent direct action.
- **Key Functions:**
 - **Organising [humanitarian sea missions](#)** to Gaza, carrying aid supplies and global volunteers.
 - **Facilitating global campaigns and awareness** through international media engagement.
 - **Advocating nonviolence** as a fundamental strategy in confronting injustice and occupation.

INGA HYDROPOWER PROJECT

Context:

The World Bank has approved \$250 million for the Inga 3 hydropower project in the [Democratic Republic of Congo](#) (DRC), despite criticism from global civil society groups.



About Inga Hydropower Project:

- **What is Inga Dam?**
 - A series of **hydropower projects** on the **Congo River**, aimed at utilizing Inga Falls' massive energy potential.
 - Inga 1 (1972) and Inga 2 (1982) are operational, **Inga 3** and **Grand Inga** are planned expansions.
- **Located in:** Approximately 225 km **southwest of Kinshasa**, the capital of the Democratic Republic of Congo (DRC).
- **Built on:** The **Congo River** at **Inga Falls**, one of the world's most powerful natural waterfalls.
- **Nations and Institutions Involved:**
 - **Lead Nation:** Democratic Republic of Congo
 - **Financing Partner:** **World Bank**, potentially committing **\$1 billion** overall
- **Features of Inga 3 and Grand Inga Project:**
 - **Scale and Capacity:**
 - Part of a \$10 billion hydroelectric scheme.
 - **Projected capacity:** ~4.8 GW for Inga 3, Grand Inga could reach **38.9 GW**, surpassing China's **Three Gorges Dam**.
 - **Design Type:** Planned as a **run-of-the-river system**, requiring minimal reservoir creation.
 - **Energy Use Focus:** Power likely directed to mining industries and export markets, not rural electrification.

COURT OF ARBITRATION ON THE KISHENGANGA AND RATLE HYDROELECTRIC PROJECTS

Context:

India has rejected a "supplemental award" issued by a Court of Arbitration on the Kishenganga and **Ratle hydroelectric** projects, citing its illegality and breach of the Indus Waters Treaty (IWT) 1960.



About Court of Arbitration on the Kishenganga and Ratle Hydroelectric Projects:

- **What is it?**
 - The Court of Arbitration is an ad-hoc international dispute resolution mechanism under **Annexure G of the Indus Waters Treaty (IWT)**, 1960, meant to resolve differences when bilateral means fail.
- **Legal Basis:** The COA can only be formed with the agreement of both India and Pakistan and in strict accordance with procedures under IWT.
- **India's Stand:** India terms the current court as "**illegally constituted**", as it was formed unilaterally at Pakistan's request, bypassing IWT norms.
- **Recent Verdict:**
 - The so-called "**supplemental award**" questions the design and functioning of India's Kishenganga and Ratle hydro projects. India rejected it, stating it violates India's sovereign rights and has no legal binding.

About Ratle Hydroelectric Project

- **Location:** Situated on the **Chenab River** in Kishtwar district, Jammu and Kashmir.
- **Capacity:** An 850 MW run-of-the-river hydro project.
- **Significance:** Key for **clean energy**, water security, and regional development. The project is supported through a joint venture between **National Hydroelectric Power Corporation (NHPC)** and JKPDC.
- **Pakistan's Objection:** Islamabad claims design features, like spillway structure and pondage, violate the IWT, which India strongly contests.

About Kishenganga Hydroelectric Project:

- **Location:** Built on the **Kishenganga River** (called

Neelum in Pakistan) in Bandipora district, Jammu and Kashmir.

- **Capacity:** A 330 MW run-of-the-river project.
- **Commissioned:** The project was commissioned in 2018.
- **Strategic Importance:** Diverts water from the Kishenganga to the Jhelum basin to maximize power generation — a provision permitted under the IWT, subject to conditions.
- **International Dispute:** Pakistan raised concerns on environmental and water flow impacts. The previous **neutral expert (2013)** allowed India's construction with minor design modifications.

India's Justification for Treaty Suspension:

- India has **placed IWT in abeyance** post the **Pahalgam terrorist attack**, citing Pakistan's continued backing of cross-border terrorism.
- Sovereign right claimed under **Vienna Convention on Law of Treaties**, which allows suspension in case of material breach.

EXERCISE NOMADIC ELEPHANT 2025

Context:

India and Mongolia are conducting the 17th edition of the joint military exercise 'Nomadic Elephant 2025' in Ulaanbaatar, Mongolia from May 31 to June 13, 2025.



About Exercise Nomadic Elephant 2025:

- **Type of Exercise:** It is a joint military training between two countries – India and Mongolia.
- **Current Edition:** This is the **17th edition** of the exercise, showing a long-term defence partnership.
- **Location:** The exercise is being held at the **Special Forces Training Centre** in **Ulaanbaatar**, the capital of **Mongolia**.
- **Indian Participation:** **45 soldiers** from the Indian Army are taking part. They are mainly from the **Arunachal Scouts**, and a unit trained for mountain warfare.
- **Key Features and Activities:**

- **Counterterrorism Training:** Soldiers are practicing skills like sniper shooting, room clearing, and fighting in mountain and city-like areas.
- **Peacekeeping Practice:** The troops are preparing for situations where countries work together under the UN's command to maintain peace and help civilians in conflict zones.
- **Cyber and Rock Warfare:** Training includes basic **cyber warfare awareness** and climbing or survival skills in rough terrains like hills and rocks.
- **Working Together Smoothly:** The goal is to improve coordination and understanding between the two armies so they can act together quickly during emergencies.
- **Cultural Bonding:** Soldiers are also sharing cultural programs to build friendship and mutual respect between the two countries.

Other Military Exercises in News

Exercise Name	Host Nation / Location	Key Features
Ekuverin 2025	Maldives (Maafilaafushi)	India-Maldives bilateral drill focused on coordination & counterinsurgency.
Desert Hunt 2025	India (Air Force Station, Jodhpur)	Integrated tri-service special ops with Para SF, MARCOS, and Garud units.
TROPEX 25	Indian Ocean Region	Naval operational readiness exercise involving amphibious landings.
Exercise Aakraman	India (Central Theatre Command)	Su-30 & Rafale-based air combat simulations for electronic warfare.

PASSAGE EXERCISE (PASSEX)

Context:

The Indian Navy and UK Royal Navy conducted a Passage Exercise (PASSEX) in the North Arabian Sea.



About Passage Exercise (PASSEX):

- **What is PASSEX?**
 - PASSEX refers to **joint naval drills conducted between friendly navies** when they cross each other during

deployments. It enhances interoperability, communication, and strategic cooperation at sea.

- **Host Location:** Conducted in the [North Arabian Sea](#), a region of geostrategic importance for global maritime trade and security.
- **Participating Nations:**
 - **India:** INS Tabar (stealth frigate), a conventional submarine, and P-8I long-range maritime aircraft.
 - **United Kingdom:** HMS Prince of Wales (aircraft carrier) and HMS Richmond (frigate) of the UK Carrier Strike Group.
- **Objectives of the Exercise:**
 - Strengthen interoperability between Indian and Royal Navies.
 - Enhance anti-submarine warfare coordination.
 - Conduct tactical manoeuvres and [maritime domain awareness](#) operations.
 - Share professional expertise and operational best practices.
 - Demonstrate mutual commitment to **Indo-Pacific maritime security**.
- **Key Features:**
 - **Helicopter control drills and fleet movement:** Enable precise coordination between ships and airborne units for swift multi-platform responses.
 - **Joint anti-submarine operations:** Combine air, surface, and subsurface assets to boost submarine detection and tracking.
 - **Officer exchanges:** Foster mutual trust and improve interoperability through shared naval experiences.
 - **Real-time tactical data sharing:** Enhances situational awareness with live encrypted information across platforms.
 - **Communication protocol exercises:** Test system compatibility for seamless coordination during joint missions.
- **Strategic Importance for India:**
 - **Strengthens India's defence diplomacy in Indo-Pacific:** Showcases India's naval reach and strategic alignment with key partners like the UK.
 - **Advances India-UK 2030 Roadmap goals:** Deepens defence cooperation under the Comprehensive Strategic Partnership.
 - **Supports SAGAR vision:** Promotes inclusive maritime security through collaborative regional engagement.

EXERCISE SHAKTI 2025

Context:

The 8th edition of Exercise Shakti, a joint Indo-French military drill, is being held from June 18 to July 1 at Camp Larzac in Southern France.



About Exercise Shakti 2025:

- **What is Exercise Shakti?**
 - Exercise Shakti is a biennial Indo-French joint military exercise, launched to enhance bilateral military cooperation and interoperability.
 - It focuses on sub-conventional warfare training and UN peacekeeping operations, especially under Chapter VII of the UN Charter.
- **Host and Participating Nations:**
 - Hosted by **France** in 2025 at **Camp Larzac, La Cavalerie**.
 - **Participants include:**
 - [Indian Army](#) contingent led by the Jammu and Kashmir Rifles.
 - French Army's 13th Foreign Legion Half-Brigade (13th DBLE).
- **Key Features:**
 - Joint training in semi-urban terrain, mimicking modern asymmetric conflict scenarios.
 - Shared learning of Tactics, Techniques and Procedures (TTPs) for sub-conventional operations.
 - Includes physically intensive activities to build endurance and team spirit.
 - Familiarisation with modern military equipment and battlefield technologies.
 - Promotes interoperability in [UN peacekeeping](#) and [counter-insurgency](#) frameworks.
- **Significance of the Exercise:**
 - Strengthens military diplomacy and

deepens India-France defence ties.

- Enhances strategic cooperation in Indo-Pacific and global security architecture.
- Builds trust, communication, and coordination between the two professional forces.

US ISSUE LEVEL 2 TRAVEL ADVISORY FOR INDIA

Context:

The US State Department issued a Level 2 Travel Advisory for India, urging citizens to exercise increased caution due to rising violent crime and terrorism threats.



About US Issue Level 2 Travel Advisory for India:

- **What it is?**
 - A Level 2 advisory is part of the **US State Department's 4-level travel alert system** that advises citizens on international travel risks. Level 2 means **"Exercise Increased Caution"**.
- **Published by:** US Department of State, Bureau of Consular Affairs.
- **Four Categories of US Travel Advisories:**
 - **Level 1** – Exercise Normal Precautions
 - **Level 2** – Exercise Increased Caution
 - **Level 3** – Reconsider Travel
 - **Level 4** – Do Not Travel
- **Key Issues in Latest Advisory on India:**
 - **Violent Crime and Sexual Assaults:**
 - Reports of rape and violent attacks at [tourist destinations](#) have risen.
 - The advisory urges travellers, especially **women**, to avoid solo travel.
 - **Terrorism Threats:**
 - Terror attacks may occur without

warning in crowded spaces — markets, public transport hubs, religious places, and government buildings.

- Restricted access for US officials in parts of **eastern Maharashtra, Telangana, and West Bengal** due to [Naxalite presence](#).

- **High-Risk Areas Identified:**

- **Jammu & Kashmir:** Do not travel due to terrorism and unrest.
- **India-Pakistan Border:** Do not travel due to armed conflict risk.
- **Central & Eastern India** (e.g., Chhattisgarh, Jharkhand): Terror threats by Naxalite groups.
- **Manipur:** Avoid due to **ethnic violence**.
- **Northeastern states:** Reconsider travel to parts of Arunachal Pradesh, Sikkim, and remote border regions due to insurgent activity.

- **Legal and Travel Restrictions:**

- **Satellite phones and [GPS devices](#) are banned;** violation leads to jail or fine.
- E-visas are **not valid for land crossings**.
- Violations of immigration rules can lead to **deportation or legal action**.

- **Impacts of the Advisory:**

- **Diplomatic Implication:** May strain India-US people-to-people ties and affect tourism exchanges.
- **Tourism Sector Impact:** May deter US travellers from visiting India, hurting the tourism economy.
- **Regional Sensitivities:** Highlights security lapses in [border and insurgency](#)-prone areas, prompting national response.
- **Policy Review:** Encourages India to bolster law enforcement and tourist safety, particularly in sensitive zones.
- **Perception Challenge:** Affects India's global image as a safe tourist and business destination.

GRAND CROSS OF THE ORDER OF MAKARIOS III

Context:

Prime Minister of India was awarded the Grand Cross of the Order of Makarios III, the highest civilian honour of [Cyprus](#), during his historic visit.

About Grand Cross of the Order of Makarios III:

- **What is it?**
 - The Grand Cross is one of the highest distinctions under the Order of Makarios III, Cyprus's premier national honour conferred on dignitaries for exceptional contributions.
- **Awarding Nation:** It is presented by the President of the Republic of Cyprus and named after Makarios III, the first President and spiritual leader of Cyprus.
- **Objective:**
 - To honour global leaders for **distinguished service to Cyprus** or **noteworthy global contributions** in diplomacy, peace, and human values.
 - Reflects Cyprus's commitment to fostering international goodwill and alliances.
- **Key Features:**
 - **Hierarchy:** Part of a 6-tiered order—ranging from Grand Collar to Knight.
 - **Recipients:** Reserved for [Heads of State](#), global leaders, and individuals with notable service to Cyprus.
 - **Symbolism:** Embodies the Cypriot spirit of independence, integrity, and international cooperation.
 - **Award Ceremony:** Conferred in a formal diplomatic setting by the President of Cyprus.

Cyprus honours PM Modi with highest civilian award

List of prominent awards and honours received by PM Modi

- Order of King Abdulaziz (Saudi Arabia)
- Order of Amanullah Khan (Afghanistan)
- Order of Zayed (United Arab Emirates)
- Legion of Merit (United States)
- Order of the Nile (Egypt)
- Legion of Honour (France)
- Order of Honour (Greece)
- Order of the Dragon King (Bhutan)
- Order of St. Andrew (Russia)

**Syllabus: Important International Institutions**

ASIAN DEVELOPMENT BANK (ADB)

Context:

The Asian Development Bank (ADB) has withdrawn a \$434.25 million loan for Assam's 1000 MW [Solar Power Park](#) following protests over tribal land acquisition in Karbi Anglong.

- The **Union Finance Ministry**, at the request of the **Assam government**, asked ADB to cancel the loan to avert further conflict and displacement of indigenous communities.

**About Asian Development Bank (ADB):**

- **What is ADB?**
 - A **regional multilateral development bank** that promotes inclusive and sustainable economic growth in [Asia and the Pacific](#).
 - Established to eradicate poverty and promote regional cooperation and integration.
- **Headquarters:** Metro Manila, Philippines
- **Established:** 19 December 1966
- **Membership:**
 - **69 member countries** (as of 2024), including **50 from Asia-Pacific**.
 - Founding inspired by the [UNESCAP](#) (United Nations Economic and Social Commission for Asia and the Pacific).
- **Voting and Shares:**
 - Shares are weighted by capital subscription.
 - Major shareholders (as of 2020):
 - **Japan & USA:** 15.571% each
 - **China:** 6.429%
 - **India:** 6.317%
 - **Australia:** 5.773%
- **Core Functions:**
 - **Infrastructure development:** Funds roads, transport, energy, and urban infrastructure to boost connectivity and growth.
 - **Climate resilience and clean energy:**

Supports projects promoting renewable energy, low-carbon tech, and disaster risk reduction.

- **Poverty alleviation and rural development:** Finances social welfare, agriculture, and rural employment to reduce poverty.
- **Regional integration and cross-border projects:** Encourages cooperation through trade corridors, power grids, and joint infrastructure.
- **ADB-Japan Scholarship Program (ADB-JSP):** Provides postgraduate scholarships to students from developing member countries.
- **Observer at the United Nations:** Participates in global policymaking forums to align development with UN goals.

52ND G7 SUMMIT

Context:

Prime Minister of India will attend the 52nd G7 Summit in Kananaskis, Canada from June 15–17, 2025, following an invite from Canadian Prime Minister.

- India has attended the G7 as a special invitee since 2019.



About 52nd G7 Summit:

- **What is G7?**
 - G7 is an informal intergovernmental group of the seven richest democracies.
 - It discusses major economic and geopolitical challenges.
 - It is not a treaty-based body and has no permanent secretariat.
- **When Was It Launched?**
 - Formed in 1975 as the Group of Six (France, Germany, Italy, Japan, UK, USA).
 - Canada joined in 1976, making it the G7.
- **Current Members:**
 - USA, UK, France, Germany, Italy, Japan,

Canada

- **European Union** participates as an invitee (non-member).

- **History and Evolution:**

- **1970s:** The G7 was formed in response to the global oil crisis to enable the world's top economies to coordinate macroeconomic strategies.
- **1980s:** It expanded its agenda to address geopolitical concerns, including arms control, global security, and human rights violations.
- **2000s onward:** G7 began engaging with developing nations, emphasizing issues like climate change, financial inclusion, and digital transformation.
- **1998–2014:** Russia joined to form the G8, but was removed post-Crimea annexation, signalling a return to G7's democratic alignment.

- **Key Functions of G7:**

- **Macroeconomic Coordination:** G7 provides a platform for the world's advanced economies to stabilize markets, reduce inflation, and ensure fiscal discipline.
- **Global Issue Response:** It drives action on global crises—like climate change, AI regulation, cybersecurity threats, and public health emergencies.
- **Democracy and Development:** Promotes liberal democratic values, gender equity, and sustainable development across partner countries.
- **Donor and Policy Signalling:** Acts as a key forum for aligning donor priorities and signalling coordinated global policy shifts to international institutions.

12TH BRICS PARLIAMENTARY FORUM

Context:

India has officially taken over the chairmanship of the 12th BRICS Parliamentary Forum, to be hosted in 2026.

- This follows the 11th BRICS Parliamentary Forum in Brazil, where member parliaments condemned the Pahalgam terror attack.



About 12th BRICS Parliamentary Forum:

- **What is the BRICS Parliamentary Forum?**
 - It is a platform for dialogue among parliaments of BRICS member countries.
 - Facilitates discussions on terrorism, AI governance, economic development, and inter-parliamentary cooperation.
- **Established in:** The first BRICS Parliamentary Forum was held in **2015**, as a parallel institution to the BRICS summits.
- **Period of Chairmanship:**
 - Chairmanship **rotates annually** among [BRICS countries](#).
 - India will serve as chair until the **conclusion of the 12th forum in 2026**.
- **Functions:**
 - Encourages parliamentary diplomacy and alignment on global policy issues.
 - Promotes democratic dialogue, cooperation in lawmaking, and consensus on global peace and security.
 - Acts as a voice for the Global South in parliamentary affairs.

About BRICS:

- **What is BRICS?**
 - BRICS is a geopolitical and economic grouping of 11 emerging nations, primarily from the Global South.
 - It promotes [multilateralism](#), reform of global institutions, and equity in international governance.
- **Established In:**
 - The term **BRIC** was coined in **2001**.
 - The group was formally institutionalized through Foreign Ministers' meetings from 2006.
 - The **first BRICS Summit** took place in **2009** in Ekaterinburg, Russia.
- **Headquarters:**
 - BRICS has **no permanent headquarters**.

- The **chairmanship rotates** annually among members.

- **Current Members (11 Members):**

- **Original Members:** Brazil, Russia, India, China, South Africa
- **New Members:** Egypt, Ethiopia, Iran, Indonesia, Saudi Arabia, UAE

- **Functions of BRICS:**

- Promotes inclusive global growth, sustainable development, and reform of [Bretton Woods institutions](#).
- Focuses on economic cooperation, digital transformation, energy security, and peaceful multilateralism.
- Enhances political coordination and civil society engagement across member states.
- Supports cooperation in areas like health, education, space, fintech, and AI governance.

ORGANISATION OF ISLAMIC COOPERATION (OIC)

Context:

India sharply rejected references made by the Organisation of Islamic Cooperation (OIC) during its Istanbul meeting, calling on the body to refrain from commenting on India's internal matters.



ORGANISATION OF ISLAMIC COOPERATION

About Organisation of Islamic Cooperation (OIC):

- **What is it?**
 - The **OIC** is an intergovernmental organisation representing the **collective voice of the Muslim world** on international issues.
- **Established in:** 25 September 1969 in Rabat, Morocco.
- **Headquarters:** Jeddah, Saudi Arabia.
- **Membership:**

- **57 member states** across four continents.
- **India is not a member** of [OIC](#).
- **Objectives:**
 - Promote **Islamic solidarity** among member states.
 - Safeguard the interests of the **Muslim Ummah**.
 - Foster international **peace and harmony**.
 - Eliminate **discrimination** against Muslims globally.
 - Support conflict resolution involving member nations.
- **History:**
 - 1969: Founded post-Al-Aqsa incident.
 - 1970: First foreign ministers' meeting held in Jeddah and permanent secretariat created.
 - 1972: First OIC Charter adopted.
 - 2008: Current Charter adopted during the 11th Islamic Summit in Dakar to modernise OIC's role.
- **Functions:**
 - Acts as a collective platform for Muslim-majority countries.
 - Maintains **consultative status** with the [United Nations](#).
 - Addresses issues like Palestine, counter-terrorism, poverty reduction, climate change, and human rights.
 - Implements [OIC-2025 Ten-Year Action Plan](#) focusing on **18 priority areas** with **107 goals**.

UN80 INITIATIVE

Context:

The [United Nations Secretary-General](#) Antonio Guterres unveiled the UN80 Initiative to reform and revamp the UN system ahead of the Charter's 80th anniversary.



About UN80 Initiative:

- The UN80 Initiative is a comprehensive reform drive across the UN system to align its structures, mandates, and operations with 21st-century challenges.
- **Launched by:** UN Secretary-General António Guterres.
- **Objective:** To **modernize the UN system**, enhance accountability, reduce duplication, and ensure it delivers effectively on peace, development, and human rights.
- **Key Features of the UN80 Initiative:**
 - **Three Core Workstreams**
 - **Efficiency & Cost Reduction:** Eliminate overlaps, reduce administrative costs, and automate services.
 - **Mandate Implementation Review:** Evaluate how over 3,600 UN mandates are executed—not the mandates themselves.
 - **Structural Reforms:** Realign programs and departments, especially in high-cost locations.
 - **Formation of UN80 Clusters:**
 - Seven thematic clusters include:
 - Peace & Security, Development (Secretariat & UN System), Humanitarian, [Human Rights](#), Training & Research, and Specialized Agencies.
 - **Relocation & Rationalization:**
 - Shift operations from high-cost cities like New York and Geneva.
 - Review potential redundancies and abolish underperforming functions.
 - **Budget Integration Goals:**
 - Integrate initial changes into the **2026 Revised Budget**.
 - Present major structural changes in the **2027 Programme Budget**.
- **Significance of the UN80 Initiative:**
 - **Strengthens Multilateralism:** Aligns with the vision of the Pact for the Future for revitalized global cooperation.
 - **Boosts UN Efficiency:** Saves resources by cutting overlaps, redundancies, and underutilized posts.
 - **Focuses on Impact:** Shifts from volume-based reporting to [results-oriented delivery](#).

NICE OCEAN ACTION PLAN

Context:

The [Third UN Ocean Conference](#) (UNOC3) concluded in Nice, France, with a landmark political declaration and over 800 voluntary commitments by 170+ countries called as Nice Ocean Action Plan.



About Nice Ocean Action Plan:

- **What is UNOC3?**
 - The **United Nations Ocean Conference 2025**, co-hosted by **France and Costa Rica**, is the third in a series of global efforts to advance Sustainable Development Goal 14 ([SDG14](#) – Life Below Water).
- **Participation:**
 - Held in **Nice, France** from **June 8–13, 2025**
 - Over **15,000 participants**, **60+ world leaders**, and **450+ side events**
 - Built on past UNOC events in **New York (2017)** and **Lisbon (2022)**
- **Key Commitments under Nice Ocean Action Plan:**
 - **Political Declaration** titled “*Our Ocean, Our Future: United for Urgent Action*”
 - **30% ocean protection by 2030** reaffirmed under the Kunming-Montreal Biodiversity Framework
 - **Ratification of [BBNJ](#) (High Seas Treaty)** gains momentum – now at **50 countries**
 - **€1 billion EU fund** for marine protection and sustainable fisheries
 - **Coral Bond by Indonesia & World Bank** to finance reef restoration
 - **Largest [Marine Protected Area \(MPA\)](#)** by French Polynesia (entire EEZ – 5 million sq.km)
 - **High Ambition Coalition for a Quiet Ocean** launched to reduce underwater noise pollution
- **Significance:**

- Strengthens global marine governance amid climate and biodiversity crises
- Supports equitable financing for [Small Island Developing States \(SIDS\)](#)
- Encourages science-driven ocean literacy, deep-sea mining moratorium advocacy, and nature-based solutions
- Catalyses global unity on ocean-climate-action nexus ahead of **SDG14’s 2030 deadline**

UNITED NATIONS ECONOMIC AND SOCIAL COUNCIL (ECOSOC)

Context:

India has been elected to the United Nations Economic and Social Council (ECOSOC) for the 2026–28 term with overwhelming global support.



About United Nations Economic and Social Council (ECOSOC):

- **What is the United Nations ECOSOC?**
 - **Full Form:** United Nations Economic and Social Council (ECOSOC)
 - **Established:** 1945 under the UN Charter
 - **Total Members:** 54 countries, elected by the [UN General Assembly](#) for a **3-year term**
 - **Key Role:** Central UN platform for policy dialogue, coordination, and consensus on economic, social, and humanitarian issues
- **Objectives of ECOSOC:**
 - **Raise living standards and promote full employment:** Aims to ensure economic well-being and job creation for all countries through global policy support.
 - **Address economic, social, and health challenges:** Tackles global poverty, inequality, and health crises via coordinated UN efforts and partnerships.
 - **Foster cultural and educational cooperation:** Encourages international

collaboration to advance education and preserve cultural heritage.

- **Promote human rights and fundamental freedoms:** Advocates for civil liberties and social justice as foundations for global peace and development.

- **Key Functions of ECOSOC:**

- **Coordinates 15 UN Specialized Agencies:** Ensures policy alignment across agencies like WHO, ILO, and FAO on global development goals.
- **Oversees 8 functional and 5 regional commissions:** Facilitates intergovernmental dialogue on social, economic, and regional development issues.
- **Acts as central forum for socio-economic policies:** Provides a global platform for member states to discuss and recommend economic and social policies.
- **Hosts High-Level Political Forum (HLPF):** Monitors implementation of the 2030 Sustainable Development Goals through annual ministerial reviews.
- **Holds joint sessions with IMF & World Bank:** Aligns UN development strategies with global financial systems for better policy coherence.

INTERNATIONAL ORGANIZATION FOR MARINE AIDS TO NAVIGATION (IALA)

Context:

India participated in the 2nd Session of the IALA Council in Nice, France, as the Vice President of the organization.

- India also invited members for the **3rd General Assembly (2025)** and **21st IALA Conference (2027)** in Mumbai.



About International Organization for Marine Aids to Navigation (IALA):

- **What is IALA?**
 - IALA is an intergovernmental technical

body responsible for standardizing and enhancing marine aids to navigation (AtoN) to ensure maritime safety and efficiency globally.

- **Established in:** 1957 as a non-governmental body and became an intergovernmental organization in 2021.
- **Headquarters:** Saint-Germain-en-Laye, near Paris, France.
- **India's Role & Term:**
 - India is a Council member **since 1980** and was elected Vice President during the 1st General Assembly in Singapore (2023).
 - India's tenure as **Vice President (2023–2027)** marks its rising maritime stature and technical leadership.
- **Objectives of IALA:**
 - To develop **international standards and technical guidance** for marine navigation aids.
 - To promote **safety of navigation**, protection of the marine environment, and **global harmonization** of practices.
 - To support **capacity building** in member states through training, technology sharing, and advisory services.
- **Functions & India's Contributions:**
 - **Standardization of Navigation Aids:** Sets global norms for buoys, beacons, lighthouses, and **Vessel Traffic Services (VTS)**.
 - **Technological Innovation:** Works on IoT-enabled navigation, Maritime Service Registry, and digital AtoN development.
 - **Training and Capacity Building:** India's Kolkata Marine Navigation Training Institute will host global training sessions.
 - **Heritage Conservation:** Focuses on preservation of historical lighthouses, aligned with India's own lighthouse tourism mission.
 - **Hosting Global Maritime Events:** India will host the 3rd General Assembly (2025) and 21st IALA Conference (2027) in Mumbai, underlining its global maritime leadership.

INTERNATIONAL INSTITUTE OF ADMINISTRATIVE SCIENCES (IIAS)

Context:

India won the Presidency of International Institute of Administrative Sciences (IIAS) for 2025–2028 in elections

held in Brussels, polling 61.7% of the votes.

- This is the first time India has held the presidency and the first-ever ballot-based election in IAS's 100-year history.



About the International Institute of Administrative Sciences (IIAS):

- **What it is?**
 - The International Institute of Administrative Sciences is a global, non-governmental scientific organization dedicated to advancing public administration research and reform through global collaboration.
- **Established in:**
 - Founded in **1930**, with nearly a century of contributions to administrative theory and comparative governance.
- **Headquarters:** Located in Brussels, Belgium
- **Objectives:**
 - Promote **comparative studies** in public administration.
 - Facilitate **intercultural dialogue** and research collaboration.
 - Advance **reform models** aligned with contemporary governance challenges.
 - Engage actively with **global public administration** discourse.
- **Key Functions:**
 - Organizes three international conferences annually across member nations.
 - Publishes the International Review of Administrative Sciences in English, French, and Mandarin.
 - Acts as a forum for policy practitioners and scholars from over 90 countries.
 - Collaborates with the [United Nations Public Administration Network](#) (UNPAN) and UN CEPA.

FACTS FOR PRELIMS (FFP) GS-3:

Syllabus: Economy

RBI NEW DRAFT RULES FOR GOLD LOANS

Context:

The Reserve Bank of India released new draft rules for gold loans to address rising defaults and standardize lending practices.



About RBI New Draft Rules for Gold Loans:

- **What is it?**
 - The RBI's draft guidelines aim to **regulate and harmonize gold loan practices** across banks and NBFCs, enhance borrower protection, and reduce the risk of asset loss due to over-leveraging.
- **Key Features of the Draft Guidelines:**
 - **Permitted Collateral:**
 - Loans only allowed against **gold jewellery** and **bank-issued coins**.
 - **Primary gold** like bars, ingots, bullion cannot be used as collateral.
 - **Loan-to-Value (LTV) Cap:**
 - LTV ratio **capped at 75%** of gold's assessed value.
 - For bullet repayment loans, **interest must be included in LTV**, reducing the loan disbursed.
 - **Collateral Valuation Norms:**
 - Gold must be **assayed by qualified personnel** with the borrower present.
 - Value must be based on **22-carat price**, adjusted if purity is lower.
 - Use the **lower of 30-day average** or

previous day's gold price.

- **Ownership Proof:**
 - Borrowers must **declare ownership** or furnish **original purchase bills**.
 - Loans cannot be granted on jewellery with **uncertain ownership**.
- **Loan Caps and Limits:**
 - Max **1 kg of gold** or **50 gm coins** per borrower allowed as collateral.
 - No concurrent loans on the same collateral for both consumption and business use.
- **Purpose-based Monitoring:**
 - Consumption loans must follow stricter tenure norms (max 12 months).
 - Business-purpose loans must be evaluated based on **cash flow, not collateral value**.
- **Renewal and Repledge Restrictions:**
 - Fresh loans allowed only after **full repayment** of principal and interest.
 - Lenders must return gold within **7 working days** or pay **₹5,000/day compensation**.
- **Why Did RBI Propose These Changes?**
 - **Rising Gold Loan NPAs:** NPAs from gold loans surged to ₹2,040 crore for banks and ₹4,784 crore for NBFCs (2024 data).
 - **Regulatory Gaps:** Lack of uniform standards in valuation, lending, and loan tracking.
 - **Market Growth Pressure:** Over 100% YoY growth in gold loan portfolios created systemic concerns.
 - **Borrower Protection:** To avoid loss of household gold, often emotionally and culturally significant.
- **Implications:**
 - **For Lenders:**
 - Increased compliance and monitoring burden.
 - May impact **NBFC liquidity** and growth, especially smaller ones.
 - **For Borrowers:**
 - Could restrict easy access to credit, particularly in rural and semi-urban areas.
 - Push for differentiated rules for small loans vs. high-value gold loans.

SEBI'S OPERATIONAL FRAMEWORK FOR ESG DEBT SECURITIES

Context:

[SEBI](#) has notified a detailed operational framework for issuing Environmental, Social, and Governance (ESG) debt securities, including social, sustainability, and sustainability-linked bonds.



About ESG Debt Securities:

- **What are ESG Debt Securities?**
 - ESG debt securities are financial instruments used to raise funds exclusively for projects with environmental, social, or governance benefits. These include:
 - **Social Bonds** (for social impact projects)
 - **Sustainability Bonds** (for combined environmental and social goals)
 - **Sustainability-Linked Bonds** (with targets linked to ESG performance)
- **Key Features of ESG Debt Securities:**
 - Funds must be utilized for eligible sustainable or social projects.
 - Bonds must be labelled accurately based on primary project objective.
 - Must comply with recognized international ESG standards.
 - Require third-party verification or certification.
 - Applicable to both public issues and private placements.

About SEBI's Operational Framework for ESG Debt Securities:

- **Classification Criteria:** Issuers must classify bonds as green, social, or sustainability based on the **primary objective** of the underlying projects, ensuring clear demarcation of impact.
- **Disclosure Requirements:**
 - **Initial disclosures** in the offer document must include project eligibility, selection

process, and indicative fund distribution between financing and refinancing.

- **Continuous disclosures** to be made annually, detailing impact metrics and fund utilization.
- **Independent Review Mechanism:** Issuers must appoint independent third-party reviewers or certifiers to [validate ESG alignment](#), increasing investor trust and transparency.
- **Monitoring and Impact Tracking:** Issuers are responsible for continuous impact assessment to ensure that the funded operations effectively reduce environmental or social harm.
- **Applicability and Implementation:** The framework applies to all issuances of ESG debt securities from June 5, 2025, and aligns with global ESG benchmarks to attract responsible capital.

THE WORLD BANK REVISED THE GLOBAL POVERTY LINE

Context:

The World Bank revised the global poverty line to \$3/day (PPP 2021) from \$2.15/day (PPP 2017) based on updated price data and survey methods.

About The World Bank Revised the Global Poverty Line:

- **What Is the Global Poverty Line?**
 - A **poverty line** defines the minimum daily spending needed for basic needs like food, clothing, and shelter.
 - The global poverty line is adjusted using [Purchasing Power Parity \(PPP\)](#) to allow comparison across countries regardless of currency value.
- **How Is Poverty Rate Determined?**
 - Poverty is measured as the **percentage of people living below a certain daily expenditure level** (e.g., \$2.15/day).
 - The **World Bank uses household consumption data**, adjusted for **PPP and inflation**, to calculate national and global poverty rates.

Recent Changes in The Global Poverty Line:

Aspect	Old Poverty Line	New Poverty Line
Benchmark	\$2.15/day (2017 PPP)	\$3/day (2021 PPP)
Basis	Limited surveys and older PPP	Improved CES 2022–23, updated price levels
Result	9% global poverty in 2022	10.5% global poverty in 2022

- The new estimate reflects **richer consumption data** and **updated cost of living**, especially in countries like India.
- **Extreme poverty line** is now based on the **median poverty line for low-income countries**.

Implications For India:

- **Sharp Drop in Extreme Poverty:** Under the old \$2.15 line, 2.4% of Indians were poor in 2022. The new \$3 line increases this to 5.3%, but it's still a major drop from 16.2% in 2011–12.
- **Data Shift:** The shift is driven by the first official CES survey in 11 years (2022–23), which shows higher consumption patterns, indicating improved living standards.
- **Moderate Poverty Still Significant** Under the \$4.20/day line (for lower-middle-income countries), 23.9% of Indians were poor in 2022 — showing that moderate poverty remains a concern.
- **Global Comparison Better Reflects Indian Progress:** India's progress is more visible with new PPP-adjusted benchmarks and better domestic data integration into global metrics.
- **Caution in Comparison:** Direct comparison with older surveys (like 2011–12 CES) is not advisable due to different methodologies and [inflation adjustments](#).

RBI HAS REDUCED THE PRIORITY SECTOR LENDING TARGET FOR SMALL FINANCE BANKS

Context:

The Reserve Bank of India (RBI) has reduced the Priority Sector Lending (PSL) target for [Small Finance Banks](#) (SFBs) from 75% to 60% to enhance lending flexibility and profitability.



[About RBI has reduced the Priority Sector Lending target for](#)

Small Finance Banks:

- **What it is?**
 - RBI's revised PSL norms aim to ease lending restrictions for SFBs, allowing them to diversify and improve asset quality.
- **Old PSL Criteria:** SFBs were mandated to allocate 75% of their Adjusted Net Bank Credit (ANBC) to PSL, which led to challenges in sourcing quality borrowers and lower margins.
- **New PSL Criteria:**
 - Overall PSL target reduced from 75% to 60%.
 - The additional PSL component reduced from 35% to 20%.
 - SFBs still required to maintain 40% ANBC towards specific PSL sub-sectors.

About Small Finance Banks (SFBs):

- **What it is?**
 - SFBs are differentiated banks, providing banking services to underserved and unbanked segments of the population.
- **Established in:** Concept introduced by RBI based on **Nachiket Mor Committee 2013** recommendations; licensed under [Banking Regulation Act, 1949](#).
- **Objective:**
 - Expand financial inclusion by serving small and marginal farmers, MSMEs, and informal sector entities.
 - Provide basic banking services to rural and semi-urban populations.
 - Serve as an alternative banking institution for credit-deprived sectors.
- **Features:**
 - Can accept all deposit types.
 - Can provide small-ticket loans with a localised operational model.
 - Can distribute non-risk-sharing financial products (mutual funds, pensions, insurance).
 - 25% of branches mandated in rural areas.
 - 50% of loan portfolio to [MSME sector](#).
 - Minimum net worth ₹100 crore at launch, to be raised to ₹200 crore within 5 years.
 - Required to maintain 15% Capital Adequacy Ratio (CAR) on risk-weighted assets.

29, 2025, marking the 132nd birth anniversary of Prof. [P.C. Mahalanobis](#), with the theme '75 Years of National Sample Survey'.



About 19th Statistics Day:

- **Statistics Day** is observed every year on **June 29** to recognize the legacy of Prof. Mahalanobis, known as the Father of Indian Statistics.
- **Theme (2025):** 75 Years of National Sample Survey (NSS)
 - Celebrates the evolution and contributions of the NSS since its inception in **1950**.
- **Objective:**
 - Promote awareness among youth about the **importance of statistics** in national planning and governance.
 - Highlight innovations in **real-time data monitoring, survey integration, and digital dissemination**.

About P.C. Mahalanobis:

- **Prasanta Chandra Mahalanobis (1893–1972)** was a pioneering Indian statistician, planner, and institution-builder.
- **Key Contributions:**
 - **Founder of Indian Statistical Institute (ISI):** Established ISI Kolkata in 1931, advancing statistical education and research.
 - **Mahalanobis Distance (1936):** A widely used multivariate statistical measure for identifying outliers and variation in data.
 - **Architect of National Sample Survey (1950):**
 - Designed India's first [household sample survey system](#), revolutionizing data-driven governance.
 - His sampling techniques helped India become a global leader in official statistics.
 - **Planner of India's Second Five-Year Plan:**
 - Advocated a **heavy-industry-led economic model**, known as the

P.C. MAHALANOBIS

Context:

The 19th National Statistics Day was celebrated on June

Mahalanobis model.

- Instrumental in shaping India's **planned economy**.
- **Flood Management Studies:** Provided statistical solutions for **Bengal and Odisha floods**, which prevented ineffective infrastructure spending.
- **Journal 'Sankhya' Founder:** Established India's first statistical journal to foster academic research in statistics.

Syllabus: Major Crops & Irrigation

TOTAPURI MANGOES

Context:

Andhra Pradesh banned the entry of Totapuri mangoes from Karnataka into Chittoor district, sparking a cross-border trade dispute over mango pricing and market access.



About Totapuri Mangoes:

- A prominent juicy mango cultivar known for its elongated shape and parrot beak-like tip.
- Commonly used in **juice and pulp extraction**, especially by food and beverage industries.
- Indigenous to South India and also known as *Ginimoothi*, *Sandersha*, *Banglora*.
- **Ideal Growth Conditions:**
 - Thrives in **tropical climates** with warm temperatures and dry summers.
 - Requires **moderate rainfall** and well-drained loamy soil.
- **Major Cultivation Regions:**
 - Widely grown in **Karnataka, Andhra Pradesh, and Tamil Nadu**.
 - Particularly cultivated in Chittoor, Kolar, Ramanagara, and parts of Bengaluru Rural.
- **Key Features:**

- Medium-sized fruit with greenish-yellow skin.
- Skin has minimal bitterness, making it edible with the pulp.
- Highly preferred for industrial pulp processing due to yield and quality.
- **Karnataka-Andhra Pradesh Mango Dispute:**
 - Chittoor District Collector banned Totapuri mangoes from entering from Karnataka.
 - The **price difference**—₹8/kg in AP (with ₹4 state subsidy) vs ₹5–6/kg in Karnataka—led AP to fear **market invasion by cheaper Karnataka mangoes**, undercutting local farmers.
- **Can a State Impose Inter-State Trade Ban?**
 - No, as per **Article 301** of the Indian Constitution, trade and commerce shall be free throughout the territory of India.
 - Any restriction must meet **reasonable justification** under **Article 304(b)** and be passed by state legislature with Presidential assent.

LITCHI

Context:

India flagged off its first export consignment of rose-scented litchi from Pathankot (Punjab) to Doha (Qatar), facilitated by **APEDA**.



About Litchi:

- **What it is?**
 - Litchi is a juicy, aromatic fruit rich in sugars, vitamins, and minerals. It belongs to the Sapindaceae family and is consumed fresh, canned, or dried.
- **Origin:** Native to **southern China**, it reached India through Myanmar and Northeast India in the **18th century**.

- **Agro-Climatic Conditions for Cultivation:**
 - **Temperature:** 21°C–35°C is ideal.
 - **Rainfall:** Requires **1500–2000 mm** annual rainfall, with dry, cool winters for flowering.
 - **Soil:** Well-drained deep [loamy soil](#) with pH 5.5 to 7.
- **Top Producing States:**
 - **Bihar** – Largest producer (~221.7 thousand MT), known for Shahi and China cultivars.
 - **West Bengal** – High productivity (~10.5 MT/ha).
 1. Punjab, Assam, Tripura, Jharkhand, Uttaranchal.
- **Economic Significance:**
 - Rich in **Vitamin C, B1, Riboflavin**, and minerals like **calcium and phosphorus**.
 - Used for making **squash, wine, pickles, and dried litchi-nut**.
 - Valued export commodity with increasing demand in Gulf and Southeast Asian
- **About Litchi Consignment:**
 - **Reefer pallets** used to preserve freshness.
 - High-value produce sourced from [progressive farming models](#).
 - Promotes **farmers' global market integration** under One District One Product (ODOP) initiative.
 - **Punjab's output:** 71,490 MT and contributes **12.39%** of India's total litchi production.

Coffee Production in India

- **What it is?**
 - India is the 7th largest coffee producer globally, contributing 3.5% to world production, and 5th largest exporter globally (5% of world exports).
- **Varieties grown:**
 - **Arabica:** Kents, S.795, Cauvery (Catimor), Selection 9 (Sln.9).
 - **Robusta:** Various high-yielding selections.

Factors	Arabica	Robusta
Soils	Deep, fertile, rich in organic matter, well drained and slightly acidic (pH 6.0-6.5)	Same as Arabica
Slopes	Gentle to moderate slopes	Gentle slopes to fairly level fields
Elevation	1000-1500m	500-1000m
Aspect	North, East and North- East aspects	Same as Arabica
Temperature	15°C – 25°C; cool, equable	20°C – 30°C; hot, humid
Relative humidity	70-80%	80-90%
Annual rainfall	1600-2500 mm	1000-2000 mm
Blossom showers	March-April (25-40mm)	February – March (25-40 mm)
Backing showers	April-May (50-75 mm) well distributed	March-April (50-75 mm) well distributed

- **Production data:**
 - India produces around **3.5–4 lakh tonnes** annually, with Karnataka contributing ~70%, followed by Kerala and Tamil Nadu.
- **Climatic conditions:**
 - Cultivated under two-tier [shade canopies](#) with 50+ tree species.
 - Arabica grown at 1000-1500m and Robusta at 500-1000m.
 - Requires 1600-2500 mm rainfall and cool-humid climate (15°C–25°C for Arabica).
- **Uniqueness of Indian Coffee:**
 - India is the only country that grows [100% shade-grown coffee](#), known for mild acidity, full-bodied flavour, and fine aroma.
 - Indian plantations are bio-diverse—spices like pepper, cardamom, and vanilla are grown alongside coffee.
 - Geographical Indication (GI) tagged coffees: five regional & two specialty varieties.
 - Historic origins trace back 400 years to Baba Budan's planting in Karnataka.

[Syllabus: Agriculture & Related Issues](#)

COFFEE EXPORT SURGE

Context:

India's coffee exports surged over 25% in FY2025-26, continuing a record-breaking trend after 40% growth last year, according to the [Coffee Board of India](#).

About Coffee Export Surge:

- **What it is?**
 - India has recorded **25%+ export growth** so far this year, after achieving US\$1803 million in coffee exports in FY2024-25, up from US\$1286 million in FY2023-24.
- **Factors leading:**
 - Global demand for premium shade-grown Arabica and Robusta.
 - Branding & promotion via [GI tags](#) and digital campaigns by Coffee Board.
 - Favourable climate & yield cycles post-pandemic disruptions.

INTERNATIONAL POTATO CENTRE (CIP)

Context:

The Union Cabinet has approved the establishment of a global potato research centre in Agra, a regional wing of the International Potato Centre (CIP), Peru.

- The **CIP-South Asia Regional Centre (CSARC)** will cater to potato-producing Indian states and South Asian nations.



About the International Potato Centre (CIP):

- **What it is?**
 - A global research organization under CGIAR, based in Peru, working on potato, sweet potato, and Andean tubers.
- **Established:** 1971 and began India operations in 1975 via ICAR collaboration.
- **CIP Network:** Active across South America, Africa, and Asia.
- **Headquarter:** Lima, Peru.

About CIP-South Asia Regional Centre (CSARC):

- **Location:** Singna, Agra, Uttar Pradesh.
- **Budget:** ₹171 crore (India – ₹111.5 crore; CIP – ₹60 crore).
- **Region Served:** India and neighbouring South Asian countries.
- **Objectives of CSARC:**
 - Boost productivity of potato and sweet potato through high-quality seeds.
 - Enhance farmer income via processing, [value addition](#), and exports.
 - Ensure food and nutrition security in climate-vulnerable areas.
 - Develop climate-resilient and disease-free varieties.
- **Functions of CSARC:**
 - **Seed Innovation:** Access global potato germplasm for better yield.
 - **Climate Research:** Develop heat-tolerant, drought-resistant potato varieties.
 - **Post-Harvest Tech:** Support storage, processing, and packaging innovations.

- **Farmer Support:** Train Indian and [South Asian](#) farmers in best practices.
- **Market Linkage:** Strengthen domestic value chains and export potential.
- **Significance for India:**
 - **Second-Largest Producer:** India produced 51.3 million tonnes (2020).
 - **Yield Gap:** Indian average – 25 tonnes/ha and potential – 50 tonnes/ha.
 - **Seed Self-Reliance:** Reduces dependence on seed imports from neighbours.
 - **Boost to Agri Exports:** Enhances capacity to export processed products.
 - **R&D Expansion:** After [IRRI-VNS](#), this is the second global Agri centre in India.
- **India and Potato:**
 - **Global Rank:** India is 2nd in production, after China (78 MT).
 - **Top States:** UP (15 MT), WB (15 MT), Bihar (9 MT).

ASAFOETIDA (HEENG)

Context:

CSIR-IHBT reported the first flowering and seed set of asafoetida (heeng) at Palampur, Himachal Pradesh confirming its successful acclimatisation and domestication in Indian soil.



About Asafoetida (Heeng):

- **What is Asafoetida?**
 - Asafoetida (*Ferula assa-foetida*) is a perennial medicinal and culinary spice derived from the oleo-gum resin of the plant's taproot.
 - Known as [heeng](#) in India, it is widely used in Indian cuisines and mentioned in Ayurveda and ancient texts like the Charaka Samhita for its digestive and aromatic properties.
- **Cultivation Zones:**

- Naturally grown in [cold arid climates](#) of Iran, Afghanistan, and Central Asia.
- Requires sandy, well-drained soils, low rainfall (<300 mm), and temperatures ranging from -4°C to 40°C.
- In India, ideal regions include Lahaul-Spiti, Kinnaur, Uttarkashi, and other high-altitude valleys.
- **Features of Asafoetida:**
 - **Long Maturation Cycle:** Takes 5 years to mature before flowering and resin extraction.
 - **Oleoresin Source:** Resin (heeng) forms 40–64% of dried gum tapped from its fleshy root system.
 - **Drought Tolerant:** Dormant in extreme winters, survives with minimal water.
 - **Medicinal Value:** Known for treating digestive issues, bloating, abdominal pain, and stimulating metabolism.
 - **Cultural Importance:** Mentioned in Mahabharata, Panini's works, and used in rituals and cuisine across India.
- **Significance of Indigenous Cultivation:**
 - **Self-Reliance:** India, once 100% import-dependent, now aims to become a domestic producer of heeng.
 - **Agro-Ecological Breakthrough:** Successful cultivation in Palampur (1300 m) proves adaptability beyond cold deserts.
 - **National Milestone:** Establishment of [Heeng Germplasm Resource Centre](#) (2022) and development of tissue culture labs for scaling up.



[About Collection of Real Time Observations & Photo of Crops \(CROPIC\):](#)

- **What is CROPIC?**
 - CROPIC stands for Collection of Real Time Observations & Photo of Crops. It is a mobile app-based initiative to photograph standing crops and analyse them using AI-powered image recognition.
- **Developed By:** Developed by the Union Ministry of Agriculture and Farmers' Welfare under the **Fund for Innovation and Technology (FIAT)** of [PMFBY](#).
- **Objectives of CROPIC:**
 - **Real-time monitoring** of crop growth stages and health.
 - **Early identification** of crop stress and potential yield loss.
 - **Automated assessment** for timely insurance claims under **PMFBY**.
 - **Build a crop image signature database** for machine learning models.
 - Promote **digital transformation** and resilience in agriculture.
- **How Will CROPIC Work?**
 - **Farmer-Driven Photo Upload:** Farmers will upload crop images 4–5 times during the crop cycle using the CROPIC mobile app, ensuring real-time, ground-level data capture.
 - **AI-Based Image Analysis:** These photos are processed through an [AI cloud](#) engine that uses computer vision to detect crop type, growth stage, stress signs, and possible damages.
 - **Diagnostic Output Generation:** The model generates precise diagnostics including crop condition, stage, stress indicators, and severity of loss based on visual markers.
 - **Web-Based Dashboard for Officials:** A centralised digital dashboard displays analysed data for district/state-level officials to [track crop health](#) and emerging risks.

COLLECTION OF REAL TIME OBSERVATIONS & PHOTO OF CROPS (CROPIC)

[Context:](#)

The Ministry of Agriculture and Farmers Welfare has launched CROPIC, a tech-driven initiative using AI to monitor crop health and automate crop loss assessment.

- The **pilot phase will cover Kharif 2025 and Rabi 2025-26** in 50 selected districts.

- **Support for Insurance Claim Validation:** The analysed images serve as verifiable evidence to aid fast, transparent, and automated processing of PMFBY compensation claims.
- **Key Features of CROPIC:**
 - **Crowdsourced Data Collection:** Data is sourced directly from farmers through mobile apps, ensuring local participation and wider coverage of farm-level realities.
 - **Photo-Analytics Engine with AI:** The platform integrates machine learning and image recognition to identify disease, pest attacks, or yield-affecting anomalies.
 - **Dashboard for Visual Monitoring:** Real-time analytics are mapped and visualised on a digital dashboard for authorities to intervene proactively.
 - **PMFBY Integration for Efficiency:** The model links seamlessly with the Pradhan Mantri Fasal Bima Yojana to reduce human dependency and enable faster claim settlements.
 - **Pilot Coverage and Scalability:** The initiative will initially cover 50 districts per season across different [agro-climatic zones](#), focusing on 3 insured crops per district.

FUSARIUM GRAMINEARUM

Context:

Two Chinese researchers have been charged in the US for smuggling *Fusarium graminearum*, a toxic crop-destroying fungus, raising fears of agro-terrorism.



About *Fusarium graminearum*:

- **What is It?**
 - *Fusarium graminearum* is a fungal pathogen that causes Fusarium Head Blight (FHB), primarily in wheat, maize, barley,

and other cereals.

- **Vector Type:** It is a [fungus](#) and spreads via airborne spores, contaminated seeds, and moist soil.
- **Banned/Regulated Under:**
 - While not universally banned, import and research involving *F. graminearum* are **highly regulated** under **biosecurity laws** in the US and many countries.
 - Requires [biosafety clearance](#) from agriculture and customs departments.
- **Key Features:**
 - Produces a **mycotoxin** called **vomitoxin** (Deoxynivalenol or DON).
 - Thrives in **warm, humid conditions**, spreading rapidly through crops.
 - Difficult to eradicate once introduced into a crop ecosystem
- **Impact on Food & Economy:**
 - Causes crop yield loss, grain rot, and contamination, rendering cereals unsafe for consumption.
 - Contaminated grain can trigger vomiting, fever, diarrhoea, and livestock health issues.

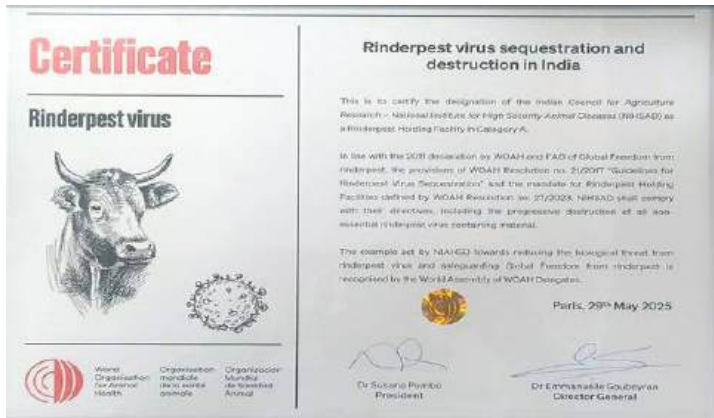
About Agro-Terrorism:

- **Definition:**
 - Agro-terrorism refers to the deliberate use of biological agents (fungi, bacteria, pests, or toxins) to attack a nation's agriculture sector, aiming to cause economic disruption, food insecurity, and public fear.
- **Regulated By:**
 - **In the US:** Monitored under USDA Animal and Plant Health Inspection Service (APHIS) and FBI biosecurity protocols.
 - **Globally:** Controlled through [international phytosanitary regulations](#) and **plant quarantine acts** of respective nations.

RINDERPEST VIRUS

Context:

India's ICAR-NIHSAD, Bhopal has been designated as a Category A Rinderpest Holding Facility (RHF) by [World Organisation for Animal Health](#) (WOAH) and the Food and Agriculture Organization (FAO) during the 92nd WOAH General Session in Paris.



About Rinderpest Virus:

- **What is Rinderpest?**
 - Rinderpest (also called *Cattle Plague*) was a **highly contagious viral disease** affecting cattle and other ruminants.
 - It belongs to the **Morbillivirus genus**, related to measles and canine distemper viruses.
 - The disease had **100% morbidity and up to 90% mortality**, making it a major livestock killer historically.
- **Transmission & Vector:**
 - Spread via **direct contact**, contaminated water, and aerosols from infected animals.
 - No insect vector and transmission is strictly **animal-to-animal**.
- **Clinical Features:**
 - Symptoms include high fever, nasal discharge, oral erosions, severe diarrhoea, and death within 10–15 days.
 - No known **zoonotic risk** to humans.
- **Impact on Livestock and Economy:**
 - Led to **massive cattle deaths**, causing **famine**, **rural poverty**, and **economic collapse** in agrarian societies.
 - Disrupted milk, meat, and manure supply — critical for rural livelihoods.
- **Global Eradication:**
 - Rinderpest became the **second disease ever eradicated** (after smallpox).
 - Declared globally eradicated by **FAO-WOAH in 2011** after a century-long effort.
- **India's Recent Achievement:**
 - **ICAR-NIHSAD Bhopal** is now a **WOAH-FAO Category A RHF**, securing India's role in RVCM containment.
 - Recognised for robust biosafety, inventory control, and emergency readiness.
- **Relevance of Category A RHF Status:**
 - Ensures India can safely store Rinderpest

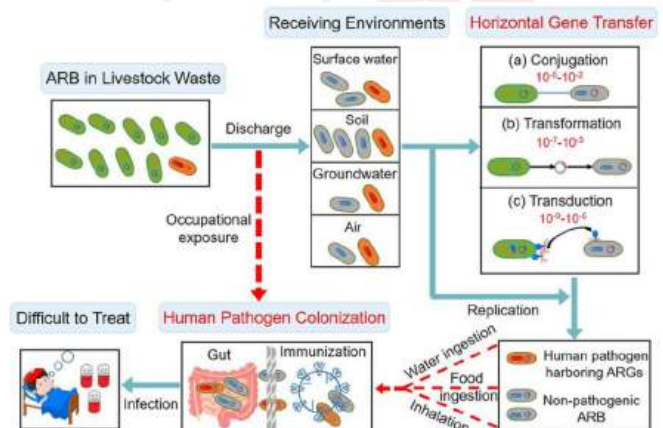
Virus-Containing Material (RVCM).

- Prevents accidental re-emergence of the disease through global surveillance.
- Lays the foundation for India's **future application to Category B** status, allowing vaccine development.

INSECT-BASED LIVESTOCK FEED

Context:

Indian researchers and ICAR institutes are scaling up insect-based livestock feed to combat **antimicrobial resistance** (AMR) and lower the environmental impact of conventional animal farming.



About Insect-Based Livestock Feed:

- **What it is?**
 - Feed prepared from **nutritious insect species** such as black soldier flies, crickets, mealworms, and grasshoppers, used as a sustainable protein source for livestock and aquaculture.
- **Developed by:** Pioneered by **ICAR** and private partners like Ultra Nutri India, Loopworm, and Bhairav Renderers in collaboration with institutes such as **CIBA** and **CMFRI**.
- **Principle behind working:**
 - **Waste-to-protein bioconversion:** Insects like **black soldier fly larvae** efficiently consume and metabolize **organic residues** (agro-waste, food waste, brewery waste), producing high-protein biomass suitable for animal feed.
 - **Rapid biomass accumulation:** Larvae grow rapidly (within 12–15 days), accumulating **up to 75% crude protein and essential lipids**, making the conversion process time-efficient and cost-effective.
 - **Enhanced gut microbiota modulation:** Insect-derived proteins enhance animal gut health by promoting **beneficial microbiota** and reducing dependency on antibiotic

growth promoters—thus helping mitigate AMR.

- **Closed-loop nutrient cycling:** Residual frass (insect waste) can be used as **organic fertilizer**, creating a circular, low-waste production model that supports sustainable agriculture.

- **Key Features:**

- **High nutritional value:** Rich in **proteins (up to 75%)**, fats, micronutrients (zinc, iron, calcium), and dietary fibre.
- **Efficient resource use:** Insects require **less land, water, and feed** compared to traditional livestock farming.
- **Low environmental footprint:** Emissions of **greenhouse gases** are significantly lower in insect farming.
- **Waste valorization:** Insects upcycle **organic and food waste** into usable animal feed.
- **Economic viability:** Lower **cost of production** with better protein digestibility than soy or fish-based feed.

- **Significance:**

- **Fights AMR:** Reduces the need for antibiotics in feed, helping tackle **antimicrobial resistance** at the source.
- **Supports food security:** Can help meet rising protein demands as global food production must grow **70% by 2050 (FAO)**.
- **Enhances climate resilience:** Aligns with **climate-smart agriculture** and helps reduce the environmental impact of animal farming.
- **Global momentum:** Already **regulated in 40 countries** for animal feed use, including species like black soldier flies and crickets.
- **Indian initiatives:** ICAR-led projects aim to scale insect-based feed for shrimp, seabass, poultry, and livestock.

Syllabus: Food processing and related Industries

SILICA GEL DESICCANT

Context:

Silica gel sachets, often found in packaged goods with the label “Do Not Eat”, have raised public curiosity about their purpose, safety, and reuse amid growing awareness of consumer product safety.



About Silica Gel Desiccant:

- Silica gel is a **desiccant**, meaning it absorbs and retains moisture to keep its surroundings dry.
- Commonly found as small, translucent beads in paper or cloth sachets.
- **Chemical Composition:**
 - Composed of **silicon dioxide (SiO₂)** — the same basic component as quartz or sand.
 - Non-toxic in most forms and chemically **inert**, but sometimes coated with **cobalt chloride** (a toxic moisture indicator)
- **How Silica Gel Works?**
 - Silica gel is **highly porous** at the nanoscale.
 - Water is absorbed through **capillary condensation**, mimicking natural mechanisms like how trees transport water.
 - A single gram can have a **surface area of up to 700 m²**, increasing its absorption efficiency dramatically.
- **Key Features:**
 - **Hydrophilic nature:** Strong affinity for water molecules.
 - **Non-toxic base:** Safe if accidentally touched or inhaled, but still a choking hazard.
 - **Colour change variants:** Some gels change colour (e.g., blue to pink) to signal moisture saturation.
 - **Rechargeable:** Can be reused after drying in an oven at 115–125°C.
- **Applications of Silica Gel:**
 - **Consumer Products:** Electronics, shoes, clothes, and food packaging to prevent mold or spoilage.
 - **Pharmaceuticals:** In medicine bottles and vitamin packs to avoid moisture degradation.
 - **Industrial Use:** Protects sensitive

instruments, chemicals, and camera lenses.

- **Storage & Preservation:** Used in libraries, museums, and households to preserve photographs, documents, and films.
- **Toxicity and Safety:**
 - Most silica gel is **non-toxic**, though it poses a **choking hazard**.
 - Variants with **cobalt chloride** (blue when dry, pink when wet) are **toxic** and mainly used in industrial settings.
 - Ingestion may cause discomfort but is rarely poisonous unless toxic dyes or chemicals are added.

Syllabus: Infrastructure (Energy, Ports, Roads, Airports)

INDIA ENERGY STACK (IES)

Context:

The Ministry of Power has launched a task force to conceptualize the India Energy Stack (IES) — a [Digital Public Infrastructure](#) aimed at transforming India's power sector through secure and interoperable digital systems.



About India Energy Stack (IES):

- The **India Energy Stack (IES)** is a comprehensive **digital public infrastructure (DPI)** for the **power sector**, designed to ensure seamless, secure, and real-time coordination across generation, distribution, and consumption.
- **Developed By:** The initiative is **spearheaded by the Ministry of Power**, Government of India.
- **Objective:**
 - **Modernize the [power sector](#)** with a unified digital foundation.
 - **Enable secure data sharing** and real-time analytics.
 - **Boost consumer-centric services** and grid

efficiency.

- **Support India's Net Zero goals** and economic ambitions.
- **Key Features of IES:**
 - **Unique Identifiers:** For consumers, energy assets, and energy-related transactions to ensure traceability and precision.
 - **Real-Time, Consent-Based Data Sharing:** Data exchange between stakeholders (consumers, utilities, policymakers) will be secure, permissioned, and instantaneous.
 - **Open APIs for Interoperability:** Enables seamless integration with third-party systems, startups, and service providers.
 - **Utility Intelligence Platform (UIP):** A modular application built on IES that provides analytics, insights, and decision support for DISCOMs, policymakers, and consumers.
 - **Consumer Empowerment Tools:** Features that enable choice, comparison, and participation in energy markets.
- **Expected Outcomes:**
 - **White Paper on IES** to be released for public feedback and policy formulation.
 - **Pilot Programs in Delhi, Gujarat, and Mumbai** to test the IES via real-life applications.
 - A **national rollout roadmap** for IES based on feedback, performance, and scalability.
 - Enhanced **grid resilience, renewable integration**, and **DISCOM efficiency**.
 - **Digital transformation** of power infrastructure to match the scale of Aadhaar and UPI success.

NATIONAL INVESTMENT AND INFRASTRUCTURE FUND (NIIF)

Context:

Union Finance Minister chaired the 6th meeting of the Governing Council of National Investment and Infrastructure Fund (NIIF) in New Delhi. The meeting reviewed fund performance, strategic partnerships, and new fund launches.

About National Investment and Infrastructure Fund (NIIF):

- **What is NIIF?**
 - NIIF is a government-anchored investment

platform that [mobilizes long-term capital](#) for infrastructure and strategic sectors in India. It serves as a Sovereign Wealth Fund (SWF)-linked asset manager with independent decision-making.

- **Headquarters:** Mumbai, Maharashtra
- **Nodal Ministry:** Ministry of Finance, Department of Economic Affairs
- **Established in:** 2015 (Announced in Union Budget 2015-16)
- **Key Features of NIIF:**
 - **Public-Private Fund Structure:** Government holds **49% equity**, remaining 51% from global investors such as ADIA, Temasek, and CPPIB.
 - **SEBI-Registered AIF:** Registered as a **Category II Alternative Investment Fund (AIF)** in December 2015.
 - **Professional Management:** Managed by a seasoned team, currently led by CEO & MD **Sanjiv Aggarwal**, appointed in February 2024.
 - **Robust AUM Growth:** NIIF now manages over **₹30,000 crore (US\$4.9 billion)** in Assets Under Management (AUM), catalysing capital worth ₹1.17 lakh crore.
 - **Collaborative Investment Model:** Strong institutional partnerships with sovereign wealth funds, pension funds, and [multilateral banks](#) (ADB, AIIB, NDB).

NIIF FUND STRUCTURE:

- **NIIF Master Fund:** India's largest infra-focused fund with a \$2.1 billion corpus, investing in core assets like ports, airports, and data centres.
- **Private Markets Fund (PMF):** Targets \$1 billion via third-party managers; PMF II has onboarded private investors and is nearing its first close.
- **Strategic Opportunities Fund (SOF):** With a \$3 billion corpus, it supports greenfield ventures critical to national resilience and economic self-reliance.
- **India-Japan Fund:** A \$600 million bilateral fund (GoI: 49%, JBIC: 51%) focused on environmental projects and Indo-Japan business synergy.

- **Governing Council of NIIF:**
 - **Chaired by:** Union Finance Minister
 - Advises on **strategy, governance, capital mobilization**, and fund deployment.
 - Set to meet **annually** going forward to guide NIIF's evolving mandate.
- **Functions of NIIF:**
 - **Capital Mobilization:** Attracts domestic and international capital for Indian infrastructure.
 - **Investment Management:** Deploys [equity](#) in commercially viable infrastructure and related sectors.
 - **Strategic Partnerships:** Builds platforms

with sovereign and institutional partners.

- **Policy Support:** Aligns investments with national priorities like Make in India, green energy, and digital infrastructure.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

Context:

Prime Minister of India will address the 81st Annual General Meeting (AGM) of the International Air Transport Association (IATA) in New Delhi.

- This is the first time in 42 years that India is hosting the IATA AGM, highlighting India's growing role in global aviation.



About International Air Transport Association (IATA):

- **What is IATA?**
 - IATA is a global trade association representing the airline industry, working to simplify and standardize air travel regulations and promote safe, efficient air transport.
- **Established in:** Founded in April 1945 in **Havana, Cuba**, as a successor to the 1919 International Air Traffic Association.
- **Headquarters:** Main office in **Montreal, Canada**, with executive offices in Geneva, Switzerland.
- **History & Evolution:**
 - Initially created to help regulate the airline industry post-[Chicago Convention \(1944\)](#).
 - Historically engaged in price-fixing and fare regulation during its early decades.
 - Held its first major tariff conference in Rio de Janeiro in 1947.
 - Modernized over time into a key platform for global policy, safety, and innovation in [aviation](#).
- **Objectives:**

- Represent airline interests globally.
- Advocate for fair regulations and reduced operational charges.
- Lead the industry in creating technical and commercial aviation standards.
- **Core Functions:**
 - Supports over 317 member airlines from 120+ countries (82% of global air traffic).
 - Develops safety, ticketing, cargo, and financial settlement frameworks.
 - Organizes the [World Air Transport Summit](#) (WATS) to address pressing industry issues such as:
 - Sustainable Aviation Fuel (SAF)
 - Energy security and decarbonization
 - Innovations in connectivity and airport infrastructure
 - Financing mechanisms for green aviation transitions

DIRECTORATE GENERAL OF CIVIL AVIATION (DGCA)

Context:

The Directorate General of Civil Aviation (DGCA) has launched a Comprehensive Special Audit to assess the entire aviation ecosystem and strengthen safety standards in India's fast-growing [civil aviation sector](#).



Ministry of Civil Aviation
Government of India

About Directorate General of Civil Aviation (DGCA):

- **What it is?**
 - India's apex **civil aviation regulatory body**, responsible for overseeing air safety, licensing, and compliance with international standards.
- **Established in:** Originally set up in **1978** as an attached office of the Ministry of Civil Aviation. It became a statutory body under the [Aircraft \(Amendment\) Act, 2020](#).
- **Ministry:** Operates under the Ministry of Civil Aviation, Government of India.
- **Objective:** To promote safe, efficient, and secure air transportation through robust regulation and

proactive safety oversight.

- **Key Functions of DGCA:**

- **Aircraft & Pilot Licensing:** Registers civil aircraft and licenses pilots, air traffic controllers, maintenance engineers, and crew.
- **Airport Certification:** Certifies airports for operational safety and efficiency.
- **Airworthiness Standards:** Formulates airworthiness standards and grants Certificates of Airworthiness.
- **Accident Investigation:** Investigates aviation incidents and promotes accident prevention measures.
- **Safety Oversight:** Monitors compliance of all licensed aviation entities under [Aircraft Rules, 1937](#).
- **Training Approval:** Approves flying, simulator, and maintenance training organizations.
- **Air Transport Services Regulation:** Grants **Air Operator's Certificates** and regulates Indian and foreign airline operations within Indian airspace.
- **Coordination with ICAO:** Engages in ICAO Universal Safety Oversight Audit Programme (USOAP) and represents India in global aviation forums.
- **Indigenous Development:** Promotes domestic manufacturing of aircraft and components.
- **Advisory Role:** Advises the Government on technical, regulatory, and international matters concerning civil aviation.

INFRASTRUCTURE PUSH FOR JAMMU AND KASHMIR

Context: The Central Government, on June 24, 2025, sanctioned 19 major infrastructure projects worth ₹10,637 crore in Jammu and Kashmir.

- Four projects—**Pir Ki Gali Tunnel, Sadhna Tunnel, Zaznar-Shopian Road, and Trehgam-Chamkote Road**—stand out for their strategic and security importance.



About Infrastructure Push for Jammu and Kashmir:

- **What It Is?**
 - A significant road and tunnel infrastructure initiative by the Central Government to **boost connectivity**, security, and development in border and remote regions of Jammu and Kashmir.
- **Total approved outlay:** ₹10,637 crore
- **Implementing agencies:** BRO ([Border Roads Organisation](#)) and earlier NHIDCL (now relieved of key tunnels)
- **Key Projects and Features:**
 1. **Pir Ki Gali Tunnel (Mughal Road):**
 - **Length:** 9 km
 - **Location:** Between Chatta Pani (Poonch) and Zaznar (Shopian)
 - **Purpose:** Enables **all-weather connectivity** on historic [Mughal Road](#)
 - **Strategic Value:** Alternate access to Kashmir, vital in emergencies, boosts tourism & military mobility.
 2. **Sadhna Tunnel (Kupwara-Karnah):**
 - **Length:** 7 km
 - **Significance:** Connects **Kupwara to Karnah**, near the Line of Control (LoC)
 - **Use:** Ensures round-the-year access, especially for **troop movement and locals** during snow-induced closures.
 3. **Zaznar-Shopian Road:**
 - **Length:** 28 km
 - **Function:** Part of proposed Surankote–Shopian–Baramulla Highway
 - **Benefits:** Improves **valley-to-border linkage**, reduces reliance on NH44.
 4. **Trehgam-Chamkote Road:**
 - **Length:** 68 km

- **Stretch:** Kupwara to Teetwal near the LoC
- **Purpose:** Enhances **border area infrastructure**, supports military logistics and civilian movement.

• **Strategic Importance:**

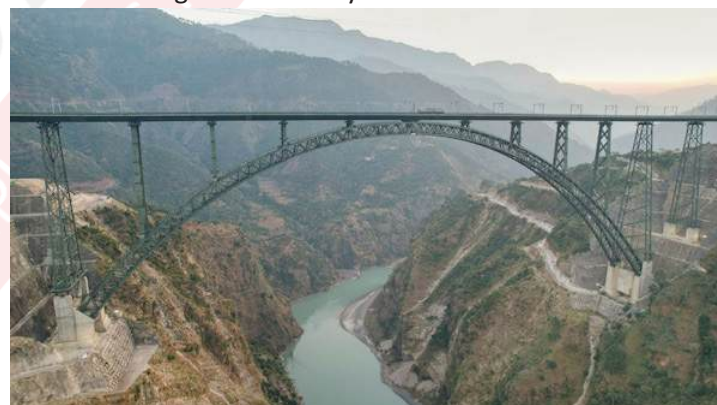
- Supports border area development and military preparedness.
- Enhances connectivity in [LoC zones](#) like Karnah, Teetwal.
- Reduces pressure on NH44, currently the sole valley highway.
- Enables faster disaster response, troop mobilisation, and economic access.

CHENAB RAILWAY BRIDGE

Context:

Prime Minister of India will inaugurate the Chenab Railway Bridge marking the completion of the [Udhampur–Srinagar–Baramulla Rail Link \(USBRL\) Project](#).

- It is now officially the tallest railway bridge in the world, symbolizing engineering excellence and strategic connectivity.



About Chenab Railway Bridge:

- **What is it?**
 - A steel-arch railway bridge built over the **Chenab River** in Jammu & Kashmir.
 - Recognized as the tallest railway bridge globally with a height of **359 meters—35 meters taller than the [Eiffel Tower](#)**.
- **Location:**
 - Situated between **Bakkal and Kauri villages** in **Reasi district**, Jammu & Kashmir.
 - Forms a critical part of the Udhampur–Srinagar–Baramulla Rail Link (USBRL) project.
 - Connects **Katra to Sangaldan**, enabling rail access to **Srinagar**.
- **Who Built It?**

- Executed by [Konkan Railway Corporation](#).
- Constructed by a JV of Afcons Infrastructure, Ultra Construction (South Korea), and VSL India.
- **Key Features of the Bridge:**
 - **Total Length:** 1,315 meters (530 m approach + 785 m main arch).
 - **Wind Resistance:** Up to 266 km/h and earthquake-resistant (up to magnitude 8).
 - **Temperature Tolerance:** Up to -20°C.
 - **Blast-Proof:** Designed to resist explosions equivalent to 40 tonnes of TNT.
 - **Lifespan:** 120 years and trains can run up to 100 km/h.
- **Significance:**
 - **Strategic Importance:** Strengthens connectivity to Kashmir, a border-sensitive region.
 - **Engineering Feat:** One of the most complex terrains and built in a [high seismic zone \(Zone V\)](#) with fractured geology.
 - **Boosts National Integration:** Provides uninterrupted rail access to the Valley.
 - **Civil Engineering Landmark:** Symbolizes India's advancement in infrastructure and resilience.
 - **Tourism & Economic Growth:** Promotes regional development and employment.

About India's First Maritime NBFC - Sagarmala Finance Corporation Limited:

- **What it is?**
 - SMFCL is a **Mini Ratna Category-I CPSE** under the Ministry of Ports, Shipping and Waterways (MoPSW), functioning as a dedicated NBFC to cater exclusively to the financial needs of India's maritime sector.
- **Headquarters:** New Delhi.
- **Objectives:**
 - Bridge financing gaps in maritime infrastructure and logistics.
 - Enable financial inclusion for MSMEs, startups, and educational institutions.
 - Support strategic growth sectors like shipbuilding, cruise tourism, and green energy.
 - Aid India's global maritime leadership goal under [Amrit Kaal Vision 2047](#).
- **Functions:**
 - Offer **short-, medium-, and long-term credit** to port authorities, logistics companies, and maritime entrepreneurs.
 - Finance **innovative maritime projects**, including [green hydrogen](#), shipbuilding, and **digital ports**.
 - Act as a **financial catalyst** for Public-Private Partnership (PPP) models in ports and allied infrastructure.
 - Partner with **startups and research institutions** to fund maritime skilling and R&D.
- **Significance:**
 - Fulfills a long-standing demand for a sector-focused financial body in maritime development.
 - Strengthens India's port-led development under the [Sagarmala Programme](#).
 - Enhances investment readiness of maritime infrastructure through customized financial solutions.

INDIA'S FIRST MARITIME NBFC - SAGARMALA FINANCE CORPORATION LIMITED

Context:

Union Minister of Shipping inaugurated India's first maritime sector [NBFC](#), the Sagarmala Finance Corporation Limited (SMFCL), aiming to bridge financial gaps and boost infrastructure growth in the maritime domain.

- Registered with the RBI as an NBFC. SMFCL is aligned with the Maritime Amrit Kaal Vision 2047.



DIGITAL INITIATIVES FOR MARITIME SECTOR

Context:

The Union Minister of Ports, Shipping & Waterways launched a series of digital initiatives aimed at enhancing efficiency and sustainability in the [maritime sector](#).

- Key projects include the **SAGAR SETU platform**, **Digital Centre of Excellence (DCoE)**, **DRISHTI**

Framework, and standardized Scale of Rates (SOR).



About Digital Initiatives for Maritime Sector:

- **What it is?**
 - A maritime digital push led by the Ministry of Ports, Shipping and Waterways (MoPSW) to modernize port infrastructure, logistics, and governance using emerging technologies.
- **Objective:**
 - Enhance port efficiency and trade ease.
 - Enable data-driven governance.
 - Support sustainability and clean energy goals.
 - Align with **Maritime India Vision 2030** and **Amrit Kaal Vision 2047**.

Key Digital Initiatives Launched:

1. **Digital Centre of Excellence (DCoE):**
 - **Partnership:** MoPSW & Centre for Development of Advanced Computing.
 - **Purpose:** Spearhead digital transformation in maritime logistics.
 - **Features:**
 - i. Uses **AI, IoT, Blockchain** for smart ports.
 - ii. Focus on sustainable and green operations.
 - iii. Supports real-time port operation upgrades.
2. **SAGAR SETU Platform:**
 - **What it is:** Unified EXIM digital interface.
 - **Integration:** 80+ ports, 40+ stakeholders.
 - **Goals:**
 - i. Reduce paperwork and processing delays.
 - ii. Promote seamless, transparent logistics.
 - iii. Aligns with **PM Gati Shakti Master Plan**.

- **Impact:** Boosts Ease of Doing Business (EoDB) and port productivity.

3. DRISHTI Framework:

- **Full Form:** Data-driven Review Institutional System for Tracking Implementation.
- **Pillars:** KPI Monitoring, Progress Tracking, Organisation Oversight, and Cell-wise Review
- **Goal:** Monitor Maritime India Vision 2030 projects in real time.

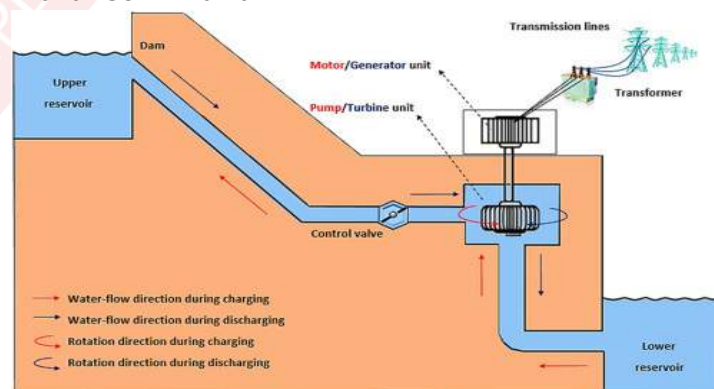
4. Scale of Rates (SOR) Template:

- **What:** Standardised tariff structure for major ports.
- **Why:** Reduces ambiguity, ensures transparency.
- **Benefit:**
 - i. Digital comparison of tariffs.
 - ii. Flexibility for local port adaptation.
 - iii. Investor and trader confidence boosted.

INDIA'S FIRST VARIABLE SPEED PUMPED STORAGE PLANT

Context:

India's first Variable Speed Pumped Storage Plant (PSP) at Tehri, Uttarakhand, has commenced commercial operation with a 250 MW unit.



About India's first Variable Speed Pumped Storage Plant:

- **What is it?**
 - A **1,000 MW hydropower project** designed to store energy by pumping water to an upper reservoir using surplus power, and releasing it to generate electricity when demand rises.
- **Executed by:** THDC India Limited (THDCIL), under the **Ministry of Power**
- **Technology Partner:** GE Vernova (provided power electronics and 250 MW variable-speed unit)

- **Location:** Tehri Garhwal, Uttarakhand
- **How the Tehri PSP Works?**
 - **Pumping Phase:** Surplus renewable energy (e.g., from solar or wind) is used to pump water from lower to upper reservoir.
 - **Energy Storage:** The water in the upper reservoir **stores potential energy** like a “water battery”.
 - **Generation Phase:** When electricity demand rises, **water is released** through turbines to generate power.
 - **Electricity Generation:** Flowing water **spins turbines**, which activate generators to produce electricity.
 - **Variable Speed Operation:** The plant can **adjust turbine speed**, allowing precise control of pumping and generation, improving efficiency and grid support.
 - **Grid Synchronization:** The system maintains synchronization with grid frequency, ensuring stable power delivery.
- **Key Features and Advantages:**
 - **First Variable-Speed PSP in India:** This is India’s first pumped storage project using variable-speed technology, marking a leap in hydropower innovation.
 - **250 MW Initial Capacity:** The project began with the commissioning of its **first 250 MW unit**, part of the larger 1,000 MW Tehri PSP.
 - **Enhanced Efficiency:** Variable-speed turbines allow **precise control** over pumping and generation, enhancing overall system efficiency.
 - **Improved Grid Stability:** It enables real-time power adjustments, supporting the stability of the grid amid renewable energy fluctuations.
 - **Flexible Operation:** The plant can swiftly switch between pumping and generation, adapting to dynamic grid demands.
 - **Enables Energy Storage:** Functions like a giant water battery, storing surplus energy for peak-hour power generation.

of the three types of neutrinos, capping it at 8.8×10^{-7} times the [mass of an electron](#)—twice as precise as previous estimates.



About KATRIN experiment:

- **What is KATRIN?**
 - The Karlsruhe Tritium Neutrino (KATRIN) Experiment is a precision physics project that studies the mass of neutrinos using beta decay of tritium.
- **Developed by:** Conducted by an international collaboration led by the Karlsruhe Institute of Technology (KIT), Germany.
- **Nations Involved:** Major institutions from Germany, the U.S., and other European countries contribute to the experiment.
- **Objective:** To directly measure the absolute mass of neutrinos—a major unsolved question in [particle physics](#).
- **Key Features of KATRIN:**
 - **Massive Detector:** Uses a 200-tonne spectrometer for ultra-precise electron energy measurements during tritium decay.
 - **Tritium Disintegration Monitoring:** Observes beta decay of tritium to track maximum energy of electrons, revealing [neutrino mass](#).
 - **Robust Data Collection:** Analysed over **36 million electrons** across **259 days**, making it one of the most data-rich neutrino studies.
 - **Direct Measurement Method:** Unlike [cosmological studies](#), KATRIN does not rely on early universe assumptions or models.
- **Significance of KATRIN:**
 - **Breakthrough in Neutrino Physics:** Set a **new upper limit on the sum of neutrino masses**—a critical input for physics beyond the Standard Model.
 - **Validates and Challenges Theory:** Confirms neutrinos have mass, challenging the Standard Model which assumes massless neutrinos.

Syllabus: Science and Technology- Developments & Applications

KATRIN EXPERIMENT

Context:

The KATRIN experiment in Germany has published the most stringent upper limit yet on the sum of the masses

- **Clue to New Physics:** Opens path to identify **new forces or particles** like Majorana vs Dirac neutrinos, which could reshape particle physics.
- **No Model Bias:** Result is **model-independent**, making it more reliable than cosmological estimates that rely on multiple assumptions.
- **Foundation for Future Experiments:** Sets technical standards for future [neutrino detectors](#) and decay experiments worldwide.

MAGNETIC ISOLATION AND CONCENTRATION (MAGIC)

Context:

A new technique called Magnetic Isolation and Concentration (MagIC) has enabled cryo-electron microscopy (cryo-EM) to analyse samples 100 times more dilute than earlier.



About Magnetic Isolation and Concentration (MagIC):

- **What is MagIC?**
 - **MagIC** stands for **Magnetic Isolation and Concentration** – a novel enhancement to cryo-electron microscopy (Cryo-EM).
 - It enables the imaging of **ultra-dilute biological samples**—100 times more dilute than what was previously possible.
- **How It Works?**
 - **Tagging:** Molecules of interest are bound to **magnetic beads** (about 50 nm in size).
 - **Magnetic Clustering:** A magnet is used to pull and cluster these bead-bound molecules into dense regions on the [cryo-EM](#) grid.
 - **Image Capture:** The concentrated clusters

allow more **usable particles per image**, making detection feasible even at **<0.0005 mg/ml** concentration.

- **DuSTER Algorithm:** An AI-based tool filters out background noise by selecting only those particles that are consistently detected across multiple imaging passes.

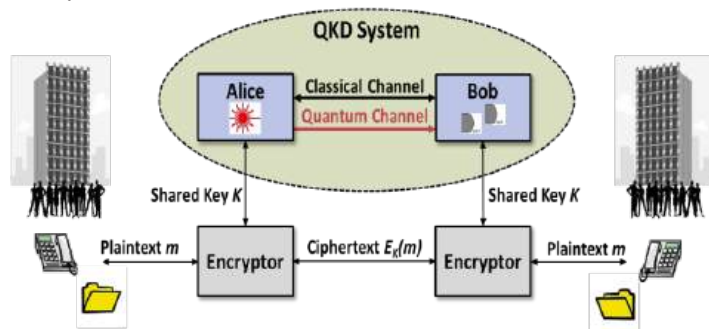
About Cryo-Electron Microscopy (Cryo-EM):

- **What is Cryo-EM?**
 - A revolutionary imaging technique that captures 3D structures of biomolecules at near-atomic resolution.
 - It involves rapid freezing (vitrification) of samples and imaging them using electron beams.
- **Developed by:**
 - Initially developed in the **1980s**.
 - Recent advancements in hardware and image-processing algorithms earned the **2017 Nobel Prize in Chemistry** (awarded to Dubochet, Frank, and Henderson).
- **Working Principle:**
 - **Sample Preparation:** Protein solutions are rapidly frozen using cryogenic liquids (e.g. ethane) into amorphous ice to preserve natural structures.
 - **Imaging:** Electron beams pass through the frozen sample producing multiple **2D projections**.
 - **Data Processing:** Computational software reconstructs a **3D density map** from thousands of 2D particle images.
 - **Structure Modelling:** Final atomic-level models are fitted into this density for biological insights.
- **Applications of Cryo-EM:**
 - **Structural Biology:** Mapping large, flexible macromolecules like ribosomes, ion channels.
 - **Virology:** Revealing virus capsids (e.g. [SARS-CoV-2](#) spike protein).
 - **Cell Biology:** Imaging cell organelles, cytoskeletons, mitotic spindles.
 - **Neurobiology:** Understanding synaptic vesicles and neuronal signalling.
 - **Drug Discovery:** Designing inhibitors by visualizing protein-ligand binding sites.
 - **Molecular Biology:** Visualizing RNA polymerases, ribosomes, and translation complexes.

INDIA'S QUANTUM LEAP IN COMMUNICATION

Context:

India successfully demonstrated quantum entanglement-based secure communication over 1 km in open air. This breakthrough was achieved by DRDO and IIT Delhi, marking a leap toward unhackable networks.



About India's Quantum Leap in Communication:

- **What Is the Achievement?**
 - India has entered the quantum communication era by showcasing [Quantum Key Distribution \(QKD\)](#) in open air using entangled photons, enabling unbreakable encryption.
- **Developed By:**
 - Defence Research and Development Organisation (DRDO)
 - Indian Institute of Technology (IIT) Delhi
- **How Quantum Communication Works?**
 - Utilizes [quantum entanglement](#), where two particles remain interconnected—any change in one instantly reflects in the other.
 - **Quantum Key Distribution (QKD)** ensures secure sharing of encryption keys.
 - If an eavesdropper tries to intercept, the quantum state collapses, instantly alerting both sender and receiver.
- **Key Features of the Breakthrough:**
 - **One-kilometre Secure Wireless Communication:** India achieved quantum communication over a 1-km distance in open air, without relying on fiber cables or lab-enclosed systems.
 - **Secure Key Rate – 240 bps:** The system successfully transmitted encryption keys at a secure rate of 240 bits per second, suitable for critical data security.
 - **Low Error Rate – Below 7%:** The quantum link maintained a transmission error rate under 7%, ensuring stability and reliability for practical deployments.

- **Open-Air (Free-Space) Demonstration:** Unlike fiber-based QKD, this milestone occurred outdoors, showcasing the feasibility of wireless quantum communication in real-world conditions.
- **Indigenous Quantum Hardware:** The entire setup was developed using locally sourced photonic components, marking a step toward Atmanirbhar Bharat in quantum tech.

• Significance for India:

- Supports [India's National Quantum Mission](#) and strategic tech autonomy.
- Enables development of military-grade, banking, and governance encryption systems.
- Prepares groundwork for urban quantum networks and battlefield-secure communication.
- Aligns India with global leaders like China and the US in quantum networking.

QUANTUM 5G FIXED WIRELESS ACCESS

Context:

BSNL has soft-launched Quantum 5G Fixed Wireless Access (FWA) in Hyderabad, India's first fully indigenous, SIM-less 5G FWA service, delivering fibre-like speeds via 5G radio.



About Quantum 5G Fixed Wireless Access:

- **What It Is?**
 - Quantum 5G FWA is a **Fixed Wireless Access** solution by BSNL that offers high-speed internet without physical fibre, using 5G radio waves and **SIM-less architecture**.
- **Launched By:** Launched by [BSNL](#).
- **How It Works?**
 - **Direct-to-Device (D2D) platform** replaces the need for physical SIM cards—devices connect automatically over 5G networks.
 - **Customer Premises Equipment (CPE)** uses built-in authentication, enabling instant and

seamless access to the internet.

- Operates entirely on an **indigenous technology stack** (core network, [radio access network](#) - RAN, and CPE) developed by Indian vendors under the [Atmanirbhar Bharat](#) initiative.
- No dependency on foreign components—fully controlled and operated within Indian digital infrastructure.

• **Key Features:**

- SIM-less architecture:** First-of-its-kind in India—removes physical SIM requirement for 5G Fixed Wireless Access (FWA).
- Made-in-India tech stack:** Designed and integrated by Indian engineers—core network, RAN, and devices all built domestically.
- High-speed performance:** Achieves up to 980 Mbps download and 140 Mbps upload with latency below 10 milliseconds—supports bandwidth-heavy applications.
- Easy and rapid deployment:** Plug-and-play CPE device—no trenching or laying of fibre cables needed; covers over 85% of Hyderabad households.
- Optimized for modern needs:** Ideal for Ultra-HD video streaming, cloud-based gaming, remote working, and smart home devices.

• **Significance:**

- Establishes BSNL as India's first [telecom operator](#) offering indigenous, SIM-less 5G Fixed Wireless Access.
- Demonstrates India's capabilities under **Atmanirbhar Bharat** in designing and deploying cutting-edge telecom infrastructure.
- Enables affordable gigabit-speed internet for both urban centres and underserved/rural regions, bridging the digital divide.

• **Roadmap and Future Plans:**

- Pilot cities:** Bengaluru, Pondicherry, Visakhapatnam, Pune, Gwalior, Chandigarh by September 2025.

DIFFERENCE BETWEEN U-238 AND U-235



FEATURE	U-238	U-235
ABUNDANCE	99.27% of natural uranium	0.72% of natural uranium
NEUTRON NUMBER	146	143
FISSION CAPABILITY	Cannot sustain chain reaction	Can sustain chain reaction

About Uranium Enrichment:

• **What is Uranium Enrichment?**

It is the process of increasing the concentration of Uranium-235 (U-235) isotope in natural uranium to enable sustained [nuclear fission](#), used in both civilian reactors and nuclear weapons.

• **Facility in News:**

- Natanz and Fordo:** Iran's major uranium enrichment sites
- Isfahan:** Site for uranium processing and raw material preparation

• **What is an Isotope?**

Atoms of the same element with the same number of protons but different numbers of neutrons are called isotopes. Their nuclear behaviour differs even if their chemical properties remain similar.

• **Steps in Nuclear Enrichment:**

- Conversion:** Uranium ore is processed into uranium hexafluoride gas (UF₆), which can be efficiently used in centrifuges for isotope separation.
- Centrifugation:** UF₆ gas is spun in ultra-fast centrifuges (~70,000 rpm); the heavier U-238 moves outward, while lighter U-235 concentrates near the centre.
- Cascade Process:** [Centrifuges](#) are connected in series (cascade), where each stage gradually increases U-235 concentration through repeated separations.
- Product Use:**
 - Low Enriched Uranium (LEU):** 3–5% U-235, used in civilian nuclear power reactors to generate electricity.
 - Highly Enriched Uranium (HEU):** ~90% U-235, used for compact, efficient nuclear weapons (weapons-grade uranium).
- Significance:**
 - Civilian Uses:** Generates ~9% of global

URANIUM ENRICHMENT

Context:

Israel recently targeted Iran's key nuclear facilities at Natanz, Fordo, and Isfahan — sites central to [uranium enrichment](#) — raising fresh concerns about Iran's potential nuclear weapons capability.

electricity; produces medical isotopes.

- **Weapons Proliferation Risk:** The same technology can be diverted for bomb-making.
- **Geopolitical Impact:** Higher enrichment levels (Iran currently at 60%) escalate tensions and fears of nuclear arms development.

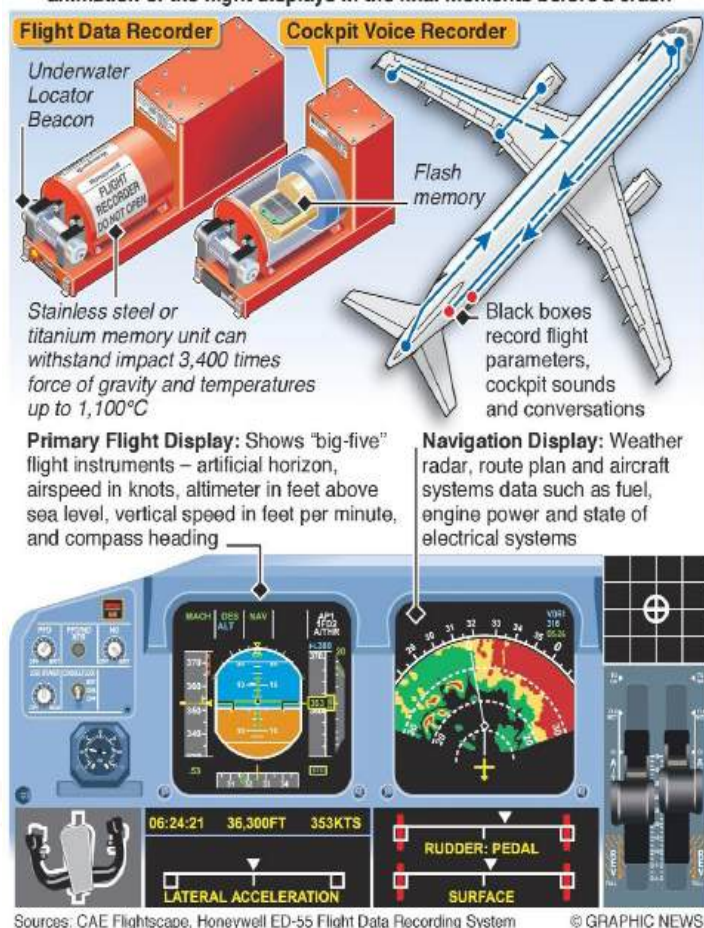
BLACK BOX

Context:

The tragic crash of an [Air India Boeing 787-8 Dreamliner](#) in Ahmedabad has brought attention to the critical role of black boxes in aviation investigations.

How black boxes reconstruct a crash

Information from an aircraft's flight data recorder and cockpit voice recorder – the so-called “black boxes” – is used to create an interactive animation of the flight displays in the final moments before a crash



About Black Box:

- **What is a Black Box?**
 - A **Black Box** refers to two key devices in an aircraft: the Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR).
 - They record **audio inside the cockpit** and **technical flight data** respectively, offering investigators vital clues post-crash.

Historical Evolution:

- **1930s:** François Hussenot of France devised early photographic film-based data recorders.
- **1953-54:** Dr. David Warren in Australia invented the modern FDR after investigating unexplained air crashes.
- **1960:** Use of FDR and CVR made **mandatory** in [commercial aircraft](#).
- **1990:** **Solid-state memory** replaced magnetic tapes, enhancing durability and data capacity.

How It Works?

- **Cockpit Voice Recorder (CVR):** Records **pilot and co-pilot conversations**, radio transmissions, alarms, and ambient sounds.
- **Flight Data Recorder (FDR):** Collects data on **altitude, speed, engine performance**, flight path, and over **3,500 parameters** for up to **25 hours**.

Materials & Protection:

- Housed in **crash-protected metal casings** using **titanium or steel**.
- Designed to survive:
 - Fires up to **1,100°C**
 - Explosions and G-force impacts
 - **30 days of underwater immersion**
- Emits **locator beacons** for search and recovery teams.

Why is a Black Box is orange colour?

- Despite the name, black boxes are **bright orange** with **reflective strips** for easy visibility at crash sites.
- The term “black box” comes from early film-based recorders stored in **light-tight boxes**, not from their colour.

Modern Innovations:

- **Combined Recorders:** Merge CVR and FDR into a single unit to meet ICAO's 25-hour voice recording norm.
- **Automatic Deployable Recorders:** Eject from aircraft during crash and float on water, transmitting location via [Emergency Locator Transmitter \(ELT\)](#).
- **Data Streaming via Satellites:** Being explored to transmit real-time data and avoid loss in deep-sea crashes.

INDIA TO DEVELOP ITS FIRST EVER POLAR RESEARCH VESSEL

Context:

India has signed an MoU with Norway's Kongsberg to develop its first indigenous Polar Research Vessel (PRV), marking a major leap in shipbuilding and polar scientific exploration.



About India to Develop Its First Ever Polar Research Vessel (PRV):

- **What it is?**
 - A Polar Research Vessel (PRV) is a specially designed ship capable of navigating polar waters and equipped for deep-sea research, marine biodiversity studies, and climate monitoring.
- **International Partnership:**
 - Partnership between **Garden Reach Shipbuilders and Engineers Ltd. (GRSE), Kolkata** and **Kongsberg, Norway**.
 - Supported by India's Ministry of Ports, Shipping and Waterways and National Centre for Polar and Ocean Research (**NCPOR**).
- **Objectives:**
 - Strengthen India's capabilities in **Arctic and Antarctic research**.
 - Enable **deep-sea exploration**, ocean floor mapping, and climate data collection.
 - Promote innovation in marine science under the **Make in India** and **Blue Economy** initiatives.
- **Key Features:**
 - **Polar-Class & Indigenous Build:** Designed for extreme Arctic and Antarctic conditions with ice-breaking capabilities; built indigenously by GRSE with Norway's design support.
 - **Advanced Scientific Infrastructure:** Equipped with seabed samplers, seismic profilers, multibeam sonar, and labs for marine biology, geology, and climate research.
 - **Deep-Sea and Long-Duration Missions:**

Capable of exploring depths up to 6 km and sustaining extended polar expeditions with self-support systems.

- **Green and Sustainable Technology:** Aligns with [IMO norms](#), integrating green fuel usage, energy-efficient systems, and eco-friendly research protocols.
- **Strategic National Utility:** Enables multidisciplinary polar and ocean research under NCPOR, boosting India's global scientific and maritime standing.
- **Significance:**
 - Boosts indigenous **shipbuilding infrastructure** and polar technology.
 - Reduces reliance on leased vessels for India's polar missions.
 - Enhances India's role in **climate research**, ocean health, and sustainable marine development.
 - Reinforces India's commitment to the [Paris Agreement](#) (UNFCCC) with goals like creating a **2.5 billion tonne carbon sink by 2030**.
 - Facilitates stronger **India-Norway maritime collaboration** and investment in green and smart shipping.

[Syllabus: Awareness in fields of IT, Space, Computers, Robotics, Nano-tech, Bio-Tech, IPR](#)

BHARATGEN AI MODEL

Context:

India launched 'BharatGen', its first government-funded multimodal Large Language Model (LLM) designed for Indian languages at the BharatGen Summit 2025.



About BharatGen AI Model:

- **What is It?**
 - 'BharatGen' is a multimodal [Large Language Model](#) (LLM) that supports text, speech, and image-based AI outputs in 22 Indian languages, developed to meet India's

regional, linguistic, and cultural diversity needs.

- **Developed By:** Led by the TIH Foundation for IoT and IoE at IIT Bombay.
- **Funded under:** The National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS).
- **Objectives:**
 - To build a **democratic AI ecosystem** rooted in Indian languages and values.
 - To create **ethical, inclusive AI tools** accessible to all regions and social groups.
 - To support **region-specific solutions** across governance, health, education, and agriculture.
 - To foster **AI-based entrepreneurship, innovation, and R&D** capacity in India.
- **Key Features:**
 - **Multimodal Capabilities:** Integrates **text, speech, and image** processing to offer a wide range of AI applications.
 - **Language Diversity:** Trained on **22 Indian languages**, including major and regional dialects.
 - **Inclusive Development:** Designed to address rural and underserved communities, especially in health and governance.
 - **Scalability:** Supports national platforms like **CPGRAMS**, AI-powered telemedicine, and AI in education.
 - **Collaborative Architecture:** Combines efforts of government, academia, startups, and students through hackathons and R&D parks.
- **Significance:**
 - **National Innovation Push:** Aligns with “India’s Techade” vision for tech-driven inclusive growth.
 - **Cultural Relevance:** Offers context-aware AI solutions reflecting Indian societal ethos.
 - **Education Reform:** Embeds AI in learning under **NEP 2020**, bridging humanities and technology.

STARLINK

Context:

The Department of Telecommunications (DoT) has granted a license to Elon Musk’s Starlink to begin satellite internet services in India.

- Starlink becomes the **third company** after **Eutelsat OneWeb** and **Jio Satellite Communications** to

receive this approval.



About Starlink:

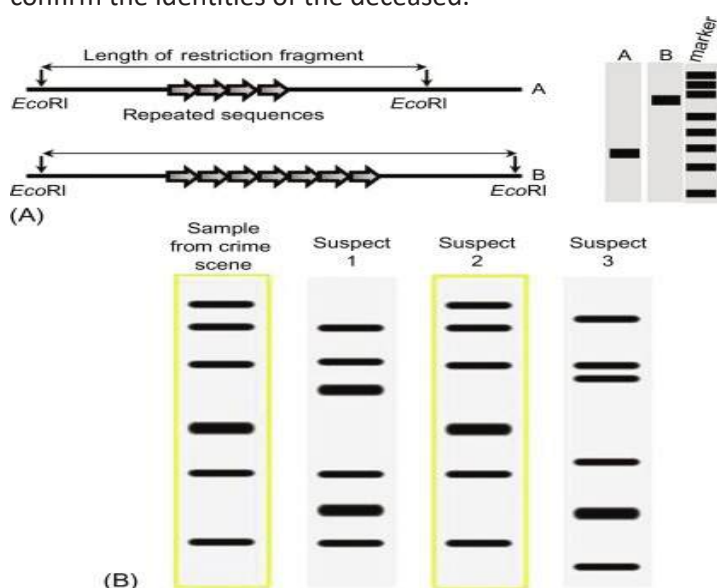
- **What is Starlink?**
 - Starlink is a satellite-based broadband internet system developed by SpaceX.
 - It aims to provide high-speed, low-latency internet globally, especially in rural and remote regions.
- **Parent Company:** SpaceX (Space Exploration Technologies Corp.) founded by Elon Musk in 2002.
- **How Starlink Works?**
 - Operates through a **constellation of Low Earth Orbit (LEO)** satellites positioned at about **550 km altitude**.
 - Ground stations transmit data to satellites, which relay it back to **user terminals on Earth** using **radio signals**.
 - Satellites are equipped with **laser links** for inter-satellite communication, forming a **global internet mesh**.
- **Key Features of Starlink:**
 - **High-Speed Internet:** Delivers speeds up to **150 Mbps**, with plans to double in future updates.
 - **Low Latency:** Offers latency as low as **20–25 milliseconds**, ideal for streaming and video calls.
 - **Advanced Technology:** Equipped with **optical space lasers**, argon-powered ion thrusters, and flat-panel antennas.
 - **Rapid Deployment:** Uses **Falcon 9 rockets** to deploy satellites regularly, keeping the network updated.
 - **Global Coverage:** Planned expansion of **42,000 LEO satellites**, ensuring service even in the most isolated regions.
- **Significance of Starlink for India:**
 - Enhances digital inclusion in underserved and remote rural areas.

- Reduces dependence on fibre and mobile networks in disaster-prone or geographically challenging terrains.
- Boosts competition in India's broadband ecosystem, especially [in Tier 2 and Tier 3 towns](#).
- Positions India as a key market in the global satellite internet race.

DNA IDENTIFICATION TECHNIQUES

Context:

After the tragic [Air India Boeing 787 crash](#) in Ahmedabad, authorities are using DNA identification techniques to confirm the identities of the deceased.



About DNA Identification Technique:

- **What is DNA Identification?**
 - DNA identification is the forensic process of matching DNA from unidentified human remains with known biological samples.
 - Each individual's DNA (except identical twins) is **unique**, making it a **biological fingerprint** used to establish identity with high precision.
- **How DNA Identification Works?**
 - **Sample Collection & Storage:**
 - DNA begins to degrade after death, especially in hot/humid conditions.
 - Investigators collect [DNA](#) from hard tissues (bones, teeth) or soft tissues (skin, muscle), storing them in ethanol or freezing at -20°C to prevent breakdown.
 - **Reference Matching:**
 - Reference DNA is collected from close relatives (parents, children,

maternal or paternal kin) or personal items (toothbrush, hairbrush) for comparison.

- Matching determines the relationship and helps confirm the identity of the remains.

• **Methods of DNA Analysis:**

1. **Short Tandem Repeat (STR) Analysis:**

- Evaluates repeating sequences in nuclear DNA.
- Most commonly used; accurate if DNA is **well preserved**.

2. **Mitochondrial DNA (mtDNA) Analysis:**

- Used when nuclear DNA is degraded.
- Inherited maternally, so it's matched with maternal relatives.

3. **Y-Chromosome STR Analysis:**

- Traces paternal lineage using male-specific Y chromosomes.
- Useful when close maternal relatives are unavailable.

4. **Single Nucleotide Polymorphism (SNPs):**

- Detects single-point mutations in highly degraded DNA.
- Less accurate than STR but useful when reference DNA is minimal.

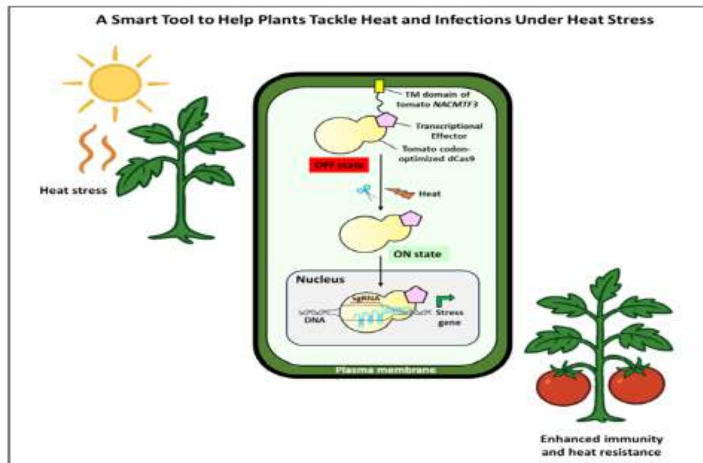
• **Key Features and Applications:**

- **Gold Standard:** Preferred in mass disasters, wars, plane crashes, and crime scenes.
- **Accuracy:** High specificity; can differentiate individuals even from degraded remains.
- **Storage Sensitive:** Requires strict protocols for preservation to avoid data loss.
- **Universal Use:** Employed by agencies worldwide, including CBI, [INTERPOL](#), and ICRC.
- **Legal Validity:** DNA evidence is admissible in Indian courts under the Indian Evidence Act.

MODIFIED CRISPR TOOL TO HELP PLANTS COMBAT HEAT STRESS

Context:

Scientists at Bose Institute, Kolkata, have developed a modified [CRISPR tool](#) to help plants combat heat stress and bacterial infections, offering a breakthrough in sustainable and smart agriculture.



About [Modified CRISPR Tool to help plants combat heat stress:](#)

- **What It Is?**
 - A modified CRISPR tool using **dCas9 (dead Cas9)** that acts as a gene switch, turning defense genes on or off without cutting DNA.
 - The tool is designed to activate only under plant stress—such as heat waves or pathogen attack.
- **Developed By:** Bose Institute, an autonomous institution under the Department of Science and Technology ([DST](#)), Government of India.
- **How It Works?**
 - Scientists used a part of a natural tomato protein (called **NACMTF3**) to **hold back the CRISPR switch (dCas9)** outside the plant's control center (nucleus).
 - When the plant faces stress like **heat or disease**, the hold is **released**, and the CRISPR switch **moves inside the nucleus**.
 - Inside, it **turns on helpful genes** that help the plant fight **heat and infections**.
 - This system **saves energy**, as it only works **when the plant is in danger**.
- **Key Features:**
 - **Works only when needed:** Genes are turned on only during heat or disease stress.
 - **Safe and natural:** Uses a tomato protein, making it safe and eco-friendly.
 - **Activates helpful genes:** Turns on **CBP60g** and **SARD1** (to fight bacteria) and **NAC2** and **HSFA6b** (to handle heat).
 - **Protects in two ways:** Helps plants survive **both heat and disease**.
 - **No cutting of DNA:** Unlike normal CRISPR, this version **doesn't change the DNA**, so it's safer for future use in farming.
- **Significance:**

- **Climate-resilient agriculture:** Enhances plant survival during unpredictable weather, heatwaves, and microbial outbreaks.
- **Smart input management:** Plants utilize the tool **only when needed**, saving energy and improving productivity.
- **Food security:** Supports yield sustainability in key crops like tomato, potato, brinjal, and chilli.
- **Global applicability:** Has potential use across **solanaceous crops worldwide**, helping farmers adapt to climate stress.
- **Research impact:** Published in the **International Journal of Biological Macromolecules**, validating global scientific relevance.

STEP-AND-SHOOT SPOT-SCANNING PROTON ARC THERAPY (SPARC THERAPY)

Context:

A 46-year-old woman with skull-base parotid cancer became the first patient to be treated using step-and-shoot spot-scanning proton arc therapy (SPArc), a cutting-edge radiotherapy technique that minimizes damage to surrounding healthy tissues.



Step by step
SPArc works by targeting tumours with protons in a near-continuous manner

A woman receives radiation therapy to treat her cancer. GETTY IMAGES



■ A team has used step-and-shoot proton arc therapy to treat a parotid gland cancer for the first time ■ The therapy significantly minimised damage to nearby organs over SFO-IMPT, the current standard of care ■ A 46 y.o. woman received step-and-shoot SPARC after her parotid-gland cancer had spread towards the base of her skull	■ In June-August 2024, she completed 33 sessions with step-and-shoot SPARC and received 66 grays of radiation ■ In this time, the woman reportedly had "minor skin irritation" and no issues eating or continuing working ■ Synthetic CT scans were used to track dose delivery, the therapy's performance, and develop adaptive treatment plans
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About [Step-and-Shoot Spot-Scanning Proton Arc Therapy \(SPArc Therapy\):](#)

- SPARC is a novel proton-based radiotherapy technique that delivers precise radiation doses to complex tumours while sparing nearby organs.
- **Developed by:** Corewell Health William Beaumont University Hospital, U.S.
- **Objective:** To maximize tumour irradiation while

reducing radiation exposure to critical organs in sensitive anatomical areas like the brainstem, skull base, and optic nerves.

• **Key Features:**

- **Step-and-Shoot Precision:** Radiation is delivered in programmed angular steps across 180°, improving targeting accuracy while minimizing dose spillage.
- **Layer-by-Layer Energy Modulation:** Proton beams are adjusted across energy layers, painting the tumour slice by slice to ensure full coverage.
- **Adaptive Treatment via Synthetic CT:** AI-generated synthetic [CT scans](#) from cone-beam CT help track real-time anatomical changes and adjust dose delivery dynamically.
- **Reduced Side Effects:** The first patient had only minor skin irritation, no impact on diet or daily life—a big leap in quality of life for cancer patients.

• **Applications:**

- **Head and Neck Cancers:** Especially those near sensitive areas like the skull base or facial nerves.
- **Large or Complex Tumours:** Where precision and reduced collateral damage are essential.
- **Refractory or Invasive Cancers:** Where traditional radiation methods fail or pose high risk to healthy tissues.

• **Significance for India:**

- **Precision Oncology Advancement:** SPARC can improve survival outcomes in otherwise untreatable cases.
- **Cost vs Benefit Debate:** High costs and limited use raise concerns over equitable access and health system burden.
- **India's Opportunity:** With increasing [cancer rates](#), India may benefit from strategic integration of such technologies in tertiary centres.

[Syllabus: ISRO & Other Space Missions](#)

SSLV TECHNOLOGY TRANSFER

Context:

For the first time, ISRO's [Small Satellite Launch Vehicle](#) (SSLV) technology will be fully transferred to an Indian firm — HAL, which will own, build, market, and operate the rocket.



About SSLV Technology Transfer:

• **What It Is?**

- Full **Transfer of Technology (ToT)** for ISRO's SSLV, enabling an Indian firm to independently build and commercialize the rocket.

- **Parties Involved:** ISRO, [IN-SPACE](#) (space sector regulator), NSIL (commercial arm), HAL (recipient).

- **Awarded By:** IN-SPACE, after a two-stage national bidding process and HAL won with a ₹511 crore bid.

- **Objective:** Strengthen private participation in space, enable commercial launch services, reduce dependency on [ISRO](#) for small satellite launches.

• **Features:**

- HAL will own the SSLV and can modify its design.
- Full production capability — 6 to 10 rockets per year.
- **Initial ToT period:** 2 years with ISRO handholding.
- HAL will independently handle future launches post-ToT.

About Hindustan Aeronautics Limited (HAL):

• **What It Is?**

- India's largest aerospace and defence PSU — a pioneer in **aircraft and aerospace systems**.

- **Headquarters:** Bengaluru, Karnataka.

- **Established:** 23 December 1940, originally as Hindustan Aircraft Limited.

- **Ministry:** Under **Ministry of Defence**, Govt of India.

- **Objective:** Design, develop, manufacture, maintain **aircraft, helicopters, engines**, avionics, and space components.

• **Key Features:**

- 85+ years of contribution to [India's aerospace growth](#).
- First Indian firm to manufacture MiG-21, Jaguar, SU-30MKI, LCA Tejas.
- Active in **space systems** — supplies structures for [GSLV Mk-III](#), Mars Mission,

Human Spaceflight.

- Partner to ISRO for **cryogenic engines** & aerospace launch vehicle structures.
- Multiple divisions across India in aircraft, helicopters, avionics, composites, MRO, and space.
- Publicly listed on **BSE and NSE since 2018**.

AXIOM MISSION 4 (AX-4)

Context:

India marked a historic moment in space exploration as Group Captain Shubhanshu Shukla became the first Indian to reach the [International Space Station](#) (ISS), 41 years after Rakesh Sharma's 1984 mission.



SPACE ODYSSEY: SHUKH IN PILOT'S SEAT

LIFT-OFF: Wednesday 12.01pm IST from Kennedy Space Center, Florida.
DOCKING: Capsule to dock with International Space Station at 4.30pm IST, Thursday

Crew Members:

- Tibor Kapu, 33** (Hungary) – Mission specialist
- Shubhanshu Shukla, 39** (India) – Pilot
- Peggy Whitson, 65** (US) – Commander
- Sławosz Uznański, 41** (Poland) – Mission specialist

MISSION DURATION: 14 DAYS

Shukla's Roles:

- > Shukla is **second-in-command**, after mission commander Peggy Whitson
- > He monitors and **intervenes if automation fails**
- > He assists in **spacecraft operations, navigation and control** during launch, docking, re-entry, and landing
- > Once docked with ISS, he will **join experiments, tech demos, and outreach events**

Quotes:

- “The tricolour on my shoulder tells me that I am not alone, I am with all of you – **Shubhanshu Shukla**”
- “Shukla carries with him the wishes, hopes and aspirations of 1.4 billion Indians – **PM Narendra Modi**”

About Axiom Mission 4 (Ax-4):

- Ax-4 is the fourth private human spaceflight mission by Axiom Space to the ISS, designed to advance international collaboration and conduct cutting-edge research in microgravity.
- **Organizations Involved:**
 - Axiom Space (Mission organizer)
 - NASA (Host at ISS)
 - SpaceX (Launch vehicle and [Dragon capsule provider](#))
- **Launch Site & Timeline:**
 - **Launch Pad:** LC-39A, Kennedy Space Center, Florida
 - **Launch On:** June 25, 2025.
 - **Mission Duration:** ~14 days aboard the ISS

Mission Objectives:

- **Microgravity Research:**
 - Over 60 experiments covering life sciences, material science, human physiology, and Earth observation.
- **International Outreach & Collaboration:**
 - Fosters cooperation in low-Earth orbit research, setting a precedent for future **global partnerships** in space.
- **National Program Development:**
 - Enables participating countries to **leap forward in their human spaceflight capabilities**.

Crew Members:

- **Peggy Whitson (USA)** – Commander, holds the U.S. record for longest cumulative time in space.
- **Shubhanshu Shukla (India)** – Pilot, first Indian to reach ISS and second Indian in space.
- **Sławosz Uznański (Poland)** – ESA Mission Specialist, second Polish astronaut after 1978.
- **Tibor Kapu (Hungary)** – Mission Specialist, second Hungarian astronaut after 1980.
- **Zero-G Indicator:** “Joy” the baby swan toy—selected by Shukla and his 6-year-old son Sid.

Significance to India:

- **Revival of Human Spaceflight:**
 - Shukla becomes the **first Indian to enter ISS** and only the second Indian in space since 1984.
- **Boost to Gaganyaan & Space Station Plans:**
 - Mission complements India's ambition to launch its own **crewed space mission (Gaganyaan)** and build an **Indian space station by 2035**.
- **Scientific Leadership:**
 - India leads and participates in multiple experiments, expanding **India's role in space science diplomacy**.

[Syllabus: Defence & Navy](#)

CDS AND SECRETARY OF THE DEPARTMENT OF MILITARY AFFAIRS EMPOWERED TO ISSUE JOINT

INSTRUCTIONS

Context:

Defence Minister authorised the [Chief of Defence Staff](#) (CDS) and Secretary of the Department of Military Affairs to issue joint instructions and orders for all three services.



About CDS and Secretary of the Department of Military Affairs Empowered to Issue Joint Instructions:

- **What it is?**
 - For the first time, **CDS can issue unified instructions/orders** applicable across **Army, Navy, Air Force**, streamlining operational and administrative procedures.
- **New System vs Old System:**
 - **Earlier:** Each service issued orders for joint activities, causing redundancy and slow coordination.
 - **Now:** CDS issues single unified joint orders, ensuring synergy and seamless command flow.
- **Objective of New Powers:**
 - Enhance **cross-service cooperation**
 - Improve **command efficiency**
 - Streamline administrative procedures
 - Lay groundwork for **integrated theater commands**
- **Significance:**
 - Strengthens theaterisation process
 - Empowers **Inter-Services Organisations (ISOs)** under ISO Act, 2023
 - Enables faster, unified military response in joint operations.
 - Boosts overall **transparency, unity of command, and resource optimisation**

About Chief of Defence Staff (CDS):

- **What it is?**
 - **4-star General-equivalent rank** and **Principal Military Adviser** to Defence Minister for tri-service matters.
 - Also, Permanent Chairman, Chiefs of Staff

Committee (CoSC).

- **Ministry:** Heads the [Department of Military Affairs](#) (DMA), a dedicated wing of the Ministry of Defence (MoD).
- **Functions and Powers:**
 - Advises on tri-service strategy, joint planning, and procurement.
 - Coordinates capability development and theaterisation efforts.
 - Oversees inter-service integration and resource management.
 - Does not exercise direct military command over the three service chiefs, who retain full control of their forces.
 - Leads structural reforms aimed at building joint war-fighting capabilities across the Armed Forces.

FATTAH HYPERSONIC MISSILE

Context:

Iran deployed its Fattah hypersonic missile during recent strikes on Israel, showcasing its ability to bypass even advanced defence systems like [Iron Dome](#), raising global security concerns.



About Fattah Hypersonic Missile:

- **What is it?**
 - Fattah is a medium-range hypersonic ballistic missile developed by Iran's Islamic Revolutionary Guard Corps (IRGC), designed to strike with precision and evade modern air defence systems.
- **Developed In:** November 2022, commemorating Hassan Tehrani Moghaddam
- **Inducted:** 2023 into IRGC's arsenal.
- **Key Features of Fattah Missile:**
 - **Speed:** Hypersonic—travels at **Mach 13 to Mach 15** (up to ~15,000 km/h)
 - **Range:** 1,400 km, with future upgrades planned to **2,000 km**

- **Manoeuvrability:** Can shift direction mid-flight (up/down/left/right) to evade interceptors
- **Stealth:** Generates a **plasma shield** that reduces radar detection and jams radio signals
- **Deployment:** Actively used in Iran's **2025 strikes on Israel** ([Operation Honest Promise 3](#))
- **Variants:** Fattah-2 in development with extended range
- **Other Global Hypersonic Missiles:**

Country	Hypersonic Missile Systems
Russia	Avangard, Kinzhal
China	DF-17
India	BrahMos-II (under development)
USA	AGM-183 ARRW (under testing)
North Korea	Hwasong-8
Iran	Fattah-1 (operational), Fattah-2 (developing)

INS ARNALA

Context:

The Indian Navy will commission INS Arnala, the first of the 16 Anti-Submarine Warfare Shallow Water Crafts (ASW-SWC) at Visakhapatnam.



About INS Arnala:

- **What is INS Arnala?**
 - INS Arnala is the first indigenously-built Anti-Submarine Warfare Shallow Water Craft (ASW-SWC) ship.
 - It will enhance India's capabilities in [coastal surveillance](#), mine-laying, and sub-surface operations.
- **Built By:** Designed and constructed by **Garden Reach Shipbuilders & Engineers (GRSE)**, Kolkata in partnership with L&T Shipbuilders.
- **Operational Region:**

- Designed for **coastal waters** and the [Indian Ocean Region \(IOR\)](#).
- It supports Low-Intensity Maritime Operations (LIMO), Search and Rescue (SAR), and Subsurface Surveillance.

Key Features of INS Arnala:

- **Length:** 77.6 meters, **Displacement:** 1490+ tonnes, **Speed:** Up to 25 knots, **Endurance:** 1800 nautical miles (~3300 km).
- First Indian naval warship powered by **Diesel Engine–Waterjet combination**.
- Integrates **80% indigenous systems** from BEL, Mahindra Defence, MEIL, and L&T.
- Supports AI-driven combat systems, sonar arrays, and mine-laying gear.

About Arnala Fort:

- **Located in:** Arnala village, Vasai taluka, Maharashtra, near Mumbai's northern coast.
 - Also known as **Jaldurg** or **Janjire Arnala**, it is surrounded by sea waters.
- **Historical Significance:**
 - Originally built by Sultan Mahmud Begda in 1516.
 - Captured and ruled by Portuguese, [Marathas](#), Mughals, and Peshwas over time.
- **Architectural Features:**
 - **Rectangular fort structure**, three main entrances, and bastions on the north.
 - Houses temples like Tryambakeshwar, Bhavani Mata, Kalika Mata, and Mahadev.
 - Though food is scarce on the fort, **water is available in wells**, showcasing sustainable coastal defence design.

ADAMYA FAST PATROL VESSEL

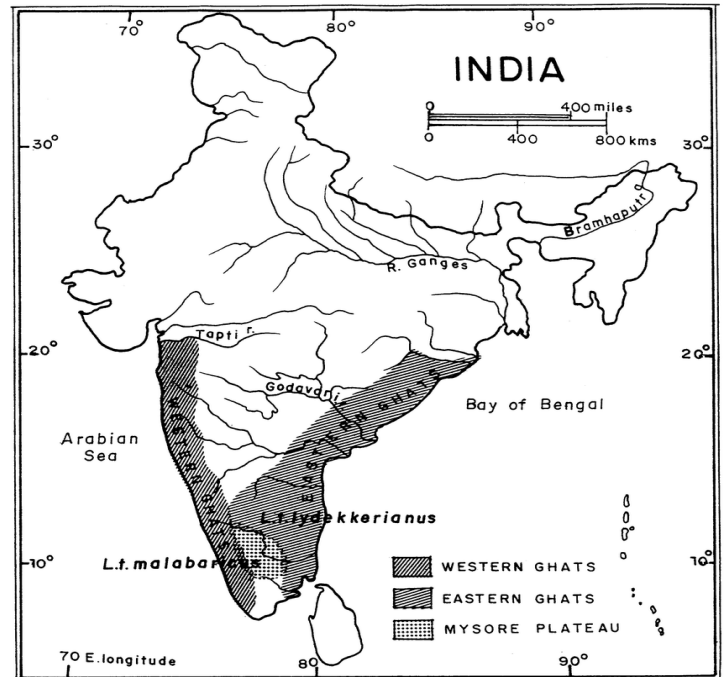
Context:

The [Indian Coast Guard](#) (ICG) has inducted 'Adamyā', the first Fast Patrol Vessel (FPV) of an eight-vessel series built by Goa Shipyard Limited (GSL).



About Adanya Fast Patrol Vessel:

- **What It Is?**
 - 'Adanya' is a **high-speed Fast Patrol Vessel (FPV)** designed for rapid deployment in coastal waters, EEZ patrol, and maritime law enforcement missions.
- **Developed By:** Goa Shipyard Limited (GSL)
 - First of the eight FPVs under GSL's ICG contract
- **Objective:**
 - Enhance ICG's **quick-reaction capability** for **search & rescue (SAR)**, coastal surveillance, and interdiction operations
 - Support India's **Aatmanirbhar Bharat** vision in defence manufacturing
- **Key Features:**
 - First in class with **Controllable Pitch Propellers (CPPs)** and fully indigenous gearboxes
 - Equipped with **30mm CRN-91 naval gun** and **two 12.7mm remote-control guns** with fire control system
 - Features:
 - Integrated Bridge System (IBS)
 - Integrated Platform Management System (IPMS)
 - Automated Power Management System (APMS)
 - Superior manoeuvrability, operational efficiency, and high-sea performance
- **Significance:**
 - Boosts **coastal defence** and maritime domain awareness.
 - Acts as a **force multiplier** for ICG's coastal patrol and humanitarian missions.
 - Strengthens **Make in India** initiative in the naval defence sector.
 - Enhances India's response capabilities across its **Exclusive Economic Zone (EEZ)**.



About Western Ghats Conservation:

- **What is It?**
 - A UNESCO World Heritage Site and one of the world's eight hottest hotspots of biodiversity, the Western Ghats stretch along the **western edge of the Deccan Plateau**, influencing monsoon systems and sustaining rich ecosystems.
- **States Involved:** Spread across Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.
- **Key Features:**
 - **Rich Biodiversity:** Hosts over **7,400 species**, with high endemism in flora and fauna.
 - **Hydrological Role:** Origin of rivers like **Godavari, Krishna, and Kaveri**, critical for peninsular water security.
 - **Climatic Influence:** Traps monsoon winds, creating **high rainfall zones** and acting as a climate regulator.
 - **Topographical Diversity:** Composed of lateritic plateaus, escarpments, valleys, and peaks like Anai Mudi (2,695 m).

Syllabus: Conservation

WESTERN GHATS CONSERVATION

Context:

Ecologist Madhav Gadgil has urged for a community-centric approach to conserve the Western Ghats, citing failure of forest bureaucracy and neglect of [Forest Rights Act implementation](#).

Formation of Western Ghats:

1. Precambrian Origin:

- The Western Ghats are part of the **Peninsular Shield** (Deccan Plateau), dating back to the **Precambrian Era** (>600 million years ago).
- Formed through **cratonic uplift** and **volcanic activity**, not orogenic (folding) processes like the Himalayas.

2. Deccan Traps Volcanism:

- The plateau's uplift and the **massive basaltic lava flows** during the **Deccan Trap eruption** led to step-like highlands across western India.
- The Ghats are the **western edge** of this **trap topography** (trap = stair-step in Swedish).

3. **Faulting and Escarpment Formation:**

- As India drifted northward after breaking from Gondwana (~100 million years ago), the **western edge of the Deccan Plateau fractured and subsided**, forming an **escarpment (steep slope)**.
- The **Arabian Sea coast subsided**, and the land adjacent to it (the Ghats) **remained uplifted**, forming a rugged edge.

4. **Erosional and Fluvial Processes:**

- Over millions of years, **erosion by monsoon-fed rivers** carved deep valleys and dissected the mountain range.
- Today's terrain shows **residual plateaus, lateritic caps, and canyon-like valleys**.

Issues Plaguing the Western Ghats:

1. **Flawed Forest Governance:** Forest Department uses **outdated and inflated data**, limiting transparency and ecological planning.

E.g. Gadgil's 1975 study in **Uttara Kannada** revealed 10x overestimated bamboo stocks used to justify a paper mill.

2. **Industrial Pollution & Misuse of Resources:** Polluting industries operate in ecologically fragile zones, backed by state support and no accountability.

E.g. **Grasim Rayon Factory** discharged toxic mercury into **Chaliyar River**, destroying fisheries and tribal livelihoods.

3. **Non-Implementation of Forest Rights Act (FRA), 2006:** Tribal and forest-dependent communities continue to be denied **Community Forest Rights (CFR)** despite legal entitlements.

E.g. In most districts of **Kerala and Karnataka**, CFR claims remain pending, causing disenfranchisement.

4. **Monoculture Plantations & Pesticide Use:** Forest lands are diverted for **eucalyptus and acacia** plantations, harming native biodiversity and soil health.

E.g. **Wayanad** experienced decline in pollinators and soil microbes due to pesticide-intensive plantations.

5. **Ecologically Harmful Fire Practices:** Communities light fires to collect **tendu leaves**, degrading forest cover and threatening wildlife habitats.

E.g. Forest fires in **Gadchiroli and parts of Karnataka** have escalated due to unsustainable collection methods.

6. **Inaccessible, Aggregated Forest Data:** Forest Survey of India provides **delayed and district-level data**, hiding local forest degradation.

E.g. In the 1970s, **NRSC satellite imagery** showed forest cover at 15%, while FD falsely claimed 23%.

Committees on Western Ghats Conservation:

1. **Western Ghats Ecology Expert Panel (WGEEP), 2011**

- Led by Madhav Gadgil, recommended **ESA zoning**, CFR implementation, and Gram Sabha-led conservation.

2. **Kasturirangan Committee, 2013**

- Favoured a **development-friendly approach**, reducing ESA coverage and diluting people's participation in governance.

Way Ahead:

1. **Implement Community Forest Rights (CFR) under FRA, 2006:** Recognizing CFR empowers communities economically and ecologically by giving them ownership and responsibility.

E.g. Pachgaon, Maharashtra earns income from bamboo, avoids forest fires, and has restored sacred groves.

2. **Promote Democratic Decentralisation:** Empowering **Gram Sabhas** ensures local knowledge and accountability in forest conservation.

E.g. **Kerala's VSS model** (Vana Samrakshana Samiti) enables community-led forest protection and revenue sharing.

3. **Modernise Ecological Data Systems:** Use **real-time open-access satellite tools** like **Google Earth or Bhuvan** for monitoring forest health and changes.

E.g. Global Forest Watch now provides 30m resolution data that can be used to counter false FSI claims.

4. **Ban Unsustainable Industrial Activities in ESA:** Enforce **SC-mandated mining bans** in wildlife corridors and fragile ecosystems to avoid irreversible biodiversity loss.

E.g. Mining in **Goa and Kerala hill tracts** led to habitat fragmentation and water table depletion.

5. **Promote Biodiversity-Compatible Livelihoods:** Encourage **NTFP-based enterprises**, eco-tourism, and agro-forestry to align income generation with conservation.

E.g. **Wayanad tribal co-operatives** market organic turmeric and wild honey internationally.

Conclusion:

The **Western Ghats** are vital for India's ecological stability, water security, and cultural heritage. Conservation cannot succeed without empowering its long-standing forest communities. Democratic, data-driven, and ecologically just governance is the only way forward.

PYQ:

1. There is no formation of deltas by rivers of the Western Ghat. Why? (UPSC-2013)

FOREST RIGHTS ACT CELLS

Context:

For the first time since the [Forest Rights Act \(FRA\), 2006](#), was enacted, the Centre has sanctioned 324 Forest Rights Act (FRA) cells under the Dharti Aba Janjatiya Gram Utkarsh Abhiyaan across 18 States and Union Territories.



About Forest Rights Act Cells:

- **What It Is?**
 - District- and State-level units created to **support and accelerate** the implementation of FRA under the [Dharti Aba Janjatiya Gram Utkarsh Abhiyaan](#) (DAJGUA).
- **Governing Framework:** Established under **DAJGUA operational guidelines**, not directly under the principal FRA legislation.
- **Funded by:** The Ministry of Tribal Affairs, Government of India.
- **Authority & Location:**
 - Located in **Tahsildar/Sub-Division/Collector offices** within [Tribal Sub-Plan areas](#).
 - Headed by ADM or Sub-Collector at respective levels.
- **Key Features of FRA Cells:**
 - **Administrative Coverage:** 324 district-level cells and 17 State-level cells approved.
 - **Budget Allocation:** ₹8.67 lakh per district cell; ₹25.85 lakh per State cell.
 - **Highest Cells Approved:** Madhya Pradesh (55), Chhattisgarh (30), Telangana (29), Maharashtra (26), Assam (25), Jharkhand (24).
- **Functions of FRA Cells:**
 - **Accelerated Disposal:** Expedite pending claims, especially post-District Level Committee (DLC) approval.
 - **Rejected Claims Review:** Re-examine rejected claims and inform claimants with reasons to enable appeal.

- **Demarcation Support:** Aid in marking boundaries of vested forest lands.
- **Title Distribution:** Facilitate issuance of land titles and ensure updates in official land records.
- **Scheme Integration:** Ensure FRA titleholders benefit from government welfare schemes.
- **Support CFR Filing:** Help [Gram Sabhas](#) file claims for Community Rights and Community Forest Resources.
- **Revenue Village Conversion:** Assist in converting forest settlements into revenue villages legally.
- **Stakeholder Coordination:** Act as liaison between departments, civil societies, and claimants for smooth implementation.

GREEN INDIA MISSION

Context:

The Union Government released a revised roadmap for the Green India Mission, aiming to enhance forest restoration, combat [climate change](#), and address land degradation and desertification challenges.



About Green India Mission:

- **What it is?**
 - GIM is a key mission under **NAPCC** to enhance forest cover, restore degraded lands, and contribute to India's **climate goals**.
- **Launched in:** 2014
- **Ministry:** Ministry of Environment, Forest and Climate Change (MoEF&CC)
- **Objective:**
 - Increase forest/tree cover by 5 mha and improve forest quality on another 5 mha.
 - Sequester 2.5-3 billion tonnes of CO₂ by 2030.
 - Restore degraded ecosystems and enhance

biodiversity.

- Combat [land degradation](#) and desertification.
- Improve livelihoods of forest-dependent communities.

• **Key Features:**

- **Ecosystem Restoration:** Restores degraded forests, grasslands, wetlands, and mangroves.
- **Carbon Sink Creation:** Aligns with India's NDC target to create additional 2.5-3 billion tonnes CO₂ sink.
- **Community Participation:** Focuses on livelihood enhancement of forest-fringe communities.
- **Science-Based Planning:** Uses FSI data and ecological mapping for priority restoration zones.
- **Multi-Sectoral Convergence:** Leverages synergies with other schemes like Green Wall Project, [CAMPA funds](#).

• **New Changes in GIM 2025:**

- **Regional Focus:** Special priority to Aravallis, Western Ghats, Himalayas, mangroves.
- **Green Wall Project:** Linked with [Aravalli Green Wall](#) to control desertification/dust pollution.
- **Mining Rehabilitation:** Focus on eco-restoration of **abandoned mining areas**.
- **Open Forests:** Priority to restore open forests — estimated **1.89 billion tonnes CO₂** potential.
- **Updated Targets:** Alignment with India's 26 mha land restoration commitment by 2030.

About Aravalli Green Wall Initiative:

• **What is it?**

- A centrally coordinated reforestation and landscape restoration campaign led by the Ministry of Environment, Forest and Climate Change (MoEFCC), covering the 700-km Aravalli range.

• **Objectives:**

- Combat [land degradation and desertification](#) across 29 districts.
- Restore **ecological balance** by increasing green cover and protecting biodiversity.
- Strengthen **carbon sequestration** under India's climate commitments (NDC-UNFCCC).
- Revive **surface water bodies** and promote **community participation**.

• **Key Features:**

- **29 districts** across Haryana, Rajasthan, Gujarat, and Delhi identified for plantation.
- **1,000 nurseries** to be developed with native species using funds from CAMPA, MNREGA, and state schemes.
- Focus on [agroforestry](#), **pasture development**, and rejuvenation of lakes and ponds.
- Integration with existing missions like '[Ek Ped Maa Ke Naam](#)'.
- Promotion of **eco-tourism**: safaris, trekking, and nature parks to involve local communities.
- **Target:** Complete Phase I by 2027 and action plan released during COP16 of UNCCD in Riyadh.

About the Aravalli Range:

• **States Covered:**

- Delhi, Haryana, Rajasthan, and Gujarat (spanning over 670 km).

• **Geographical and Ecological Significance:**

- One of the **oldest fold mountain ranges** in the world (formed during the Proterozoic Era).
- Acts as a **natural barrier** against the spread of the Thar Desert into NCR.
- **Highest peak:** Guru Shikhar in Mount Abu, Rajasthan (1,722 metres).
- **Source of key rivers:** Banas, Sahibi (tributaries of [Yamuna](#)), and Luni (flows into Rann of Kutch).
- Composed of ancient rocks and rich in **minerals like copper, zinc, and marble**.
- **Divided into two parts:**

ARAVALLI GREEN WALL INITIATIVE

Context:

Prime Minister of India will launch the Aravalli Green Wall initiative on World Environment Day 2025 to rejuvenate the ancient Aravalli range.



- Sambhar–Sirohi range (includes Guru Shikhar).
- Sambhar–Khetri range (discontinuous ridges).

WORLD ENVIRONMENT DAY 2025

Context:

On 5 June 2025, World Environment Day was celebrated globally with Jeju, South Korea hosting the official event.



About World Environment Day 2025:

- **What is it?**
 - World Environment Day is the **United Nations' principal platform** for global environmental outreach, celebrated annually on **June 5** to raise awareness and promote action for environmental protection.
- **Host Country:** The official celebrations were held in **Jeju Province, Republic of Korea**.
- **Theme for 2025:** Beat Plastic Pollution.
- **Objective:**
 - To highlight the **urgency of tackling plastic waste**, which affects oceans, biodiversity, and human health.
 - To promote **global cooperation** toward a legally binding **Global Plastics Treaty**, scheduled for negotiations in August 2025.
- **Historical Background:** Initiated in **1973** by the United Nations Environment Programme (UNEP).
- **Significant Global Commitments & Initiatives:**
 - **UNEP's Global Plastics Hub:** A new platform offering data, collaboration, and resources on marine litter and plastic pollution.
 - **Tide Turners Summit in India:** Showcased youth-led plastic reduction efforts engaging over 980,000 young leaders across 60+ countries.

- **Mexico's Beach Cleanup Plan (2025–2030):** Aims to eliminate plastic waste from all national coasts within five years.
- **Global Ecosystem Restoration Murals:** SAM and UNEP's 245-foot mural in Chicago raised awareness on plastic pollution and nature restoration.

KULSI RIVER

Context:

Assam and Meghalaya governments have agreed to construct a 55 MW hydropower project on the Kulsī River, which is a known habitat for the endangered Ganges River dolphin.



About Kulsī River:

- **Location:** Flows through West Khasi Hills (Meghalaya) into Kamrup district (Assam).
- **Origin & Course:**
 - Originates in Meghalaya.
 - It flows ~60 km before joining the **Brahmaputra River**.
- **Key Features:** Small, shallow river with average width of 70–80 meters and rich in biodiversity and endangered species habitat.

About Gangetic Dolphin (*Platanista gangetica*)

- **What is the Gangetic Dolphin?**
 - A freshwater dolphin species found in South Asia, one of only five river dolphin species globally.
 - Locally known as “**Susu**” for the sound it emits while surfacing for air.
- **Geographic Distribution:** Inhabits Ganga, Brahmaputra, **Meghna**, and Karnaphuli-Sangu River systems across India, Nepal, and Bangladesh.
- **Key Biological Features:**
 - **Blind Species:** Lacks functional lenses; navigates and hunts using **echolocation**.

- **Respiration:** Surfaces every **30–120 seconds** to breathe.
- **Feeding Habits:** Predominantly eats fish and favors **counter-current** flows in main river channels.
- **IUCN Red List:** Endangered
- **Declared the [National Aquatic Animal of India](#)** in **2009**, symbolizing freshwater ecosystem conservation.

MENAR AND KHICHAN RAMSAR SITE

Context:

India has added two new Ramsar Sites—Menar (Udaipur) and Khichan (Phalodi) ahead of World Environment Day.

- With this, India's total number of **Ramsar wetlands rises to 91**, the highest in Asia and third globally.



About Menar and Khichan Ramsar Site:

1. **Menar Wetland, Udaipur:**

- **Nickname:** Bird Village
- **Size:** 104 hectares
- **Biodiversity:** Over 200 bird species including Eurasian coot, herons, spot-billed duck.
- **Community-Driven Conservation:** Local residents prohibit hunting/fishing; declared IBA in 2016.
- **Tourism Value:** Growing [eco-tourism](#) destination on Udaipur-Chittorgarh route.

2. **Khichan Wetland, Phalodi:**

- **Known For:** Migratory Demoiselle cranes
- **Ecological Significance:** Wintering site for large flocks of migratory birds.
- **Community Role:** Local traditions protect birds; acts as a critical stop along the Central Asian Flyway.

About Ramsar Sites:

- **What is a Ramsar Site?**
 - A **wetland of international importance** under the **Ramsar Convention** (1971,

Ramsar, Iran – under UNESCO).

- Recognizes **wetlands** that provide critical **ecosystem services**, support **biodiversity**, and sustain **local livelihoods**.
- **India Status on Ramsar Sites:**
 - **India became a Ramsar signatory:** February 1, 1982
 - **First Ramsar Sites:** Chilika Lake (Odisha) and [Keoladeo National Park](#) (Rajasthan) in 1981
 - **Total Ramsar Sites (as of June 2025):** 91
 - **Coverage Area:** ~13.59 lakh hectares
 - **India's Global Ranking:**
 - 1st in Asia,
 - 3rd Globally (after **UK – 175** and **Mexico – 142**)
 - **Top States by Number of Sites:**
 - Tamil Nadu – 20
 - Uttar Pradesh – 10
 - Rajasthan – 4 (post Menar & Khichan addition)
 - **Eligibility Criteria (Any 1 of 9 [Ramsar Criteria](#) Required)**
 - Supports rare or endangered species.
 - Hosts significant bird populations.
 - Critical life cycle habitat (e.g., breeding or migration).
 - Exemplary wetland ecosystem or unique hydrological characteristics.

INTERNATIONAL BIG CAT ALLIANCE (IBCA)

Context:

The first Assembly of the International Big Cat Alliance (IBCA) was held in New Delhi, chaired by Environment Minister Bhopender Yadav, who was also elected as the President of IBCA.



About International Big Cat Alliance (IBCA):

- **What is IBCA?**
 - The International Big Cat Alliance is a multinational initiative launched by India in 2024, aimed at protecting the world's seven major big cat species through collective action, knowledge exchange, and capacity building.
 - It is coordinated by the [National Tiger Conservation Authority](#) (NTCA) under the Ministry of Environment, Forest and Climate Change.
- **Established In:** March 2024, following PM Narendra Modi's announcement during the 50th anniversary of [Project Tiger](#) (April 2023).
- **Objective:**
 - Facilitate global collaboration for conservation of big cats.
 - Replicate successful conservation practices across countries.
 - Build a common pool of financial, technical, and institutional resources.
 - Address gaps in capacity building, data sharing, and financing.
 - Enhance livelihoods and climate resilience in big cat habitats.
- **Big Cats Covered:** Tiger, Lion, Leopard, [Snow Leopard](#), Cheetah, Jaguar, and Puma
- **Membership:**
 - 95 Range Countries eligible (where the species naturally occur).
 - 25 countries had joined by September 2024 (e.g., Bangladesh, Nigeria, Peru, Ecuador).
 - All [UN member](#) states can join via Note Verbale.
- **Key Functions:**
 - IBCA compiles proven conservation strategies from member nations into a shared repository to ensure scalable, science-based solutions.
 - It organizes training programs, technical workshops, and institutional exchanges to build local expertise in big cat conservation.
 - IBCA funds and promotes scientific studies, drives policy reforms, spreads conservation awareness, and links it to sustainable livelihoods.
 - The Alliance functions as a global support system, offering financial and technical aid to countries with limited conservation resources.
 - It introduces advanced technologies and fosters partnerships across sectors

to address systemic issues like habitat degradation and prey loss.

- IBCA enables member countries to share data, intelligence, and joint strategies for combating poaching and illegal wildlife trade.

- **2025 Summit Outcome:**

- **First General Assembly Held:** The inaugural Assembly of IBCA convened in New Delhi on June 16, 2025, marking a global milestone in big cat diplomacy.
- **Nine Nations Participated:** Countries like Bhutan, Cambodia, Eswatini, and Kazakhstan joined India to discuss collaborative conservation goals.
- **India Designated as HQ:** The Headquarters Agreement was ratified, formally establishing India as the permanent secretariat of [IBCA](#).
- **Bhupender Yadav Elected President:** India's Environment Minister was unanimously endorsed as the first President of the Alliance, reflecting India's leadership.
- **Funding Commitment by India:** India allocated ₹150 crore (2023–28) to support IBCA's initial setup, coordination, and capacity building efforts globally.

GHARIAL CONSERVATION PROGRAMME

Context:

Etawah marked the 50th anniversary of its gharial conservation initiative on World Crocodile Day (June 17), celebrating five decades of protecting this ancient species along the Chambal River.

TYPES OF CROCODILES IN INDIA

SPECIES NAME	HABITAT	FEATURES	IUCN STATUS
GHARIAL (GAVIALIS GANGETICUS)	Rivers (Chambal, Ganga)	Long snout, fish-eating	Critically Endangered
MUGGER (CROCODYLUS PALUSTRIS)	Rivers, lakes, marshes	Broad snout, generalist feeder	Vulnerable
SALTWATER CROCODILE (C. POROSUS)	Mangroves, estuaries	Largest crocodile, aggressive	Least Concern

About Gharial Conservation Programme:

- **What is it?**
 - A pioneering project aimed at conserving India's endangered gharial (*Gavialis gangeticus*), using captive breeding and 'rear-and-release' methods to boost wild populations.
- **Launched in:** 1975
- **Supported by:** UNDP, [FAO](#), Government of India
- **State:** Uttar Pradesh (Etawah district, Chambal River region)
- **Launched By:** Forest Department of Uttar Pradesh and Society for Conservation of Nature (SCON).
- **Habitat:**
 - **Primary Habitat:** [Chambal River](#) (Uttar Pradesh)
 - **Ideal Conditions:** Pristine, deep river stretches with minimal human disturbance
 - **Breeding Centre:** Kukrail Gharial Rehabilitation Centre, Lucknow
- **Objectives:**
 - **Protect** remaining gharial populations in natural habitats.
 - **Enhance population** through [captive breeding](#) and staged release.
 - **Build awareness** among local communities and involve them in conservation.
 - **Study habitat biology** and gharial behaviour for scientific management.
 - **Develop sustainable coexistence** with local fishing communities.
- **Key Features:**
 - **Egg Collection:** Eggs gathered from natural nests along the Chambal River.
 - **Artificial Incubation:** Controlled temperature and humidity ensure high hatch rates.
 - **Captive Rearing:** Juveniles raised 3–5 years at [Kukrail Centre](#) to improve survival.
 - **Release Programme:** Marked juveniles released in protected river stretches.
 - **Community Involvement:** Fishermen and villagers engaged in conservation-friendly livelihoods.

MAJOR INITIATIVES LAUNCHED AT UN OCEAN CONFERENCE 2025

Context:

At the recently concluded [3rd UN Ocean Conference](#) (UNOC3) in Nice, key global initiatives such as One Ocean

Finance and the High Ambition Coalition for a Quiet Ocean were launched to accelerate progress on SDG 14 — Life Below Water.



About Major Initiatives Launched at UN Ocean Conference 2025:

One Ocean Finance:

- **What it is?**
 - A **global finance initiative** to mobilise billions in sustainable funding for **blue economy** sectors and **ocean restoration**.
- **Objective:** To unlock new capital flows for industry transition, improve ocean health, and build resilient coastal communities.
- **Launched by:** A UN multi-agency coalition.
- **Nations Involved:** Open call for engagement not limited to formal member states.
- **Key Features:**
 - Designed as an inclusive, agile, scalable financing platform.
 - Seeks to address the underfunding of [SDG 14](#) (less than \$10 billion vs \$175 billion needed annually).
 - Aims to channel funds through blended finance instruments to de-risk investments.
 - Complements existing funds, aligns capital with [marine ecosystem](#) protection and community resilience.

High Ambition Coalition for a Quiet Ocean:

- **What it is?**
 - A **coalition of nations** committed to reducing **marine noise pollution** and its harmful impacts on **marine biodiversity**.
- **Objective:** To tackle **underwater noise pollution** and enhance **ecosystem resilience** in global oceans.
- **Launched by:** Canada and Panama.
 - Supported by **35 other nations**.
- **Key Features:**
 - Focuses on **policy interventions** to reduce human-generated noise in oceans.
 - Promotes global cooperation to safeguard

marine life from the growing impact of industrial activity.

- Builds on scientific recommendations from **One Ocean Science Congress**.

Syllabus: Species & Plant in News

JHARKHAND HAS PROPOSED ITS FIRST-EVER TIGER SAFARI

Context:

Jharkhand has proposed its first-ever tiger safari in the fringe area of Palamau Tiger Reserve (PTR), aimed at boosting tourism and wildlife education.



About Jharkhand Has Proposed Its First-Ever Tiger Safari:

- **What is a Tiger Safari?**
 - A **tiger safari** is a tourism model involving naturalistic enclosures to house tigers — mainly rescued, conflict-prone, or orphaned — allowing guaranteed sightings unlike traditional wild safaris.
 - First proposed in **NTCA Guidelines 2012**, further refined in **2016** and later by Supreme Court directives in 2024.
- **Legal Framework Governing Safaris:**
 - Governed by:
 - Wildlife (Protection) Act, 1972
 - NTCA Guidelines (2012, 2016)
 - CZA (Central Zoo Authority) for design, welfare, and compliance
 - **As per SC order (March 2024):** Safaris must be **outside core and buffer zones** of tiger reserves.
- **Types of Tigers Safaris:**
 - **Captive Safari:** Houses rescued or zoo-bred tigers in controlled naturalistic settings.
 - **Wild Safari:** Traditional open-reserve model like in **Ranthambore** or **Jim Corbett**, with no guaranteed sightings.

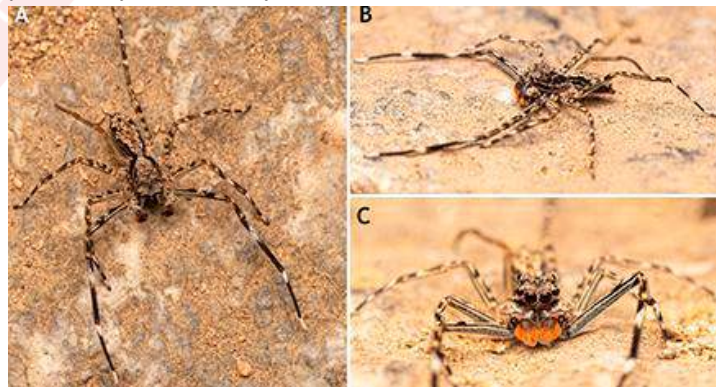
About Palamu Tiger Reserve (PTR):

- Palamu Tiger Reserve is one of the original nine Project Tiger reserves in India, and the only tiger reserve in Jharkhand, notified in 1974.
- **Location:** Latehar district, on the **Chhotanagpur Plateau**, Jharkhand.
- **Rivers:** Drained by North Koel, Burha, and Auranga rivers (Burha is perennial).
- **Flora:**
 - Predominantly **Northern Tropical Dry Deciduous forests**.
 - **Dominant species:** Sal (*Shorea robusta*).
- **Fauna:**
 - **Flagship species:** Bengal Tiger.
 - **Other key fauna:** Asiatic Elephant, Leopard, Sloth Bear, Grey Wolf, Indian Pangolin, Otter, Four-horned Antelope.
- **Historical Significance:**
 - Declared under Project Tiger in 1974.
 - Site of the **world's first pugmark-based tiger census** (1932), led by **J.W. Nicholson**.

A NEW SPECIES OF JUMPING SPIDER

Context:

A new species of jumping spider, *Spartaeus karigiri*, has been discovered in Karnataka and Tamil Nadu. This is the first Indian record of the genera *Spartaeus* and *Sonoita*, previously known only from **Southeast Asia** and Africa.



About A New Species of Jumping Spider:

- **Scientific Classification:**
 - **Name:** *Spartaeus karigiri*
 - **Subfamily:** *Spartaeinae* (*Salticidae* family)
 - **Related genera:** *Spartaeus* and *Sonoita*
- **Location Found:**
 - **Primary site:** Karigiri (Elephant Hill), Devarayanadurga, Karnataka
 - **Other locations:** Villupuram district, Tamil Nadu
- **Distinct Features:**

- **Male:** Found in rocky outcrops and crevices
- **Female:** Observed guarding egg clutch in natural habitat
- **Hunting skills:** Uses intelligent mimicry and web-invasion strategies
- **Eyesight:** Exhibits keen vision, characteristic of Salticidae family
- **Scientific Significance:**
 - First record of *Spartaeus* and *Sonoita* genera in India.
 - Confirms the presence of *Sonoita cf. lightfooti*, previously thought to be limited to [Africa](#).
 - Reveals high biodiversity in southern India's rocky landscapes.
 - Raises questions on biogeographical spread—natural vs. introduced species.
 - Enhances understanding of predatory behavior and adaptive mimicry in arachnids.

- **National Bird:** Thailand
- **IUCN Status:** *Least Concern*, though facing **moderate decline** due to habitat loss and poaching.
- **Geographic Distribution:** Native to [Southeast Asia](#), found in: Thailand, Laos, Cambodia, and Vietnam.
- **Habitat Preferences:**
 - Prefers **dense evergreen forests** and **deciduous woodlands**.
 - Often avoids human disturbance and thrives in **humid, secluded terrain**.
 - Sighted recently in **high-altitude Himalayan Forest**, suggesting range flexibility and habitat resilience.
- **Physical Features:**
 - **Males:** Metallic blue-black body, fiery red-orange rump patch, red facial skin, and elegant white tail feathers.
 - **Females:** Mottled brown and black plumage for [camouflage](#).
- **Biological and Behavioural Traits:**
 - **Omnivorous:** Feeds on seeds, fruits, insects, and small creatures by foraging on the forest floor.
 - **Shy and elusive:** More often heard than seen; prefers forest solitude.
 - **Breeding Season:** March to June. Males perform **spectacular courtship dances** to attract females.
 - **Nesting:** Females lay 4–6 eggs in ground nests, well-hidden in dense undergrowth.

SIAMESE FIREBACK

Context:

The Siamese Fireback, Thailand's national bird, has been spotted for the first time in the forests of Ranikhet, Uttarakhand, by a local bird enthusiast.



About Siamese Fireback:

- **Scientific Name:** *Lophura diardi*

AVILIST

Context:

The world's first unified global checklist of bird species, called AviList, was officially launched, standardizing [bird taxonomy](#) across international conservation, research, and biodiversity platforms.



About AviList:

- **What is AviList?**
 - AviList is a **comprehensive global bird species checklist**, developed to harmonize scientific naming and classification of birds

worldwide. It is designed to replace earlier inconsistent systems and streamline avian taxonomy for global conservation and research.

- **Developed By:**
 - AviList was created by the **Working Group on Avian Checklists**, under the [International Ornithologists' Union](#).
 - It involved four years of detailed analysis and consensus-building among experts.
- **Organizations Involved:** [BirdLife International](#), International Ornithologists' Union and others.
- **Objectives:**
 - **Standardize global bird taxonomy** using the integrative species concept.
 - **Support conservation** by offering a common language for laws, treaties, and biodiversity planning.
 - **Facilitate collaboration** among birdwatchers, researchers, and policymakers globally.
 - **Eliminate confusion** caused by multiple competing checklists.
- **Key Features:**
 - **Integrative Species Concept:** Considers morphology, genetics, ecology, reproductive isolation, and biogeography.
 - **Annual Updates:** Checklist will be revised annually to incorporate new research and evolutionary insights.
 - **Consensus-Driven:** Final decisions are made by voting within the core group of taxonomists.
 - **Versatile Utility:** Beneficial for ornithologists, conservationists, governments, educators, and citizen scientists.
- **Benefits for Conservation and Research:**
 - Enables **accurate resource allocation** for species protection.
 - Reduces **taxonomic mismatch** across agencies and treaties.
 - Provides a stable baseline for [biodiversity monitoring](#) and habitat studies.

against antimicrobial resistance.



About Antibiotic-Producing Thermophilic Bacteria:

- **Definition:**
 - Thermophiles are heat-loving microorganisms that thrive in extreme temperatures ranging from **45°C to 70°C**, where most life forms cannot survive.
- **Characters of Thermophilic Bacteria:**
 - **Heat Tolerance:** Thermophilic bacteria grow best at high temperatures between 45°C and 80°C. They thrive where most other microbes cannot survive.
 - **Heat-Stable Enzymes:** They produce enzymes that remain active at high temperatures. These enzymes are used in industries like PCR testing and biofuel production.
 - **Strong Cell Membranes:** Their cell membranes contain special fats that resist melting. This helps them stay intact in extreme heat.
 - **Unique Metabolism:** Thermophiles can use unusual nutrients like sulfur or iron. This allows them to live in mineral-rich, low-competition areas.
 - **Survival Mechanisms:** Some thermophiles form spores or have strong DNA repair systems. These features protect them in harsh and changing environments.
- **Examples of Thermophiles:**
 - *Thermus aquaticus* (used in PCR tests)
 - *Actinobacteria* (noted for antibiotic production)
 - *Sulfolobus acidocaldarius* (found in acidic hot springs)
- **Key Features of Antibiotic-Producing Thermophilic Bacteria:**
 - **Heat-Stable Enzymes:** Thermophiles produce enzymes that remain active at high temperatures, making them ideal for industrial applications like PCR and fermentation.
 - **Antibiotic Synthesis:** They generate potent

ANTIBIOTIC-PRODUCING THERMOPHILIC BACTERIA

Context:

Researchers from Vellore Institute of Technology have discovered antibiotic-producing thermophilic bacteria in Rajgir hot spring, Bihar, opening new avenues in the fight

antimicrobial compounds to eliminate rival microbes in extreme environments, useful in combating resistant pathogens.

- **Unique Metabolic Pathways:** Their survival in extreme conditions is enabled by novel metabolic processes, often leading to the discovery of [rare bioactive molecules](#).
- **Applications of Thermophiles:**
 - **Medical:** They are a promising source of new antibiotics—like diethyl phthalate from Rajgir—which combat drug-resistant infections such as *Listeria monocytogenes*.
 - **Agriculture:** Thermophilic microbial blends enhance soil fertility and crop resilience by promoting growth under harsh environmental conditions.
 - **Industrial:** Their heat-resistant enzymes are used in processes like [polymerase chain reaction](#) (PCR), biofuel generation, and waste degradation.

Western Ghats, a biodiversity hotspot in peninsular India.

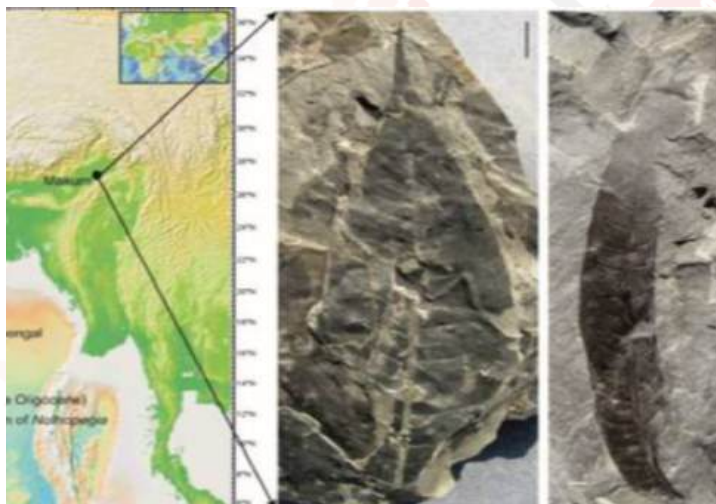
- **Fossil Discovery:** Fossil leaves of *Nothopegia* were discovered in **Assam's Makum Coalfield**, dating back to the **late Oligocene epoch (24–23 million years ago)**.
- **Key Features:**
 - Broad, reticulate-veined leaves.
 - Adapted to **warm, humid [tropical climates](#)**.
 - Fossils resemble modern Western Ghats species, indicating a **past distribution** in Northeast India.
- **Reason for Local Extinction in Northeast:**
 - Tectonic shifts and Himalayan uplift drastically altered regional climate.
 - Changes in rainfall, temperature, and wind patterns made the Northeast inhospitable.
 - *Nothopegia* migrated southward, surviving in the climatically stable Western Ghats.

NOTHOPEGIA LEAVES

Context:

Scientists from the Birbal Sahni Institute of Palaeosciences unearthed 24-million-year-old fossilized *Nothopegia* leaves in Assam's Makum Coalfield.

- This is the **oldest known fossil record** of the genus, revealing ancient climate patterns and biodiversity shifts.



About *Nothopegia* Leaves:

- **What is *Nothopegia*?**
 - A genus of flowering plants belonging to the Anacardiaceae family (same as mango).
 - It includes several tropical tree species known for their ecological and medicinal importance.
- **Present Habitat:** Currently found only in the

About Makum Coalfield:

- **Location:** Located in **Tinsukia district, Assam**, within the **Dibrugarh–Tinsukia coal belt**.
- **Features:**
 - Rich in Tertiary-period fossil records and peat-based coal deposits.
 - A valuable site for paleobotanical and geological research.
 - Offers insights into climatic transitions and [ancient flora](#) of India.

Syllabus: Environment: Pollution & Conservation

DELHI ARTIFICIAL RAIN PROJECT

Context:

The Delhi Government has launched its first ₹3.21 crore artificial rain pilot project in collaboration with IIT-Kanpur and [IMD](#) to reduce air pollution through cloud seeding technology.



About Delhi Artificial Rain Project:

- **What it is?**
 - Artificial rain refers to the technique of **inducing rainfall** by dispersing substances into moisture-laden clouds — aimed at improving **air quality** in Delhi.
- **Method Used:**
 - Uses **cloud seeding** by aircraft, dispersing agents like **silver iodide** and **rock salt** into clouds.
 - Conducted in partnership with **IIT-Kanpur**, with technical support from **IMD**.
- **How It Works?**
 - Small aircraft will release a seeding mixture into **nimbostratus clouds** (with over 50% moisture).
 - The agents act as condensation nuclei, helping cloud droplets grow and trigger **precipitation**, washing out pollutants.
- **Key Features:**
 - **Advanced Seeding:** Aircraft-mounted flares with **silver iodide**, **rock salt**, **iodised salt** trigger rain formation.
 - **Targeted Operations:** Five 90-minute flights targeting **~100 sq km** of Delhi's most polluted areas.
 - **Scientific Monitoring:** Real-time **air quality tracking** via **CAAQMS** for PM2.5 and PM10 reductions.
 - **First Urban Use:** Builds on successful **IIT-Kanpur trials** in drought regions — now adapted for pollution control.
 - **Multi-agency Effort:** Collaboration of **Delhi Govt**, **IIT-Kanpur**, **IMD**, with military-grade operational precision.
- **Significance:**
 - Aimed at reducing severe PM2.5/**PM10 pollution** episodes in Delhi winters.
 - Provides scientific data for scaling up cloud seeding in other polluted Indian cities.
 - Supports Delhi's push for 'right to clean air' and innovative urban environmental governance.



About Ship M.V. Wan Hai 503:

- **Ownership & Nationality:** The vessel is registered under the **Singapore flag** and was en route from **Colombo to Mumbai** when the fire broke out.
- **Nature of Cargo:** According to its cargo manifest, the ship holds **157 containers** with hazardous goods including: Flammable liquids, Flammable solids, and spontaneously combustible substances.
- **Fuel Reserves:** The ship also contains approximately **2,000 tonnes of fuel oil** and **240 tonnes of diesel**, increasing the risk of explosion and **oil spill**.

Features of Kerala Coast:

- **Geographical Extent:**
 - Stretches for **590 km** along the Arabian Sea.
 - Lies between Latitudes 8°17'N to 12°47'N and Longitudes 74°27'E to 77°37'E.
- **Topography:**
 - Coastal belt is **flat, low-lying**, and highly **water-rich**, featuring estuaries, lagoons, and backwaters.
 - The coast transitions inland to **midland plains** and **Western Ghats** highlands, creating unique ecological gradients.
- **Rivers and Backwaters:**
 - Kerala has **44 rivers**, 41 of which flow westward into the **Arabian Sea**.
 - **Prominent rivers:** Periyar, Bharathapuzha, Chaliyar, Chalakudy, and Pamba.
 - The **Kerala Backwaters** system (e.g., Vembanad Lake) is a major water network enabling inland navigation.
- **Biodiversity & Minerals:**
 - The coast is rich in **ilmenite**, **monazite**, **thorium**, and **titanium**.
 - Known for **high natural background radiation** in areas like **Karunagappally** due to thorium-rich sand.

SHIP M.V. WAN HAI 503

Context:

A massive fire erupted on the Singapore-flagged container ship M.V. Wan Hai 503 off the Kerala coast, prompting concerns of a potential oil spill and environmental hazard.

INDIA'S FIRST E-WASTE RECYCLING ECO PARK

Context:

Delhi has announced the establishment of India's first E-Waste Recycling Eco Park in Holambi Kalan to tackle the capital's electronic waste and promote circular economy.



About India's first E-Waste Recycling Eco Park:

- **What is the E-Waste Eco Park?**
 - The E-Waste Eco Park is a specialized facility in Delhi for the scientific recycling, dismantling, and recovery of electronic waste.
 - It is designed to serve as a model for sustainable e-waste management and promote India's shift toward a [circular economy](#).
- **Announced by:** Delhi's Environment Minister.
- **Location:** Holambi Kalan, North Delhi.
- **Operating Model:** Based on the DBFOT (Design, Build, Finance, Operate, Transfer) model under Public-Private Partnership (PPP).
 - Global tender to be floated by **Delhi State Industrial and Infrastructure Development Corporation (DSIIDC)**.
- **Concession period:** 15 years.
- **Key Features of E-Waste Eco Park:**
 - **Integrated Recycling Infrastructure:** Spread over 11.4 acres, the park will include facilities for collection, dismantling, recycling, and refurbishment. It targets processing **51,000 metric tonnes** of e-waste annually with scientific metal recovery.
 - **Comprehensive Waste Coverage:** It will manage all **106 e-waste categories** under the E-Waste Management Rules, 2022 — from phones and laptops to industrial and solar equipment.
 - **PPP-Based Green Investment Model:** To be built under a DBFOT model via Public-Private Partnership, with a 15-year concession. DSIIDC will invite global green-

tech firms via RFQ-RFP.

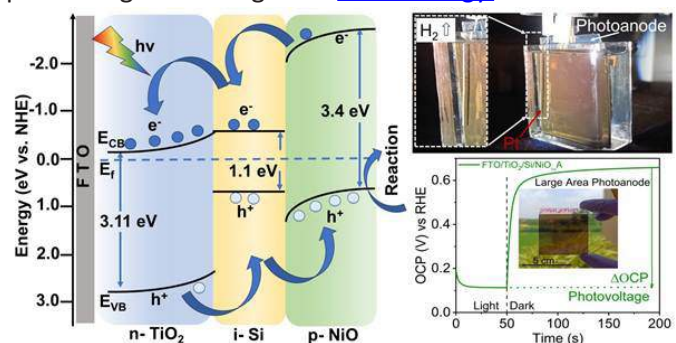
- **Economic and Employment Boost:** With ₹150 crore investment and ₹350 crore revenue target, it will create thousands of green jobs. Training centres will upskill informal workers.
- **Fast Execution with National Impact:** The project will be completed in **18 months**, setting a benchmark for sustainable e-waste infrastructure nationwide.
- **Significance:**
 - **Environmental Sustainability:** Reduces hazardous dumping, encourages safe recovery of rare earth elements.
 - **Circular Economy Model:** Promotes reuse, recycling, and responsible resource utilization.
 - **Job Creation:** Supports local dismantlers, recyclers, and refurbishes—boosting **green employment**.
 - **Urban Governance:** Strengthens Delhi's waste infrastructure and positions the city as a national sustainability leader.
 - **National Impact:** Serves as a **template for upcoming e-waste parks** in other states.

[Syllabus: Renewable Energy](#)

INDIA'S NEW SOLAR-POWERED DEVICE FOR AFFORDABLE GREEN HYDROGEN PRODUCTION

Context:

Indian scientists at Centre for Nano and Soft Matter Sciences (CeNS), Bengaluru have developed a scalable solar-driven device for affordable green hydrogen production — a potential game-changer for [clean energy](#).



About Scalable Solar-Driven Device for Affordable Green Hydrogen Production:

- **What Is the Innovation?**
 - Developed a **next-gen device** that splits

water molecules to produce **green hydrogen** using only solar energy.

- Uses **earth-abundant, low-cost materials**, avoiding fossil fuels and rare expensive components.
- Employs **silicon-based photoanode** with advanced n-i-p heterojunction architecture.

• **Technical Highlights:**

- **Architecture:** n-type TiO₂ / intrinsic Si / p-type NiO layers — enabling efficient charge separation & transport.
- **Fabrication:** Using magnetron sputtering, an industry-scalable technique.
- Achieved **600 mV surface photovoltage**, low onset potential (**0.11 VRHE**).
- Demonstrated **long-term stability** - 10 hours continuous operation with <4% performance drop.
- Successfully scaled to **25 cm² photoanode** size — effective for large-scale hydrogen production.

• **Advantages of the Device:**

- **High efficiency conversion:** Achieves superior solar-to-hydrogen conversion, maximizing energy output from sunlight.
- **Purely solar-driven:** Operates entirely on **solar energy**, eliminating the need for external power inputs or fossil fuels.
- **Durable and stable:** Maintains **long-term stability** even under alkaline conditions, essential for practical, continuous use.
- **Cost-effective materials:** Built with earth-abundant, low-cost materials, making large-scale production economically viable.
- **Scalable design:** Successfully demonstrated on a 25 cm² photoanode, proving feasibility for mass industrial adoption.

• **Significance:**

- **Decarbonizing industries:** Enables green hydrogen production to reduce emissions in hard-to-abate industrial sectors.
- **Advances India's hydrogen mission:** Aligns with India's vision for a hydrogen-driven economy under its energy transition goals.
- **Supports net-zero targets:** Contributes to national and global net-zero emission commitments by offering a clean fuel alternative.
- **Global energy transition:** Facilitates a shift towards sustainable and renewable energy systems across sectors.
- **Versatile applications:** Powers future **hydrogen-based solutions**—from home

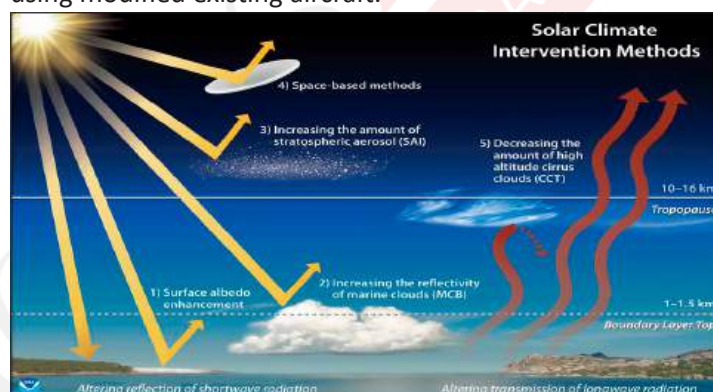
energy storage to transport and industrial use.

Syllabus: Climate Change

SOLAR CLIMATE INTERVENTION TECHNIQUES

Context:

A new study in Earth's Future journal proposes a low-altitude version of Stratospheric Aerosol Injection (SAI) using modified existing aircraft.



About Solar Climate Intervention Techniques:

• **What is Solar Climate Intervention?**

- It refers to **geoengineering technologies** aimed at **reducing incoming solar radiation** to counteract global warming effects without cutting greenhouse gas emissions.

• **Key Types of Techniques:**

- **Stratospheric Aerosol Injection (SAI):** Spraying sulphur dioxide or other particles into the stratosphere to reflect sunlight and cool Earth.
- **Marine Cloud Brightening:** Involves spraying sea salt into marine clouds to increase their reflectivity.
- **Space-Based Reflectors:** Hypothetical deployment of **mirrors or shades in space** to block a portion of sunlight.
- **Surface Albedo Modification:** Lightening surfaces (like painting roofs white or planting reflective crops) to reflect more sunlight.

• **How Stratospheric Aerosol Injection (SAI) Works?**

- Inspired by **volcanic eruptions** (e.g., Mount Pinatubo, 1991) that cooled global temperatures by emitting aerosols.
- **Sulphur dioxide aerosols** are released at high altitudes (~13–20 km) to form a **reflective layer**.

- This layer reflects sunlight back into space, reducing **global surface temperatures**.
- Duration of particles in the stratosphere: **months to years**, depending on injection altitude.
- **Significance Of SAI:**
 - **Rapid Cooling:** Could lower global temperatures within a year of deployment.
 - **Cheaper Alternative:** More affordable than decarbonisation strategies.
 - **Buys Time:** Offers short-term relief while countries scale up renewable energy.
 - **Scientific Learning:** Opens avenues for [microgravity](#) aerosol research, modelling, and international coordination.
- **Limitations:**
 - **Global Side Effects:** Uneven regional cooling and could disrupt monsoons, rainfall, and crop patterns.
 - **Ozone Layer Threat:** May delay ozone hole recovery.
 - **Acid Rain Risk:** Sulphur compounds may lead to acid precipitation.
 - **Governance Challenges:** Affects all nations but may be initiated unilaterally – creating geopolitical tensions.
 - **High Volume Needed at Lower Altitudes:** 2–3x more aerosol needed if injected at ~13 km vs 20 km.

BONN CLIMATE CHANGE CONFERENCE 2025

Context:

The Bonn Climate Change Conference 2025 began on June 16 in Germany with over 5,000 delegates participating to review climate agreements and set the technical agenda for COP29.



[About Bonn Climate Change Conference 2025:](#)

- **What It Is?**
 - An annual mid-year conference under the UN Framework Convention on Climate Change (UNFCCC) focusing on scientific, technical, and implementation aspects of climate negotiations.
- **Established In:** First held in **1995**, after the signing of the [UNFCCC](#) (**1992**).
- **Organised By:**
 - UNFCCC Secretariat
 - Hosted in **Bonn, Germany**, home to the UNFCCC headquarters.
- **Objectives of the Conference:**
 - **Prepare for COP Summits:** Sets the technical and political groundwork for the annual COP.
 - **Review Climate Agreements:** Evaluates implementation of past commitments including those under the [Paris Agreement](#).
 - **Promote Science–Policy Interface:** Connects IPCC scientific assessments with policymakers.
 - **Facilitate Finance & Tech Transfer:** Discusses support to developing countries.
 - **Enable Stakeholder Participation:** Involves [civil society](#), indigenous groups, and experts in climate dialogue.
- **Key Features:**
 - **Two Permanent Subsidiary Bodies:**
 - **SBI** (Subsidiary Body for Implementation): Tracks and reviews the execution of climate actions.
 - **SBSTA** (Subsidiary Body for Scientific and Technological Advice): Integrates IPCC science into policy planning.
 - **Pre-COP Platform:** Results here influence COP outcomes.
 - **Multilateral Participation:** Involves UN members, NGOs, scientists, and industry stakeholders.
 - **Focus on Actionable Roadmaps:** Bridges political goals with realistic strategies.
- **Theme of 2025 Conference:**
 - Operationalising the Global Goal on Adaptation (GGA)
 - GGA was part of the **Paris Agreement (2015)** but gained traction only in [COP28 \(Dubai\)](#).
 - Focus now is on setting **measurable, equitable adaptation targets** for vulnerable countries.

BLUE NDC CHALLENGE

Context:

At the [United Nations Ocean Conference](#) (UNOC3) in Nice, France, Brazil and France launched the “Blue NDC Challenge” to integrate ocean-based solutions into national climate strategies ahead of UNFCCC COP30 in Belem.

About Blue NDC Challenge:

- **What is the Blue NDC Challenge?**
 - A multilateral initiative urging countries to embed ocean-centric actions into their Nationally Determined Contributions (NDCs) to tackle climate change and enhance coastal resilience.
- **Launched by:**
 - **Brazil and France.**
 - Announced during **UNOC3** (June 2025) as part of pre-COP30 mobilization
- **Participating Countries:** Australia, Fiji, Kenya, Mexico, Palau, Seychelles.
- **Core Objective:** To integrate ocean-focused climate actions into updated [Nationally Determined Contributions](#) (NDCs) by countries ahead of UNFCCC COP30, aligning with the 1.5°C Paris target.

CORE COMMITMENTS UNDER BLUE NDC CHALLENGE:

- **Marine Ecosystem Protection:** Implement marine spatial planning and integrated coastal zone management to protect biodiversity.
- **Sustainable Blue Economy:** Promote climate-resilient fisheries and aquaculture for food security and ocean health.
- **Clean Ocean Energy:** Scale up offshore wind, tidal, and wave power as renewable alternatives.
- **Maritime Emission Reduction:** Cut emissions from shipping and seafood value chains through green tech and efficiency.
- **Phasing Out Fossil Fuels:** Gradually eliminate offshore oil and gas extraction activities.

- **Major Features of the Blue NDC Challenge:**
 - **Ocean-Integrated NDCs:** Encourages countries to include marine ecosystems, mangroves, and coastal zones in climate action plans.
 - **Sustainable Blue Economy:** Advocates for climate-resilient fisheries, ocean renewable energy (wave, wind, tidal), and carbon-smart aquaculture.
 - **Phasing Out Offshore Fossil Fuels:** Pushes for gradual elimination of offshore oil and gas exploration, especially in sensitive marine zones.
 - **Restoration and Conservation:** Focus on [mangroves](#), coral reefs, and salt marshes to boost carbon sequestration and coastal protection.
 - **Global Partnerships & Support:** Supported by Global Mangrove Alliance, [UN High-](#)

[Level Climate Champions](#), WRI, and Ocean Breakthroughs under Marrakech Partnership.

[Syllabus: Disaster Management](#)

INTERNATIONAL CONFERENCE ON DISASTER RESILIENT INFRASTRUCTURE (ICDRI) 2025

Context:

Prime Minister of India addressed the International Conference on Disaster Resilient Infrastructure (ICDRI) 2025, held for the first time in Europe.



About Coalition for Disaster Resilient Infrastructure:

- **What It Is?**
 - CDRI is a **global multilateral platform** launched by India in **2019** to promote infrastructure resilience against climate and disaster risks.
- **Headquarters:** Located in **New Delhi**.
- **Membership:**
 - 46 member countries and 8 partner organizations.
 - Includes national governments, [UN agencies](#), multilateral banks, and private sector entities.
- **Objective:**
 - Mobilize investments to make infrastructure climate- and disaster-resilient by **2050**.
 - Improve environmental quality, livelihoods, and resilience for **over 3 billion people**.
- **Funding:**
 - Mainly **voluntary contributions**.
 - **India is the primary funder**, supported by USA, UK, France, Japan, Germany, Australia, Canada, and World Bank.
 - No mandatory financial commitment for members.

• **Functions:**

- Facilitate global knowledge exchange, conduct research, promote capacity building, and aid in financing resilient infrastructure.
- Implement **10 thematic initiatives**, including those for [Small Island Developing States](#) (SIDS), urban resilience, Africa, and critical infrastructure.

Key Highlights of ICDRI 2025:

- **Theme of the Conference:** “Shaping a Resilient Future for Coastal Regions”
- **India 5 Global Priorities at CDRI:**
 - **Education & Skill Development:** Integrate disaster resilience modules into higher education for a future-ready workforce.
 - **Global Digital Repository:** Create a platform to share case studies, learnings, and rebuilding models [post-disaster](#).
 - **Innovative Financing for Developing Nations:** Ensure access to resilience funding, especially for vulnerable countries.
 - **Special Focus on SIDS:** Recognize Small Island Developing States (SIDS) as Large Ocean Countries, and prioritize their unique climate challenges.
 - **Early Warning & Coordination Systems:** Strengthen real-time alerts and last-mile communication to reduce disaster impacts.

LIGHTNING

Context:

13 people were killed by lightning strikes across Bihar in the past 24 hours. The Bihar government announced Rs 4 lakh [ex-gratia](#) for each bereaved family and urged citizens to follow safety guidelines.



About Lightning:

- **What is Lightning?**

- A natural electrostatic discharge caused by static electricity build-up in thunderstorm clouds.
- Generates extreme heat (~50,000°F), rapidly expanding air, causing thunder.

• **India's Vulnerable Regions:**

- Eastern and Northeastern states: Bihar, Jharkhand, Odisha, West Bengal, Assam.
- Parts of Madhya Pradesh, Chhattisgarh, Maharashtra, and hill regions are also prone.

• **Principles Behind Occurrence:**

- **Charge Separation in Clouds:** Inside thunderclouds, colliding water droplets, ice crystals, and hailstones create separation of electric charges—positive charges rise to the top, while negative charges accumulate at the bottom.
- **Electrostatic Build-Up:** The earth's surface becomes positively charged in response to the cloud's negative base, further intensifying the electrical potential.
- **Threshold Breach:** When the electric field strength exceeds the insulating capacity of the air, the energy discharges violently as [lightning](#), balancing the charge difference.
- **Path of Discharge:** The discharge can travel cloud-to-cloud, intra-cloud, or ground-to-cloud, producing a sudden flash of light and a shockwave heard as thunder.

• **Significance of the Hazard:**

- Lightning is one of India's leading natural disaster killers, especially affecting farmers, labourers, and outdoor workers.
- On average, lightning causes over 2,000 deaths annually in India.
- It impacts agriculture, rural livelihoods, and contributes to climate vulnerability.

• **Key Initiatives Taken in India:**

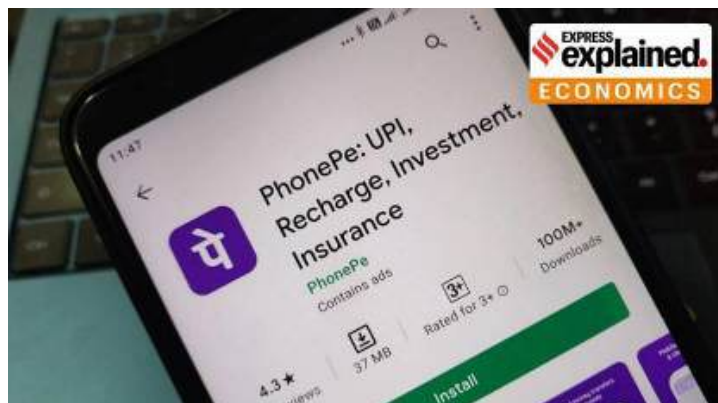
- **Damini App (IITM):** Sends real-time lightning alerts within a 40-minute window based on location.
- **Lightning Detection Network (LLN)** and Doppler radars monitor lightning strikes.
- **IMD forecasts:** Provide nowcast (2-3 hrs), short-range (1-3 days), and medium-range alerts.
- **Lightning Resilient India Campaign (CROPC & IMD):** Targets 80% reduction in deaths through rural education.
- **NDMA guidelines:** Advise states on mapping risk zones, data sharing, and safety infrastructure.

Syllabus: Cyber Crimes & Digital Security

SEBI'S NEW VERIFIED UPI MECHANISM

Context:

SEBI has announced a new verified [UPI](#) ID system for registered market intermediaries, effective from October 1, 2025, to curb rising cases of cyber fraud and impersonation in securities transactions.



About SEBI's New Verified UPI Mechanism:

- **What It Is?**
 - A validated UPI payment framework for SEBI-registered intermediaries featuring exclusive UPI handles ending with @valid.
- **Developed By:** The system is being developed in coordination with the **National Payments Corporation of India (NPCI)**, which operates the UPI platform.
- **How It Works?**
 - Every registered intermediary (broker, mutual fund, etc.) will receive a **unique UPI ID**: username.category@validBank
 E.g., abc.brk@validXYZ for a broker using XYZ Bank
 - A **"thumbs-up in green triangle" icon** will appear when transacting with verified IDs.
 - The system will integrate with the new **'SEBI Check' tool** to verify UPI IDs and bank details via QR scan or manual entry.
- **Key Features:**
 - Distinct suffixes indicate category:
 - **.brk** for stock brokers
 - **.mf** for mutual funds
 - UPI IDs will only be allocated to **genuine SEBI-registered entities**.
 - Visual authentication marks help users identify legitimate payees.
 - 'SEBI Check' confirms both **UPI ID** and **bank account/IFSC code** authenticity.
- **Benefits:**

- **Investor Protection:** Prevents fund diversion by fraudsters.
- **Transparency:** Allows clear identification of registered entities.
- **Cybersecurity Boost:** Cuts down fake UPI handles used for scams.
- **Trust Restoration:** Enhances confidence in digital transactions in the securities market.
- **Mandatory Compliance:** All intermediaries must adopt the system and older UPI IDs to be phased out.

CYBER SURAKSHA

Context:

The Defence Cyber Agency has launched 'Cyber Suraksha', a national-level cyber security exercise, aimed at enhancing [India's cyber defence](#) readiness.



About Cyber Suraksha:

- **What It Is?**
 - 'Cyber Suraksha' is a **multi-phased cybersecurity drill** simulating real-world cyber threats in a high-paced, gamified environment for national-level stakeholders.
- **Launched By:** Organised by the Defence Cyber Agency (DCyA).
- **Objectives:**
 - Boost cyber resilience at the national security level.
 - Train personnel to effectively respond to advanced cyberattacks.
 - Foster a **security-first culture** in defence institutions.
- **Key Features:**
 - Includes targeted training, evaluation modules, and leadership capsules.
 - Hosts a [Chief Information Security Officers \(CISOs\) Conclave](#) for policy and strategic alignment.

- Integrates Table-Top Exercises to simulate crisis decision-making.
- Blends structured learning with hands-on scenarios to boost readiness.

About Defence Cyber Agency (DCyA):

- **What It Is?**
 - DCyA is an integrated tri-service organisation under India's Ministry of Defence, managing military cybersecurity operations and cyber warfare strategies.
- **Established In:** Operational since November 2019.
- **Aim:**
 - To **safeguard Indian defence networks** and digital infrastructure from cyber threats.
 - Enhance **joint cyber capabilities** across Army, Navy, and Air Force.
- **Functions:**
 - Acts as a central agency for cyber operations and emergency response (CERTs).
 - Coordinates cyber intelligence, incident response, and strategic cyber defence.
 - Supports training, audits, and threat assessments across military units.
 - Reports to [Chief of Defence Staff](#) (CDS) via Integrated Defence Staff (IDS).

Syllabus: Internal Security & its Challenges

FINANCIAL ACTION TASK FORCE (FATF)

Context:

The Financial Action Task Force (FATF) strongly condemned the April 2025 [Pahalgam terror attack](#) and announced intensified scrutiny of countries' efforts in countering terror financing.



About Financial Action Task Force (FATF):

- **What is FATF?**
 - The Financial Action Task Force (FATF) is an intergovernmental policy-making body that sets global standards to combat money laundering, terror financing, and proliferation financing.
- **Established:** 1989 at the [G7 Summit](#) in Paris.
- **Mandate Expansion:** In 2001, it included **terrorism financing**.
- **Headquarters:** Paris, France.
- **Objectives:**
 - Develop and promote **global AML/CFT standards**.
 - Evaluate compliance of member countries.
 - Assist nations in building robust anti-financial crime frameworks.
 - Coordinate international efforts against terror-linked financial flows.
- **Key Functions:**
 - **Issuing FATF Recommendations:** FATF issues 40 global standards to guide countries on [anti-money laundering](#) and counter-terror financing. These form the core of international financial compliance.
 - **Mutual Evaluations of National Frameworks:** FATF reviews member countries to assess effectiveness of their AML/CFT systems. It identifies gaps and pushes for reforms.
 - **Identifying and Monitoring High-Risk Jurisdictions:** FATF places non-compliant countries on grey or black lists. This impacts their global trade and financial access.
 - **Raising Awareness on Emerging Threats:** FATF alerts nations about risks like crypto misuse, crowdfunding, and [digital laundering](#). It promotes timely regulatory action.
- **Lists Issued by FATF:**
 - **Grey List (Increased Monitoring)**
 - For countries with **strategic deficiencies** in AML/CFT frameworks.
 - Affects FDI, financial ratings, and access to global lending.
 - **Blacklist (High-Risk Jurisdictions)**
 - Countries non-cooperative in curbing terror financing and money laundering.
 - Currently includes **North Korea, Iran, and Myanmar**.
- **Significance of FATF:**
 - Enhances international cooperation in

tracking illicit financial flows.

- Deters terror state sponsorship by impacting financial systems.
- Helps countries strengthen domestic legal and institutional responses.

• **India & FATF:**

- Joined in **2010** as a full member.
- Member of [Asia Pacific Group](#) (APG) and Eurasian Group (EAG).
- Actively engages in global CFT/AML standard setting and enforcement.

TALIBAN SANCTIONS COMMITTEE & 1373 COUNTER-TERRORISM COMMITTEE

Context:

Pakistan has been appointed Chair of the 1988 Taliban Sanctions Committee and Vice Chair of the 1373 Counter-Terrorism Committee as part of its term as a non-permanent [UNSC](#) member (2025–26).



About 1988 Taliban Sanctions Committee (TSC):

- **What is it?**
 - A subsidiary body of the UNSC, the 1988 Committee monitors the implementation of sanctions specifically on Taliban-linked individuals and entities.
- **Established in:** 2011, under **UNSC Resolution 1988**, after separating from the broader 1267 Al-Qaeda Sanctions regime.
- **Objective:** To ensure compliance with **travel bans, arms embargoes, and asset freezes** targeting individuals affiliated with the [Taliban](#) who pose a threat to peace in Afghanistan.
- **Key Features:**
 - **List-based regime** covering ~130 individuals/entities.

- **Chair has procedural control**, including setting the agenda, consulting members, and presenting recommendations.
- **Decisions are taken by consensus**, limiting unilateral power.
- **No powers to investigate or enforce** and relies on state cooperation for implementation.
- Monitors compliance and considers **listing, delisting, or exemption requests**.

About the 1373 Counter-Terrorism Committee (CTC):

- **What is it?**
 - A **technical committee** created to implement **UNSC Resolution 1373** following the 9/11 attacks, aimed at strengthening **global legal and operational counter-terrorism efforts**.
- **Established in:** 2001, under **Chapter VII** of the UN Charter, making its obligations **binding** on all UN member states.
- **Objective:** To compel states to **criminalize terrorism**, prevent **terrorist financing**, and **deny safe havens** to terrorists.
- **Key Features:**
 - **Does not designate terrorists or groups** (unlike 1267 Committee).
 - Focuses on **capacity building**, legal reforms, and promoting best practices.
 - Works with [Counter-Terrorism Executive Directorate](#) (CTED) for technical support and global assessments.
 - Encourages **international cooperation**, border control, and financial surveillance.
 - Operates under **consensus model**, limiting politicisation of actions.

OPERATION DEEP MANIFEST

Context:

The Directorate of [Revenue Intelligence](#) (DRI) has seized Pakistani-origin goods worth ₹9 crore under 'Operation Deep Manifest'.



About Operation Deep Manifest:

- **What It Is?**
 - A targeted enforcement operation by the **DRI** to detect and disrupt **illicit trade routes** being used to smuggle banned Pakistani-origin goods into India.
- **Launched By:** Directorate of Revenue Intelligence (DRI), under the Central Board of Indirect Taxes and Customs (CBIC), Ministry of Finance.
- **Objective:** To enforce India's **comprehensive import ban** on Pakistani goods and prevent economic infiltration via third-country transshipment.
- **Key Features:**
 - **Container Surveillance:** Intercepted **39 containers** carrying **1,115 metric tonnes** of goods falsely labelled as UAE-origin.
 - **Document Forensics:** Tracked shipping records and **revealed false declarations**, container swaps, and **dual-port routing** via **Dubai (Jebel Ali Port)**.
 - **Financial Intelligence:** Uncovered **fund flow links** to Pakistani entities and their UAE collaborators.
 - **Enforcement Outcome:** Arrested a key partner of an importing firm and initiated broader **criminal and financial investigations**.
- **Significance:**
 - Protects national economic security by cutting off illicit trade networks from hostile states.
 - Reinforces India's **zero-tolerance policy** post-terror attacks.
 - Enhances DRI's credibility in using data analytics and AI-driven customs enforcement.
 - Acts as a deterrent against third-country re-routing, a common strategy for evading sanctions.

MAPPING: PLACES IN NEWS: WORLD:

PARAGUAY

Context:

The President of Paraguay, Santiago Peña Palacios, is visiting India from June 2 to 4, 2025, marking his first state visit.

- This is only the second-ever visit by a Paraguayan President to India and aims to strengthen bilateral ties across trade, technology, and diplomacy.



About Paraguay:

- Paraguay is a **landlocked nation** in **south-central South America**.
- **Capital:** Asunción, located on the east bank of the Paraguay River.
- **Coordinates:** Lies mostly south of the Tropic of Capricorn.
- **Bordering Nations:** Bolivia, Brazil, and Argentina.
- **Geographical Features:**
- **Rivers:**
 - **Major Rivers:** Paraguay, Paraná, Pilcomayo, and Apa
 - **Paraguay River** divides the country into:
 - Region Oriental (Eastern Region)
 - Region Occidental (Western Region or Chaco Boreal)
 - **Hydropower:** Paraguay is among the top exporters of **hydroelectricity**, mainly due to **river-based power stations**.
- **Mountains and Plateaus:**
 - Eastern Paraguay is part of the **Brazilian Plateau**.
 - Important ranges:
 - Amambay Mountains
 - Mbaracayú Mountains

- Cordillera de San Rafael, with the highest peak **Mount San Rafael** (850 m).
- **Valleys and Lakes:**
 - **Paraná and Paraguay valleys** dominate the central and western landscape.
 - Notable lakes include **Lake Ypoá** and **Lake Ypacaraí**.
- **Climate:**
 - **Eastern Region:** **Subtropical**
 - **Chaco Boreal (Western Region):** Tropical
 - **Rainfall:** 1,400–1,650 mm in the east, reducing to 760 mm in the west.

NIGERIA

Context:

Over 150 people have died in central Nigeria due to severe floods caused by torrential rain and a dam collapse in Niger State.



About Nigeria:

- **Capital:** Abuja
- **Bordering Nations:** Niger, Chad, Cameroon, Atlantic Ocean (**Gulf of Guinea**), and Benin.
- **Flooding Causes:** Intense rainfall and collapse of a dam in Mokwa (Niger State - Alau dam).
- **Geographical Features of Nigeria:**
- **Major Rivers:**
 - **Niger River:** Lifeline of Nigeria, flows through **Niger Delta** into the Atlantic
 - **Benue River:** Largest tributary of the Niger
 - **Others:** Sokoto, Gongola, Kaduna, Pilcomayo
- **Delta Region:** Home to **brackish mangroves**,

swamps, and **oxbow lakes**

- **Man-made Lakes:** Lake Kainji, Lake Bakolori
- **Mountains & Highlands**
 - **Jos Plateau:** Central highlands with extinct volcanoes
 - **Cameroon Highlands (southeast):**
 - Chappal Waddi – Nigeria's highest peak (2,419 m)
 - Mount Dimlang – Second highest (2,042 m)
- **Plains & Valleys**
 - **Sokoto & Borno Plains:** Northern sedimentary basins.
 - **Udi-Nsukka Plateau:** Eastern escarpments above flood plains.
 - **Chad Basin:** Drains northeast Nigeria, prone to waterlogging.

MOUNT ETNA VOLCANO

Context:

Mount Etna, Europe's largest active volcano, erupted spewing ash, smoke, and lava several kilometres high.



About Mount Etna Volcano:

- **What It Is?**
 - Mount Etna is a stratovolcano and one of the most active volcanoes in the world.
 - It is classified as a Decade Volcano due to its frequent activity and risk to nearby populations.
- **Location:**
 - Situated on the eastern coast of Sicily, Italy, between Messina and Catania.
 - Lies at the boundary of the **African and Eurasian tectonic plates**.
- **History:**

- Etna's volcanic activity can be traced back over 500,000 years.
- In recent notable eruptions occurred in 2018, 2021, and now in 2025.
- **Features of Etna:**
 - **Tallest Active Volcano in Europe:** Stands at approximately **3,403 metres**, making it the highest peak south of the Alps.
 - **Expansive Volcanic Structure:** Spans an area of 1,190 square kilometres with a basal circumference of 140 km, making it Italy's largest active volcano.
 - **Complex Crater System:** Contains **five active summit craters** and over 300 flank vents, enabling both summit and lateral (flank) eruptions.
 - **Strombolian vs Plinian Debate:** While some classify it as Strombolian (discrete bursts), others consider it Plinian due to the ash cloud reaching the stratosphere.
 - **World Heritage Recognition:** Inscribed as a **UNESCO World Heritage Site** in 2013 for its geological, scientific, and cultural significance.
- **Why Do Volcanoes Erupt?**
 - **Subsurface Magma Pooling:** High heat and pressure in [Earth's mantle](#) melt rock into magma.
 - **Gas Expansion:** Volatiles like CO₂ and SO₂ expand as magma rises, increasing pressure.
 - **Surface Fractures:** Faults in Earth's crust let magma escape, triggering eruptions.

- Operation Rising Lion is a large-scale military airstrike campaign launched by Israel targeting Iran's nuclear and military infrastructure.
- **Nations Involved:** Israel and Iran
- **Reason Behind the Operation:**
 - In response to **IAEA's report** that Iran violated nuclear non-proliferation norms by secretly enriching uranium.
 - Israel viewed Iran's nuclear advancement as an **existential threat**, prompting **pre-emptive action** to cripple its enrichment capabilities and eliminate senior military leadership.

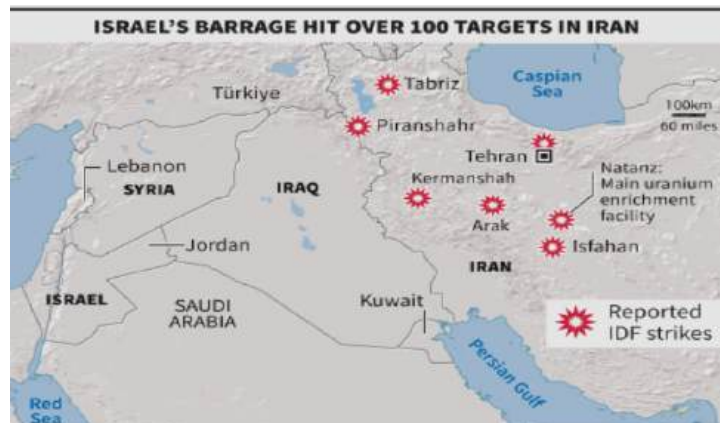
Iran's Nuclear Sites in the News:

- **Natanz Nuclear Facility (Isfahan Province):**
 - Iran's **primary uranium enrichment centre**, referred to as the "beating heart" of its nuclear programme.
 - Severely damaged in Israel's strike, including major surface infrastructure.
- **Fordow Enrichment Plant (Qom Province):**
 - Located **deep underground**, this facility is critical for high-grade enrichment.
 - Reported explosions suggest it was partially targeted in follow-up strikes.
- **Bid Kaneh Missile Complex:**
 - A key site for **missile development and production**.
 - Hit by precision strikes targeting strategic deterrence capability.
- **Kermanshah Missile Base:**
 - Central hub for **short and medium-range missile storage**.
 - Hit to restrict Iran's retaliation capabilities.
- **Tabriz Military Bases & Research Centre:** Targeted to cripple military command structures and destroy ballistic storage units.
- **Tehran Command Centre:** Underground base where Iran's IRGC air force leadership was meeting key commanders killed.

OPERATION RISING LION

Context:

Israel launched '[Operation Rising Lion](#)', a massive airstrike targeting Iran's nuclear facilities and top military personnel.



About Operation Rising Lion:

SOCOTRA ISLAND

Context:

The UAE and [WHO](#) have jointly launched a two-year humanitarian programme to tackle severe child and maternal malnutrition on Yemen's Socotra Island.



About Socotra Island:

- **What is Socotra Island?**
 - Socotra is a **biodiversity-rich island** known as the “Galápagos of the Indian Ocean” for its unique flora and fauna.
 - Designated a **UNESCO World Heritage Site in 2008** due to its high endemism—over 37% of its plant species are found nowhere else.
- **Geography:**
 - **Located in:** Approximately 340 km southeast of Yemen, in the **Indian Ocean**, near the Horn of Africa.
 - **Total area:** Approximately 3,796 sq. km.
 - The island features coastal plains, a limestone plateau, and the rugged **Hagghier Mountains**.
- **Political Control:**
 - Socotra is **part of Yemen**, currently under complex geopolitical influence involving UAE-backed forces and the Southern Transitional Council (STC).
 - UAE also maintains a **military presence**, citing humanitarian and security assistance.
- **Neighbouring Islands:** Socotra Archipelago includes **Abd Al-Kuri, Samhah, and Darsa**, forming one of the most botanically diverse island groups on Earth.
- **Origin of the Name ‘Socotra’:** Likely derived from Sanskrit “**Dvipa Sukhadhara**” meaning “island abode of bliss.”
- **Key Features:**
 - **Ecological Diversity:** Home to **Dragon’s Blood trees**, frankincense, myrrh, and endemic aloes.
 - **Climate:**
 - Semi-desert climate with **low annual rainfall**.
 - **Strong monsoonal winds (June–Sept)** historically isolated the island.

- **Economic Activities:** Fishing, pearl diving, livestock herding, and small-scale agriculture sustain the population.

STRAIT OF HORMUZ

Context:

Two oil tankers, Adalynn and Front Eagle, caught fire following a collision near the Strait of Hormuz, triggering concern over [energy security](#) and trade stability.



About Strait of Hormuz:

- **Location:**
 - The Strait of Hormuz is a strategic maritime chokepoint linking the Persian Gulf with the Gulf of Oman and **Arabian Sea**. Despite being just 33 km wide at its narrowest, it remains the world’s busiest energy transit route.
- **Bordering Nations:** Iran, UAE and Musandam (Oman)
- **Connected water bodies:** Persian Gulf (west) and Gulf of Oman (east)
- **Geographical Features:**
 - **Geographical Width:** Varies from 33 km to 95 km, with 3 km-wide shipping lanes in each direction and buffer zones.
 - **Length:** Approximately 167 kilometres long.
 - **Islands Present:** Includes Qishm, Hormuz, and **Hengam islands** which are of military and navigational significance.
- **Importance of the Strait of Hormuz:**
 - **Global Energy Lifeline:**
 - Handles **~20% of global oil trade**, or 20 million barrels/day.
 - Facilitates **~30% of global LNG trade**, largely from Qatar.
 - **Strategic Chokepoint:** Vulnerable to **military blockades**, cyberattacks, and navigational accidents.
 - **Relevance to India:**

- 85% of India's crude oil and ~50% LNG is imported via this route.
- Qatar alone supplies 80% of India's LNG needs.
- **Naval Security Efforts:** India conducts [Operation Sankalp](#) to escort Indian vessels through Hormuz, ensuring maritime safety amid geopolitical risks.

FORDOW NUCLEAR FACILITY

Context:

The Fordow nuclear facility in Iran is back in focus amid escalating Israel-Iran tensions, with reports highlighting that only the US [GBU-57 bunker](#) buster bomb could potentially destroy the fortified site.



About Fordow Nuclear Facility:

- **What is Fordow?**
 - Fordow is Iran's most heavily fortified underground uranium enrichment facility, key to its potential nuclear weapons program.
- **Location:** Situated near Qom, southwest of Tehran, the site is buried 80 metres deep into a mountain.
- **Structural Features:**
 - Deep underground facility reinforced with soil, rock, and concrete.
 - Surrounded by multi-layered air defence

systems, including Iranian and Russian missiles.

- Designed to be impervious to standard military airstrikes.
- **Operational Since:** 2009 (confirmed by [IAEA](#)).
- **Significance:**
 - Hosts enrichment of uranium up to 60%, dangerously close to weapons-grade.
 - Plays a central role in Iran's breakout potential for nuclear weapons.
 - Symbol of [Iran's](#) resistance to Western nuclear oversight.

YEMEN'S HODEIDAH PORT

Context:

Israel conducted its first-ever naval strike on Yemen's Hodeidah Port, targeting docks allegedly used by [Houthi rebels](#) to transfer weapons.



About Yemen's Hodeidah Port:

- **Location:** Western coast of Yemen, along the Red Sea on the Tihāmah coastal plain.
- **Significance:**
 - Yemen's **chief seaport**, handling **humanitarian aid**, fuel, and commercial imports.
- **Features:**
 - Equipped with **modern docking facilities**, key lifeline for millions amid war.
 - Was shelled in **Italo-Ottoman War (1911–12)** and pivotal in past regional power tussles.
 - Recent Israeli naval strike targeted **2 key piers** (A pier is a raised structure that rises above a body of water) linked to alleged arms transfers.

About Yemen:

- **Located in:** Strategically located at the entrance of the Red Sea, connecting maritime trade between Europe, Africa, and Asia.

- **Boundaries:** Saudi Arabia, Oman, surrounded by Arabian Sea, [Gulf of Aden](#) and the Red Sea.
- **Capital:** Sanaa.
 - The official and most widely spoken language is Arabic.
- **Geographical Features:**
 - **Mountainous Terrain:** The highest point is **Mount Al-Nabi Shu'ayb (12,030 ft)**, making it the tallest peak on the Arabian Peninsula.
 - **Tihāmah Coastal Plain:** A hot and humid lowland strip along the **Red Sea coast**, extending from Saudi Arabia down to the Gulf of Aden.
 - **Eastern Deserts (Rub' al-Khali):** Includes part of the **Empty Quarter**, one of the largest sand deserts in the world, with minimal vegetation and extreme aridity.
 - **Wadis (Seasonal Rivers):** Wadis like **Wadi Hadhramaut** serve as ancient water channels, important for seasonal farming and settlement patterns.
 - **Rivers:** The country has **no perennial rivers**, relying heavily on rainfall-fed wadis and underground aquifers for water.
- **Houthi Conflict:**
 - **Houthi rebels** control parts of **northern Yemen**, including **Hodeidah**.
 - Backed by **Iran**, they oppose **Saudi-led coalition** and have targeted Israel with **missiles and drones**.
 - **Israel alleges** ports like **Hodeidah** are used for **military logistics**, prompting strikes.

About Taiwan:

- **Location:**
 - Taiwan is an island nation in the western Pacific Ocean, around 160 km off the southeastern coast of China.
- **Capital city:** The capital city is Taipei.
- **Neighbouring Regions:** Pacific Ocean, Taiwan Strait, [East China Sea](#), Ryukyu Islands, Bashi Channel (bordering the Philippines).
- **Geological and Physical Features:**
 - **Mountains:** Over **two-thirds** of Taiwan is mountainous. The **Chung-yang Range** (Central Range) forms the island's backbone, with **Yu Mountain (3,997 m)** being the tallest peak.
 - **Valleys:** The [Rift Valley](#) in eastern Taiwan provides limited settlement and farming space.
 - **Rivers:**
 - **Zhuoshui River** is the longest (186 km).
 - **Gaoping River** has the largest basin.
 - Most rivers flow short distances due to steep gradients and carry high sediment loads.
 - The [Danshui River](#) is one of the few navigable ones, flowing near Taipei into the Taiwan Strait.
 - **Soils:** Originating from volcanic activity, Taiwan's soils are fertile but often degraded by heavy rainfall and irrigation.
- **Seismic Activity and Risks:**
 - Taiwan sits at the **convergence of the Eurasian and Philippine Sea tectonic plates**, making it one of the most earthquake-prone regions in the world.
 - Part of the [Pacific Ring of Fire](#), which is responsible for 90% of global earthquakes.

TAIWAN

Context:

A 5.9 magnitude earthquake struck Taiwan shaking buildings in Taipei and coastal regions.

- Taiwan lies in a [high seismic risk zone](#) due to its position along major tectonic boundaries in the Pacific Ring of Fire.



CYPRUS

Context:

Prime Minister visited Cyprus, marking the first Indian Prime Ministerial visit to the country in over two decades.



About Cyprus:

- **Geographical Location:** Cyprus lies in the **eastern Mediterranean Sea**, about 65 km south of Turkey and 100 km west of Syria.
- **Divided Control:**
 - **Republic of Cyprus** (internationally recognized, EU member).
 - **Turkish Republic of Northern Cyprus** (recognized only by Turkey, formed after 1974 Turkish invasion).
- **Capital:** Nicosia (called **Lefkosia** in the Republic and **Lefkoşa** in the Turkish-controlled north).
- **Neighbouring Regions:** Shares **maritime proximity** with Turkey, Syria, Lebanon, and Israel. (NOT BORDERING NATIONS)
- **Geographical Features:**
 - **Third-largest Island** in the Mediterranean after Sicily and Sardinia.
 - Dominated by **Kyrenia Mountains** (north) and **Troodos Mountains** (south), with the **Mesaoria Plain** in between.
 - **Highest Peak:** Mount Olympus (1,951 m), part of the Troodos range.
 - Mediterranean climate with hot, dry summers and wet winters and rainfall critical for agriculture.
- **Importance of Cyprus to India:**
 - **Strategic Diplomatic Support:** Cyprus is a consistent supporter of India's permanent seat in the UN Security Council and backed India in the Nuclear Suppliers Group.
 - **Counterweight to Turkey's Pro-Pakistan Stand:** As Turkey strengthens its military and diplomatic ties with Pakistan, including drone transfers, India's engagement with Cyprus signals strategic balancing in the region.
 - **Key Node in India-Middle East-Europe Corridor (IMEC):** Located along the proposed IMEC route, Cyprus can facilitate

India's ambitions for deeper connectivity with Europe via the Mediterranean.

- **EU Council Presidency Role:** Cyprus will hold the **EU Council Presidency in 2026**, enhancing its significance in shaping EU-India trade and security cooperation.

CROATIA

Context:

Prime Minister of India reached Croatia, becoming the first Indian Prime Minister to visit the country, as part of his 3-nation tour after attending the **G7 Summit** in Canada.



About Croatia:

- **Location:**
 - Croatia is situated at the crossroads of Central and Southeast Europe. It lies along the eastern coast of the Adriatic Sea, giving it strategic maritime access to southern Europe and the **Mediterranean**.
- **Capital:** The capital city is Zagreb.
- **Neighbouring Nations:** Slovenia, Hungary, Serbia, Bosnia and Herzegovina, Montenegro and Italy.
- **Geological Features:**
 - **Rivers:**
 - **Sava River:** Flows past Zagreb, borders Bosnia and Herzegovina.
 - **Drava River:** Borders Hungary, joins Danube.
 - **Kupa & Una Rivers:** Tributaries to the Sava.
 - **Krka & Cetina Rivers:** Flow into Adriatic, key for hydroelectricity.
 - **Valleys:**
 - **Pannonian Plains:** Rich agricultural land.
 - **Zagorje Hills:** Vineyards and orchards north of Zagreb.
 - **Mountains:**

- **Dinaric Alps:** Stretch from Dalmatian coast inland.
- **Dinara Peak:** Highest mountain at 1,831 m.
- **India-Croatia Relations:**
 - **Diplomatic Ties:** Established in 1992, after Croatia's independence from Yugoslavia.
 - **Political Engagement:** Regular bilateral visits and Prime Minister 2025 visit marks the first-ever by an Indian PM.
 - **Economic Links:** Trade in pharmaceuticals, engineering goods, chemicals; growing cooperation in IT, shipbuilding, and [renewable energy](#).

- **Rivers:**
 - Main river system belongs to the **Aras River basin**, which forms part of Armenia's borders with Iran and [Turkey](#).
 - Tributaries include the **Akhuryan, Hrazdan, Arpa, and Vorotan** rivers.
- **Valleys & Plains:**
 - **Ararat Plain** is the country's key agricultural zone, lying partly in Armenia and partly in Turkey.
 - The **Sevan Basin** holds **Lake Sevan**, one of Eurasia's largest high-altitude lakes.
 - Armenia lies in a [seismically active zone](#) and has frequent earthquakes (1988 Spitak earthquake killed ~25,000).

ARMENIA

Context:

India's Ministry of External Affairs (MEA) facilitated the safe evacuation of Indian students and citizens from Tehran via Armenia ([Operation Sindu](#)), amid escalating [Israel-Iran](#) tensions.



About Armenia:

- **Location:**
 - Armenia lies in the **South Caucasus region** of Eurasia, between **Europe and Asia**.
- **Capital:** Yerevan
- **Neighbouring Countries:** Georgia, Azerbaijan, Iran, and Turkey.
 - It also borders the Nakhchivan exclave of Azerbaijan
- **Geological Features:**
 - **Mountains:**
 - Armenia is **highly mountainous**, with an average elevation of **1,800 metres (5,900 feet)**.
 - It includes parts of the **Lesser Caucasus Ranges** and **Mount Aragats** (4,090 metres), its highest peak.

GREATER FLAMINGO SANCTUARY IN DHANUSHKODI

Context:

The Tamil Nadu officially notified a Greater Flamingo Sanctuary in Dhanushkodi to safeguard critical wetland habitats along the [Central Asian Flyway](#).

- The sanctuary covers over 500 hectares and forms part of the Gulf of Mannar Biosphere Reserve.



About Greater Flamingo Sanctuary in Dhanushkodi:

- **What it is?**
 - A newly notified wildlife sanctuary aimed at protecting migratory wetland birds, especially **greater flamingos**, in their natural stopover habitat.
- **Location:**
 - Situated in **Ramanathapuram district**, Tamil Nadu.
 - Spans **524.7 hectares** of revenue and forest land within **Rameshwaram taluk**.

- **Key Ecological Features:**
 - Located within the [Gulf of Mannar Biosphere Reserve](#), one of India's richest marine ecosystems.
 - Home to **128 bird species** including flamingos, herons, sandpipers, and egrets.
 - Hosts [mangroves](#) (*Avicennia* and *Rhizophora*), mudflats, marshes, and sand dunes.
 - Recorded over **10,700 wetland birds** in the 2023–24 bird survey.
 - Supports **sea turtle nesting** and other marine biodiversity.
- **Significance:**
 - Serves as a vital node on the **Central Asian Flyway** for migratory birds.
 - Enhances **ecotourism, biodiversity conservation**, and **local livelihood generation**.
 - Provides natural protection against [coastal erosion](#) and climate impacts.

About the Greater Flamingo:

- **Scientific Name:** *Phoenicopterus roseus*
- **Physical Features:**
 - **Height:** 90 to 150 cm and tall, pink wading birds with **long necks and legs**.
 - Distinctive **downturned bills** used for filter feeding in shallow water.
 - Coloration comes from **carotenoids** in their diet.
- **Biological Traits:**
 - Builds **cone-shaped mud nests** in lagoons.
 - Lays 1–2 eggs and both parents participate in incubation.
 - Chicks are downy white and are **fed by regurgitation**.
- **Social Behaviour:**
 - Highly **gregarious**, forming **large colonies** during breeding.
 - Fly in coordinated **V-shaped flocks**.
 - Known to stand on one leg—possibly to **conserve body heat or energy**.



About Lake Natron:

- **What is Lake Natron?**
 - Lake Natron is a shallow salt and alkaline lake located in northern Tanzania, bordering Kenya in the Gregory Rift Valley, part of the East African Rift system.
- **Location & Geography:**
 - Situated in **Ngorongoro District, Arusha Region, Tanzania**.
 - Lies close to the Kenya-Tanzania border.
 - Fed by the **Ewaso Ng'iro River** from Kenya and mineral-rich hot springs.
 - Recognized as a **Ramsar wetland site** of international importance.
- **Unique Features of Lake Natron:**
 - **Extremely Alkaline Waters:**
 - pH levels can reach **10.5–12**, nearly as corrosive as **ammonia**.
 - Alkalinity results from **sodium carbonate and trona deposits**, originating from **Ol Doinyo Lengai volcano**, the world's only active carbonatite volcano.
 - **Calcification of Animals:**
 - High **salt and soda concentrations** dehydrate and preserve animals that fall into the lake.

LAKE NATRON

Context:

A recent surge in environmental attention has spotlighted Lake Natron in Tanzania, a hyper-alkaline lake capable of calcifying animals, as climate threats and proposed development projects endanger its [fragile ecosystem](#).

- Optical illusions from the **glassy surface** cause birds to crash, leading to their calcification.
- **Striking Red Color:** Caused by **halophilic microorganisms** that thrive in hypersaline water.
- **Flamingo Habitat:**
 - **Only regular breeding site for** Africa's lesser flamingos.
 - Flamingos feed on **cyanobacteria** and nest on isolated soda flats, avoiding predators.
- **Threats to Lake Natron Ecosystem:**
 - **Climate Change:** Increased evaporation and erratic rainfall patterns (only 800 mm/year).
 - **Development Projects:** Industrial plans may disrupt flamingo breeding and increase pollution.
 - **Agricultural Runoff & Pollution:** Affects water chemistry and ecosystem stability.
 - **Lack of Protection:** Despite Ramsar status, enforcement remains weak.

- Bengal, and Bangladesh
- **Causes of Flooding in Assam:**
 - **Monsoon Rainfall:** Assam receives among the highest rainfall in India, especially during the southwest monsoon (June–September).
 - **Brahmaputra River System:** The Brahmaputra and its tributaries (Kopili, Dhansiri, Barak, Kushiya) frequently overflow, breaching embankments.
 - **Topography and Soil Composition:** Flat alluvial plains with poor drainage; earthquake-induced landslides block natural water flow.
- **Key Geographical Features of Assam**
 - **Rivers:**
 - **Brahmaputra River:** Enters Assam near **Sadiya** and flows westward for **725 km** before entering Bangladesh.
 - **Barak River:** Dominates southern Assam, especially in the **Barak Valley** (e.g., Cachar, Hailakandi).
 - **Tributaries:** Dhansiri, Kopili, Kushiya, Katakhal—many of which are above danger level during monsoons.
 - **Valleys:**
 - **Brahmaputra Valley:** Broad alluvial plain bordered by hills; prone to seasonal floods.
 - **Barak Valley:** Narrower and agriculturally rich; faces floods due to overflow and embankment failures.
 - **Mountain and Hill Regions:**
 - **North Cachar Hills (Dima Hasao district):** Part of the ancient **Meghalaya Plateau** and hilly terrain with elevations up to **1,000 meters**.
 - **Rengma Hills & Chenghehishon Peak:** Mark the highlands between central Assam and Nagaland.

INDIA:

ASSAM

Context:

Over 5.15 lakh people have been affected by severe flooding across 22 districts of Assam, with the death toll in the Northeast rising to 38.



About Assam:

- **Located in:** Assam is located in **northeastern India**, forming part of the Seven Sister States.
- **Capital:** Dispur (a suburb of Guwahati)
- **Boundaries:** Arunachal Pradesh, Bhutan, Nagaland, Manipur, Mizoram, Tripura, Meghalaya, West

Context:

The Enforcement Directorate (**ED**) conducted raids at 15 locations, including the residence of actor Dino Morea, in connection with a ₹65 crore scam in the Mithi River desilting project.

MITHI RIVER



Metro City	River Flowing Through/Along
Delhi	Yamuna River
Mumbai	Mithi River (main), Ulhas River, Dahisar River
Chennai	Coom River, Adyar River, Kosasthalaiyar River
Kolkata	Hooghly River
Bengaluru	Vrishabhavathi River
Hyderabad	Musi River
Ahmedabad	Sabarmati River
Pune	Mula - Mutha Rivers

SUBARNAREKHA RIVER

About Mithi River:

- **What is the Mithi River?**
 - The **Mithi River** is a **seasonal river** located in **Mumbai**, Maharashtra.
 - It serves as a crucial drainage outlet for excess monsoon waters and functions as a flood-control channel.
- **Location:**
 - Located on **Salsette Island**, Mumbai.
 - Acts as the **main stormwater drain** for key areas like Powai, Kurla, Dharavi, Saki Naka, Kalina, Vakola, and Bandra Kurla Complex (BKC).
- **Origin:**
 - Originates from the **overflow of Vihar Lake** and later joins with runoff from **Powai Lake**.
 - The combined flow travels roughly **18 km** before meeting the Arabian Sea.
- **Mouth of the River:** Empties into the Arabian Sea through the Mahim Creek, a critical estuarine zone in Mumbai.
- **Tributary:** It is a confluence of tailwaters and does not have a major tributary structure; instead, it receives urban runoff and lake overflows.
- **Key Features:**
 - **Severe pollution:** Contaminated with industrial discharge, sewage, oil sludge, and municipal waste.
 - **Encroachments:** Unregulated activities like scrap dumping, cattle sheds, and unauthorised discharge have degraded the river.
 - **Ecological threat:** Presence of [water hyacinths](#), silt accumulation, and chemical effluents threaten **aquatic life**.
- **Other major cities and river flowing within it:**

Context:

Over 50,000 people were affected in Balasore, Odisha, after a flash flood in the Subarnarekha River caused by heavy rain and release of water from Chandil Dam in Jharkhand.



About Subarnarekha River:

- **Origin of River:**
 - The river originates near **Piska/Nagri**, close to **Ranchi**, Jharkhand.
 - The name '**Subarnarekha**' means "Streak of Gold," linked to historical **gold mining** at its origin.
- **States it flows through:** Jharkhand, West Bengal, and Odisha.
- **Tributaries of Subarnarekha:**
 - Kharkai (joins at Jamshedpur), Kanchi, Roro, Harmu Nadi, Dulunga, Karru, Karakari, Singaduba, Kodia, and Dhamra.
 - It is an **independent river system** and **not a tributary** of any larger river.
- **Mouth of River:** The river empties into the **Bay of Bengal** near Talsari, Odisha.
- **Features of River:**
 - **Length:** Approx. 395 km.
 - **Drainage area:** 18,951 sq. km — smaller

among multi-state Indian river basins.

- **Hundru Falls:** A famous waterfall on its course in Jharkhand — falls from 98 metres.
- **Course:** After originating in Jharkhand, the river traverses **Paschim Medinipur (West Bengal)** and **Balasore (Odisha)** before reaching the sea.
- **Cultural Significance:** Known for **gold traces in the sands** of its riverbed.

About Chandil Dam:

- **What it is?**
 - A multi-purpose dam known for **tourism** and irrigation, built across Subarnarekha River.
- **Located in:** Chandil, Seraikela Kharsawan district, Jharkhand.
- **Located on River:** Built on the **Subarnarekha River**, near its confluence with **Karkori River** (which originates from **Hundru Falls**).

in India.

- **Tributaries of Kosi:** Major tributaries include Sun Kosi, Tama Koshi (Tamba Koshi), Dudh Koshi, Indravati, Likhu, Arun, Tamor.
- **Kosi is a tributary of:** The Kosi ultimately merges into the **Ganges River** south of Purnea (Bihar), contributing to the Ganga basin.
- **Key Features of Kosi River:**
 - **Length:** ~450 miles (724 km).
 - **Drainage area:** 74,500 sq km (11,070 sq km in India).
 - Known as the “**Sorrow of Bihar**” for frequent floods and westward shifting channels.
 - Highly braided, with no permanent channel — causing massive deposition of debris and flood risks.
 - Controlled by **Chatra Gorge dam** for flood moderation, irrigation, hydropower, and fisheries.
 - The river valley supports **maize cultivation** on its fertile sandy soils.

KOSI RIVER

Context:

The Uttarakhand High Court ordered an immediate halt to illegal sand mining in the Kosi River in Bazpur tehsil, after a public interest petition highlighted severe ecological damage.



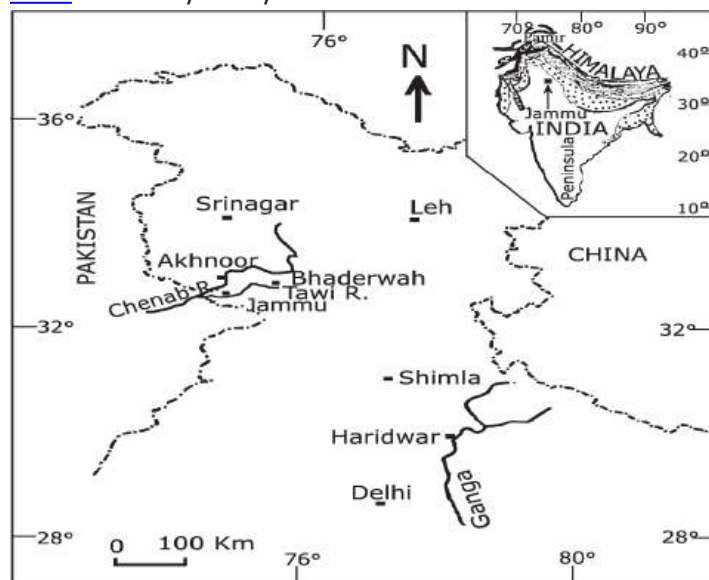
About Kosi River:

- **Origin:**
 - Formed by the confluence of **Sun Kosi, Arun Kosi, and Tamor Kosi** streams, originating in Nepal and Tibet **Himalayan regions**.
- **States it flows through:** Flows through **China (Tibet), Nepal, and India** — primarily through Bihar

TAWI RIVER

Context:

Nine individuals, including pilgrims and labourers, were rescued from the Tawi River in Jammu after a sudden **flash flood** caused by heavy rainfall.



About Tawi River:

- **Origin:**
 - The **Tawi River** flows through **Jammu region** of Jammu and Kashmir and later enters Pakistan-administered territory.
 - It originates from the **Kailash Kund glacier (Kali Kund)** near **Bhaderwah** in **Doda district**.

- **States/Regions It Flows Through:**
 - Primarily flows through **Doda, Udhampur, and Jammu districts**.
 - Crosses into **Pakistan's Punjab**, eventually joining the **Chenab River**.
- **Tributary Status:** Tawi is a left-bank tributary of the **Chenab River**, a key river in the Indus River System.
- **Key Features:**
 - **Length:** Approx. 141 km.
 - **Catchment area:** 2168 km² up to the Indian border.
 - Major tributaries include **Raji, Gou Karan**, and seasonal streams supporting **perennial flow**.
- **Significance:**
 - **Lifeline of Jammu:** Main source of water for the city.
 - **Religious Importance:** Revered as **Surya Putri** (Daughter of the Sun God) in Hindu texts like Vishnudharmottara Purana.
 - Linked to local legends of **Raja Pehar Devta** who brought the river to cure his father.
 - Supported **forts like Bahu Fort** and temples, earning Jammu the title "**City of Temples**".
- **Development Projects:**
 - The government is constructing an **artificial lake at Bhagwati Nagar** to boost **tourism and water supply**.
 - Project is under observation to comply with the **Indus Water Treaty**.

About Gangotri National Park:

- Gangotri National Park is a high-altitude protected area in **Uttarkashi district, Uttarakhand**, covering **2,390 sq km**.
- It plays a crucial role in preserving Himalayan biodiversity and the **Gangotri Glacier**, the origin of River Ganga.
- **Location:**
 - Situated in the Garhwal Himalayas, along the upper Bhagirathi River catchment.
 - Shares borders with **Kedarnath Wildlife Sanctuary** and **Govind National Park**.
 - Forms part of India's **international boundary with Tibet (China)**.
 - Includes iconic peaks like Chaukhamba I–III, Satopanth, and Kedarnath Main.
- **Flora (Vegetation Zones):**
 - **Western Himalayan subalpine conifer forests** dominate lower elevations (fir, oak, spruce, deodar).
 - **Rhododendron shrubs** and **alpine meadows** thrive at higher altitudes below glaciers.
 - Above 3,500 m, alpine shrublands and grasslands support cold-adapted vegetation.
- **Fauna:**
 - Critical habitat for **snow leopards**, a high-altitude apex predator.
 - Supports rare species like the **musk deer**, **Himalayan tahr**, and **blue sheep** (bharal).
 - Other animals include brown bears, **Asian black bears**, and monals.
 - Acts as a corridor for migratory birds and rare Himalayan butterflies

GANGOTRI NATIONAL PARK

Context:

Residents of Uttarkashi have raised strong objections to the illegal operation of a waste incinerator inside the Gangotri National Park, citing pollution in the Bhagirathi Eco-Sensitive Zone and violation of environmental laws.



MALE MAHADESHWARA HILLS WILDLIFE SANCTUARY

Context:

ive **tigers** — a mother and four cubs — were found dead in Karnataka's Male Mahadeshwara (MM) Hills Wildlife Sanctuary, raising serious concerns about poisoning, wildlife conflict, and tiger conservation lapses.



About Male Mahadeshwara Hills Wildlife Sanctuary:

- Located in **Chamarajanagar district**, Karnataka, near the **Eastern Ghats** tri-junction of Karnataka, Kerala, and Tamil Nadu.
- Declared a **Wildlife Sanctuary in 2013** and managed under the MM Hills Wildlife Division, which was formerly the Kollegal Forest Division.
- **Geography and Ecosystem:**
 - Covers an area of approximately **906 sq km**.
 - Geographically contiguous with:
 - BRT Tiger Reserve
 - Sathyamangalam Tiger Reserve
 - **Cauvery Wildlife Sanctuary**
 - Terrain comprises **hill ranges, undulating valleys, and altitudinal variation**, creating microhabitats.
- **Flora:** Dominated by **dry and moist deciduous forests**, degrading to **scrub** at fringes.
 - Pockets of **semi-evergreen, evergreen, and shola** forests at higher altitudes.
- **Fauna:**
 - Rich megafauna includes:
 - Tigers, elephants, leopards, gaur, wild dogs (dhole)
 - **Herbivores:** sambar, barking deer, spotted deer, four-horned antelope
 - **Omnivores and others:** sloth bear, wild boar, honey badger, langurs
 - Sanctuary has seen a **steady rise in tiger population** since 2013.
- **Tiger Reserve Proposal:**
 - **Yet to be notified** as a Tiger Reserve, despite ecological suitability.

About Dhole (*Cuon alpinus*):

- **Species Profile:** The **dhole** is a **social carnivore**, also known as the **Asiatic wild dog**, and is classified as **Endangered** by the IUCN.
- **Habitat:** Prefers dense forests, scrublands, and mountainous terrains; requires large, undisturbed habitats with high prey density.
- **Distribution:** Found in **South, Central, and Southeast Asia**. In India, populations exist in the **Western Ghats, Eastern Ghats, central India**, and parts of the **northeast**.
- **Key Features:**
 - Rusty-red coat with a bushy black-tipped tail.
 - Packs are matriarchal, highly coordinated hunters.
 - Plays a vital role in maintaining prey population balance in forest ecosystems.



About Kaziranga–Karbi Anglong Landscape (KKAL):

- **Location & Extent:** Spreads over **25,000 km²** in Assam, touching parts of Meghalaya and Nagaland and lies south of the **Brahmaputra River**.
- **Protected Areas Network:** Includes **Kaziranga National Park**, Karbi Anglong, and linkages to Pakke, Nameri, Laokhowa–Burhachapori, Nambor, and Ntangi protected areas.
- **Flora & Fauna:**
 - Home to tropical semi-evergreen forests, grasslands, and marshy wetlands.
 - **Rich biodiversity:** **one-horned rhinoceros**, Bengal tiger, Asian elephant, leopard, sloth bear, and over 500 bird species.
- **Ecological Significance:**
 - Acts as a genetic and movement corridor for megafauna.
 - One of the last large continuous forest patches in northeast India.
 - Plays a key role in long-term species survival in a fragmented landscape.

DHOLE (ASIATIC WILD DOG)

Context:

A recent study by the Wildlife Institute of India (WII) confirmed the reappearance of the dhole (Asiatic wild dog) in the Kaziranga-Karbi Anglong Landscape, marking its return after being considered locally extinct.



SARISKA TIGER RESERVE

Context:

The Central Government's plan to redraw the boundaries of Sariska Tiger Reserve in Rajasthan to reopen 50 closed mines has triggered strong opposition.

- The plan proposes to **redraw boundaries** to allow **50 mines** (marble, [dolomite](#), limestone, and masonic stone) to reopen.



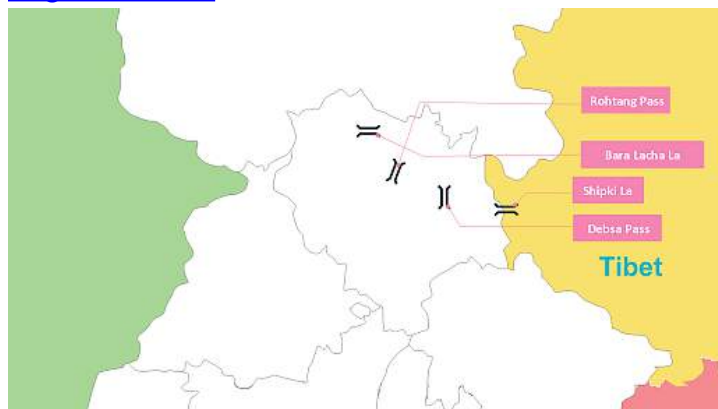
About Sariska Tiger Reserve:

- Location:** Located in **Alwar district, Rajasthan**, nestled in the **Aravalli Hills**.
- History and Status:**
 - Declared a wildlife sanctuary in 1958, a **tiger reserve in 1978** under Project Tiger, and a national park in 1982.
 - Known for being the first reserve in the world to successfully relocate tigers after local extinction in 2004.
- Features of the Tiger Reserve:**
 - Total area:** 1203.34 km² (Core: 881 km², Buffer: 322.23 km²).
 - Terrain:** Scrub-thorn arid forests, [dry deciduous forests](#), grasslands, rocky hills.
 - Fauna:** Tigers, leopards, nilgai, sambhar, chital, peafowls, serpent eagles, vultures, and horned owls.
 - Ecological Zone:** [Khathiar-Gir](#) dry deciduous forest ecoregion.
 - Vital link in the **Northern Aravalli Leopard and Wildlife Corridor**.
- Tiger Revival Timeline:**
 - 2004:** No tigers left due to poaching.
 - 2008–2010:** Tiger relocation from [Ranthambore](#) via aerial translocation.
 - 2025:** Tiger count has risen to **48**, showcasing successful conservation efforts.

SHIPKI LA PASS

Context:

The Himachal Pradesh government has opened the Shipki La Pass in Kinnaur for domestic tourism, eliminating the need for permits, reviving hopes for cross-border trade and [religious tourism](#).



About Shipki La Pass:

- What is Shipki La?**
 - Shipki La is a motorable high-altitude mountain pass located at 3,930 metres in Kinnaur district of Himachal Pradesh, forming part of the India-China border.
- Location:**
 - Lies on the **Line of Actual Control (LAC)** between India and Tibet (China).
 - The [Sutlej River \(Langqen Zangbo\)](#) enters India through this pass.
 - Previously known as **Pema La** or “Shared Gate”, signifying cultural unity.
- Historical Background:**
 - Historically, it was a major Indo-Tibetan trade route, documented since the 15th century.
 - Trade continued under a folk oath of mutual trust until the Sino-India war (1962).
 - Later disruptions occurred during the Doklam standoff and COVID-19.
- Features of Shipki La:**
 - Among the **highest motorable passes** in India.
 - Serves as a **border outpost** managed by the [Indo-Tibetan Border Police \(ITBP\)](#).
 - No longer requires permits for Indian citizens—**Aadhaar-based access** introduced.
- Significance of Shipki La:**
 - Trade Revival Potential:**
 - Reopening can restore historical Indo-Tibetan trade ties via

the Kinnaur-Indo-China Trade Association.

- Traditional items traded included Tibetan wool, yak hair, gold, borax and Indian grains, spices, and tools.
- **Religious Tourism Boost:** Can reduce Delhi to Kailash Mansarovar travel by 14 days, boosting cross-border pilgrimage routes.
- **Cultural Diplomacy:** Reflects shared Buddhist heritage and civilisational continuity between Kinnaur and Tibet.
- **Strategic Connectivity:** Reinforces India's Himalayan frontier presence, especially in light of China's border infrastructure push.