



VAJIRAM & RAVI

Institute for IAS Examination

PRELIMS

KNOCKOUT

Prelims Rapid Revision Capsule

2026 PART 2

JANUARY - 15 APRIL 2026

Proven Record of covering 80–90%
of Prelims Current Affairs Qs
in the last 3 years

Dynamic
as well as
Static Topics

Quick
Revision of
500+ Topics

Comprehensive
coverage of
Newspapers
& PIB

Crisp
Prelims-Ready
Pointers



PRELIMS KNOCKOUT – II

2026

POLITY AND GOVERNANCE

8-27

CONSTITUTION

- Article 21
- Digital Constitutionalism
- Governor's Address
- Constitutional Amendment Bill
- 'Kerala' is now 'Keralam'

LEGISLATURE

- Consumer Protection Act (CPA), 2019
- Motion of Thanks
- Substantive Motion
- Lok Sabha Speaker
- Parliamentary Friendship Groups
- Right to Recall
- Transgender Persons (Protection of Rights) Amendment Act, 2026
- SC on Paid Maternity Leave for Adoptive Mothers
- Lok Sabha (LS) Guillotine Motion

JUDICIARY

- Writ Petitions
- Arbitration Council of India
- Amicus Curie
- Death Penalties
- Right to Be Forgotten
- Doctrine of Recusal

INSTITUTIONS AND BODIES

- 16th Finance Commission (XVI FC)
- University Grants Commission (UGC)

ELECTIONS

- Delimitation
- None of the Above (NOTA)

- Impeachment Motion against Chief Election Commissioner (CEC)

GOVERNANCE

- Water Management
- ASPIRE Scheme
- Employees' Provident Fund Organisation
- Denotified Tribes
- PM RAHAT Scheme
- PM CARES, PMNRF, NDF
- Vibrant Villages Programme-II
- Members of Parliament Local Area Development Scheme (MPLADS)
- Census 2027 Mascots
- ASMITA Initiative
- eGramSwaraj Portal
- Sadhana Saptah Initiative

MISCELLANEOUS

- Frontier Nagaland Territorial Authority (FNTA)
- Badrinath-Kedarnath Temple Committee (BKTC)
- Live Events Development Cell (LEDC)
- Responsible Nations Index
- Indian Council for Cultural Relations
- WAVES OTT
- Look Out Circulars
- Immigration, Visa, Foreigners Registration & Tracking (IVFRT) Scheme
- PB-SHABD
- Government Bank Dashboard and Manual Launched
- Gruh Sugam Portal

SOCIAL ISSUES

28-33

HEALTH

- Euthanasia

EDUCATION

- Skills Outcomes Fund

VULNERABLE SECTIONS

- Protection of Children from Sexual Offences (POCSO) Act 2012
- Prevention of Sexual Harassment (POSH) Act, 2013
- SANKALP Scheme
- PANKHUDI Portal

- Child Trafficking
- National Scheduled Tribes Finance and Development Corporation
- e-SafeHER Initiative
- Juang Tribe

MISCELLANEOUS

- NPS Vatsalya Scheme

INTERNATIONAL RELATIONS

34-48

INDIA'S BILATERAL RELATIONS

- Free Trade Agreements
- India–EU FTA
- India International Institute of Democracy and Election Management
- Second India-Arab Foreign Ministers' Meeting

SUMMITS AND ORGANISATIONS

- International Renewable Energy Agency (IRENA)
- UN Convention against Corruption (UNCAC)
- World Summit on the Information Society
- Three Seas Initiative (3SI)
- International Telecommunications Union
- Washington Accords for Peace and Prosperity
- Accra Convention, 2025
- Trump Unveils the 'Board of Peace'
- Mercosur
- 28th Commonwealth Speakers' Conference (CSPOC)
- Pax Silica
- Indo-Pacific Oceans Initiative (IPOI)

- India's Bid for Full IEA Membership
- Weimar Triangle
- India AI Impact Summit 2026
- 39th AU Summit
- Bharat Bodhan AI Conclave 2026
- FORGE Initiative
- Intergovernmental Oceanographic Commission (IOC)
- WTO MC14
- GlobE Network
- World Buddhist Peace Conference 2026
- OPEC and OPEC+

IMPORTANT EVENTS IN NEWS

- Monroe Doctrine
- Bulgaria Adopts the Euro
- EU's Carbon Border Tax Begins
- UN Launches Road Safety Financing Framework in India
- Demographic Winter
- Munich Security Conference (MSC) 2026
- Arctic Sentry
- Section 301 Investigation into India
- US Strike on Kharg Island
- Conflict Areas in News

ECONOMY AND INFRASTRUCTURE

49-85

BUDGET 2026-27

MONEY AND BANKING

- India's New GDP Series
- First Advance Estimate (FAE)
- Deposit Insurance
- Central Bank Digital Currency (CBDC)
- Small Industries Development Bank of India (SIDBI)

- CBDC Based Digital Food Currency
- Country Partnership Framework (CPF)
- Non-Performing Assets (NPA)
- Reserve Bank - Integrated Ombudsman Scheme (RB-IOS), 2026
- New CPI 2024 Series
- Revised Guidelines of Lead Bank Scheme
- RBI - ESMA MoU

- RBI Compensation Framework for Digital Fraud Victims
- Primary Agricultural Credit Societies (PACS)

INDUSTRY AND INFRASTRUCTURE

- Export Preparedness Index 2024
- One Station One Product Scheme (OSOP)
- District-Led Textiles Transformation (DLTT) Initiative
- Greenfield Corridor in Maharashtra
- Centre for Fourth Industrial Revolution in Andhra Pradesh
- Deep Tech Start-Ups
- Startup India
- Chips to Start-up (C2S) Programme
- Startup Recognition Framework Revised
- Star Labelling
- Coking Coal
- Yantra India Limited Grated Miniratna Status
- AI-Preneurs of India
- Collateral Free Loan Doubled for MSMEs
- ACC-PLI scheme
- Rail Tech Policy and eRCT
- Bharat Audyogik Vikas Yojana (BHAVYA) Yojna
- Arogya Van
- TReDS Platform
- National Shipping Board (NSB)
- National Highways Green Cover Index
- NMDC's Record Iron Ore Production
- PRISM-SG Portal
- Small Hydro Power Development Scheme
- Digital Twin for VOC Port
- Modified UDAN
- Mutual Credit Guarantee Scheme
- PM E-DRIVE Revised
- Khanij Bidesh India Limited (KABIL)

AGRICULTURE AND ALLIED SECTORS

- India Becomes Largest Producer of Rice
- Polavaram Irrigation Project
- Open-Sea Marine Fish Farming Project
- Agarwood
- Land Stack
- Cattle Breeds- Karan Fries and Vrindavani
- Grain ATMs
- Bee Corridors
- Access Pass for Fishing in EEZs
- SUJVIKA Portal
- Agristack
- Purple Potatoes in Punjab
- Joha Rice
- Rice Fortification Suspended
- International Year of the Woman Farmer
- Cotton Corporation of India (CCI)

TAXATION

- Global Minimum Tax
- Kar Saathi
- Windfall Tax

FINANCIAL MARKETS

- Corporate Bond Market
- Opinion Trading
- AT-1 Bonds (Additional Tier-1 Bonds)

MISCELLANEOUS

- Sound-Mark
- MoU between FCI and WFP
- Silver
- Kaladi
- SAMPANN-UMANG integration
- Project Vault
- CHAKRA
- First State Innovation Mission in Tripura
- National Monetisation Pipeline 2.0
- Agreements on Reciprocal Trade
- Entrepreneurial State
- Lakhpati Didi
- Essential Commodities Act, 1955
- RELIEF Scheme
- Initiatives Launched for Orange Economy

IMPORTANT ACTS AND AGENCIES

- PRAHAAR Strategy
- India-Myanmar Border and Free Movement Regime
- Project Chetak

DEFENCE TECHNOLOGY

- Pinaka Weapon System
- Heron Mark-II
- DRDO's Hypersonic Glide Missile
- 'Golden Dome' Missile Defence
- Successful Flight Test of Indigenous MPATGM
- Bhairav Battalions to Debut at Army Day Parade
- Oreshnik Missile
- National IED Data Management System
- Discombobulator Weapon
- Suryastra

- C-295 Aircraft
- Direct Firing Sight Navigation System
- DRDO Successfully Demonstrates SFDR Technology
- Missile Interceptors in the U.S.–Iran War
- Gravity Bombs
- Malwan ASW SWC
- INS Aridhaman

IMPORTANT NEWS

- Shaksgam Valley
- Sri Lanka's Kankesanthurai Port
- End of New START Treaty
- India Assumes Command of CTF 154
- Indian Army Showcases Indigenous AI Solutions

EXERCISES IN NEWS**ENVIRONMENT AND GEOGRAPHY****CLIMATE**

- National Environmental Standard Laboratory (NESL)
- Digital Climate Atlas and NICRA
- India's Next-Generation Tsunami Warning System (TWS)
- INCOIS and its New Apps
- Global "Beat the Heat" Program
- India's New Nationally Determined Contributions
- Radiative Forcing-based Accounting for Global Warming

BIODIVERSITY

- International Treaty on Plant Genetic Resources (ITPGRFA)
- Operation Thunder 2025
- Coconut Root Wilt Disease
- Ratanmahal Wildlife Sanctuary
- Kumbhalgarh Wildlife Sanctuary
- Hope Island and Coringa Wildlife Sanctuary
- Project Dolphin
- Bactrian Camel

- Stingless Bees
- Freshwater Pufferfish
- Mycorrhizal Networks
- Nagoya Protocol
- CMS State of the World's Migratory Species Report
- National Chambal Sanctuary
- Bhavasagara Referral Centre
- India Submits 7th National Report to CBD
- Kugti Wildlife Sanctuary
- Sukhna Wildlife Sanctuary
- Barnawapara Wildlife Sanctuary
- Mudumalai Tiger Reserve
- Udanti–Sitanadi Tiger Reserve
- Sentinel Species

POLLUTION

- Central Ground Water Board (CGWB)
- Solid Waste Management (SWM) Rules, 2026
- Greenhouse Gas Emission Intensity Target (Amendment) Rules, 2025
- Environmental Protection Fund

- Secondary Pollutants
- ICGS Samudra Pratap
- 20 Cities Towards Zero Waste Initiative
- Blue Category of Industries

GEOGRAPHY

- Cho La And Dok La Passes
- Two new Ramsar Sites
- Glacial Lake Outburst Floods (GLOFs)
- Peatlands
- Continental Mantle Earthquakes
- Earthquake Lights
- Ladakh Magmatic Arc (LMA)

- Atlantic Meridional Overturning Circulation (AMOC)

MISCELLANEOUS

- 2026: International Year of Rangelands and Pastoralists (IYRP)
- Disaster Victims Identification Guidelines
- Forest Fires in North-East of India
- Bio-Materials
- Rat-Hole Mining
- Anavaran Portal
- Waste Foundry Sand (WFS)

SPECIES IN NEWS

SCIENCE AND TECHNOLOGY

125-158

SPACE AND SPACE TECH

- Polar Satellite Launch Vehicle (PSLV)
- Dust Experiment (DEX)
- Microlensing
- W Ursae Majoris
- Voyager 1
- Scramjet Engine
- Private Earth Observation (EO) Satellite Constellation
- Mons Mouton
- SPHEREx Mission
- Copernicus Sentinel-2 Mission
- CHaracterising ExOPlanet Satellite (CHEOPS)
- Wet Dress Rehearsal
- Vikko Sat-1
- Mission MITRA
- Antariksh Venture Capital Fund
- DART Mission
- Atacama Large Millimeter/submillimeter Array (ALMA) Telescope
- Asteroid 2024 YR4
- Acrylonitrile
- Minor Planet Centre
- Akasha300 3D Printer
- SWOT Satellite
- Orbital Data Centres
- PACE Satellite

BIOLOGY AND BIOTECH

- Bio-Bitumen
- Spina Bifida
- Cetacean Morbillivirus
- PathGennie
- Bacillus Subtilis
- Staphylococci
- Intrinsically Disordered Proteins
- Biopharma SHAKTI
- Myoglobin
- National Biobank for Lysosomal Storage Disorders
- Bio-Based Chemicals
- Tetrodotoxin (TTX)
- Exposome
- Panama Disease
- Lenacapavir
- Davos Compact on Antimicrobial Resistance (AMR) 2025
- Newcastle Disease
- BioNEST
- Keytruda
- Whole-Exome Sequencing (WES)

INFORMATION TECHNOLOGY

- Data Dumping
- Source Code
- ASC Arjun
- PANCHAM
- ICE Cloud

- Context Window in AI
- AI-Powered Distributed Renewable Energy (DRE)
- Bharat GenAI
- Model Context Protocol
- Graphics Processing Units (GPUs)
- India AI Stack
- Moltbook Platform
- Sarvam AI
- SAHI and BODH Initiative
- VoicERA
- Yuva AI for All Initiative
- Moonshot Project

MISCELLANEOUS

- Thorium-Powered Future
- Mpemba Effect
- Hydrokinetic Turbine Technology

- Forever Chemicals
- Soft Matter
- Battery Pack Aadhaar Number (BPAN)
- Zeigarnik Effect
- National Quantum Mission
- Quorum Sensing
- Dark Oxygen
- Criticality
- White Phosphorus
- G-SPIDER Robot
- Low Temperature Thermal Desalination Technology
- Dimethyl Ether (DME)
- Floating LiDAR Buoy System
- MXene
- Helium
- LPG Shortage in India
- Induction Cooktop Technology

CULTURE

159-168

FAIRS AND FESTIVALS

- Charaichung Festival
- Alo Prabhat
- Magh Mela
- Shikshapatri Dwishatabdi Mahotsav
- Thaipusam
- Harvest Festivals
- Bastar Pandum Festival
- Rongali Bihu
- Chapchar Kut
- Baisakhi Festival

ARCHITECTURE SCULPTURES

- Petra & Ellora Caves
- Turkman Gate

AND

- Somnath Temple
- Zehanpora Site
- Devnimori Relics

IMPORTANT PERSONALITIES

- Bulleh Shah
- Rani Velu Nachiyar
- C Rajagopalachari
- Samprati (Grandson of Ashoka)
- Thirumangai Alvar
- Mahatma Jyotiba Phule

MISCELLANEOUS

- UN Alliance Of Civilization (UNAOC)
- Ol Chiki Script
- Bharat GI
- Tamil Brahmi Script

SPORTS IN NEWS

169-170

- Doping
- FIDE World Rapid Chess Championship 2025
- Khelo India Tribal Games

AWARDS & PERSONS IN NEWS

171-173

- National Energy Conservation Award (NECA)
- Jeevan Raksha Padak Awards
- Franz Edelman Award
- Indira Gandhi Peace Prize 2025
- Global Teacher Prize 2026
- BAFTA Awards
- Saraswati Samman
- Jnanpith Award
- Sahitya Akademi Awards

MAPS: PLACES IN NEWS

174-189

- International Places in News
- National Places in News
- Important Temples of India
- Indus Valley Civilization (IVC) Sites
- Major International Straits

REPORTS/INDICES IN NEWS

190-192

POLITY AND GOVERNANCE

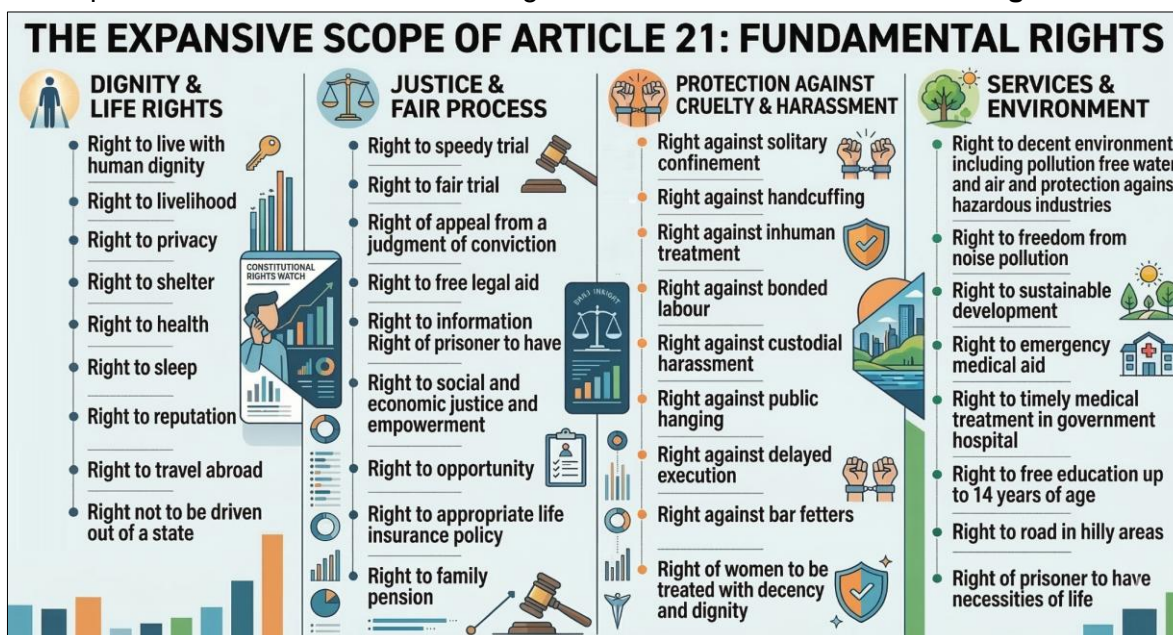
CONSTITUTION

ARTICLE 21

Context: The SC in *Dr. Jaya Thakur v. Government of India (2026)* delivered a landmark ruling recognizing access to menstrual hygiene as a constitutional right under **Article 21 and 21A**.

Article 21 of the Indian Constitution

- Article 21 states that “no person shall be deprived of **life or personal liberty** except according to **procedure established by law**.” It applies to citizens and non-citizens. The right can be enforced only against the State (as defined in Article 12).
- Initially, the SC interpreted Article 21 narrowly in **A.K. Gopalan (1950)**, holding that it mainly protected individuals from arbitrary executive action. However, the Court later expanded its meaning.
- In **Maneka Gandhi (1978)**, the Court held that any law affecting life or liberty must follow a **just, fair and reasonable procedure**, making Article 21 a strong protection of human dignity. This effectively introduced the principle similar to “**due process of law**”, ensuring protection against both arbitrary executive and legislative actions.
- The **44th Constitutional Amendment Act, 1978** ensured the right to life and personal liberty cannot be suspended during an emergency.
- The Supreme Court has described this right as the ‘**Heart of Fundamental Rights**’.



DIGITAL CONSTITUTIONALISM

Context: The Sanchar Saathi app ‘mandate’ raised Digital Constitutionalism concerns over privacy and state overreach.

About Digital Constitutionalism

- Digital Constitutionalism means **applying constitutional values (like liberty, privacy, equality) to the digital world**.
- Just as the Constitution limits government power in the physical world, it also seeks to limit state power in digital spaces** such as: Data collection, Mobile applications, Artificial intelligence, Algorithms and surveillance technologies

GOVERNOR'S ADDRESS

Context: Recently, walkouts by Governors were witnessed in some states during their address to the State Legislature at the commencement of the first session of the year.

About Governor's Address

- Governor's Address (also known as the Governor's speech or policy address) refers to the **constitutional speech delivered by the Governor of a state at the start of the first session of each year and after every general election.**
- **Article 87 provides for the President's address at the start of the first session** after a general election and at the beginning of each year. **Article 176 mirrors this framework for the Governor at the State level.**
- **Objective:** The address inaugurates the first session of the Legislature, explains the reasons for summoning the House, and outlines the government's policy priorities, legislative agenda, and financial proposals.
- **Preparation and Responsibility:**
 - The address is **drafted by the elected State government** and approved by the Council of Ministers.
 - Under Article 163(1), the **Governor delivers it on the aid and advice of the Council of Ministers**, as it is **not a discretionary function.**
- **Legislative Accountability**
 - Article 176(2) requires time to be allocated for discussion.
 - The address forms the basis of the Motion of Thanks, allowing legislators to debate and scrutinize government policies, with the government responsible for replying.

HISTORICAL BACKGROUND OF THE GOVERNOR'S ADDRESS



BRITISH PARLIAMENTARY TRADITION

Practice originates from British tradition where a session begins after the Sovereign explains reasons for summoning the House.



UNDER GOVERNMENT OF INDIA ACT, 1935 (SECTION 63)

Governor held discretion to address the Provincial Legislature. Under colonial framework, this was discretionary.



PROVINCIAL AUTONOMY (POST-1937)

Shift in practice: Speech prepared in consultation with Council of Ministers (CoM), reflecting the government's agenda.



POST-1950 & 1ST AMENDMENT (1951)

Initially required at start of every session. Constitution (First Amendment) Act, 1951, due to procedural uncertainty, limited it to the first session of each year and after a general election.



CONSTITUENT ASSEMBLY DEBATES CLARIFICATION

Debates clarified the address reflects the policies of the elected Council of Ministers, not the Governor's personal views. Governor acts as a constitutional head.

CONSTITUTIONAL AMENDMENT BILL

Context: The Constitution (131st Amendment) Bill, 2026 was introduced in Lok Sabha to increase the strength of the Lok Sabha and allow implementation of one-third women's reservation. It was later defeated, failing to secure the required two-thirds majority.

Constitutional Basis: Article 368

- **Article 368 (Part XX)** deals with the power and procedure of constitutional amendment.
- It **gives Parliament the authority to amend the Constitution** by: Addition (adding new provisions); Variation (modifying existing provisions); Repeal (removing provisions)
- However, this power is **not unlimited**. In the **Kesavananda Bharati case**, the Supreme Court held that **Parliament cannot alter the "Basic Structure" of the Constitution.**

Procedure for Amendment

- **Initiation of the Bill:** An amendment to the Constitution can be initiated only by the **introduction of a Constitution Amendment Bill in either House of Parliament** (Lok Sabha or Rajya Sabha). It cannot be introduced in the state legislatures.
- **Introduction:** The bill **can be introduced either by a minister or by a private member**. It **does not require the prior permission of the President**. Motion for the introduction of Constitution Amendment Bills are adopted by a simple majority.

- **Passage in Houses:** The bill must be passed in each House by a **special majority**. This entails a **majority of the total membership of the House** and a **majority of not less than two-thirds of the members of the House present and voting**.
- **Separate Deliberation:** Each House must pass the bill separately. There is **no provision for holding a joint sitting** of the two Houses for deliberation and passage of the bill.
- **Ratification by States:** If the bill seeks to amend vital issues related to the federal provisions of the Constitution (Article 368(2)) it **must be ratified by the legislatures of not less than one-half of the states by a simple majority**.
- **Presidential Assent:** After the bill is duly passed by both Houses of Parliament and ratified by the requisite number of state legislatures (where necessary), it is presented to the President for assent. **The President must give their assent to the bill**; they can neither withhold their assent nor return the bill for the reconsideration of Parliament.

Following the President's assent, the bill becomes a Constitutional Amendment Act, and the Constitution stands amended in accordance with the terms of the Act.

TYPES OF CONSTITUTIONAL AMENDMENTS HOW THE CONSTITUTION CAN PRACTICALLY BE AMENDED IN THREE WAYS		
 1. AMENDMENT BY SIMPLE MAJORITY OF PARLIAMENT  Requires more than 50% of members present and voting. (Not deemed to be amendments under Article 368) • Admission or establishment of new states. • Formation of new states and alteration of areas, boundaries, or names of existing states. • Abolition or creation of legislative councils in states. • Second Schedule provisions regarding emoluments, allowances, and privileges of the President, Speakers, Judges, etc. • Quorum in Parliament. • Salaries and allowances of the members of Parliament. • Rules of procedure in Parliament. • Privileges of the Parliament, its members, and its committees. • Use of the English language in Parliament. • Number of puisne judges in the Supreme Court. • Conferment of additional jurisdiction on the Supreme Court. • Use of official language. • Citizenship—acquisition and termination. • Elections to Parliament and state legislatures. • Delimitation of constituencies. • Union territories. • Fifth Schedule—administration of scheduled areas and scheduled tribes. • Sixth Schedule—administration of tribal areas.	 2. AMENDMENT BY SPECIAL MAJORITY OF PARLIAMENT Requires: (i) Majority of total membership of each House, AND (ii) Two-thirds majority of members of each House present and voting. (Usually only for voting at third reading stage) • Fundamental Rights • Directive Principles of State Policy • All other provisions which are not covered by Categories 1 and 3.	 3. AMENDMENT BY SPECIAL + CONSENT OF STATES Rigorous process for federal structure: (i) Special Majority of Parliament (as in Cat. 2), AND (ii) Consent of half of the state legislatures by a simple majority. (No time limit for state consent) • Election of the President and its manner. • Extent of the executive power of the Union and the states. • Supreme Court and High Courts. • Distribution of legislative powers between the Union and the states. • Goods and Services Tax (GST) Council. • Any of the lists in the Seventh Schedule. • Representation of states in Parliament. • The power of Parliament to amend the Constitution and its procedure (Article 368 itself).

‘KERALA’ IS NOW ‘KERALAM’

Context: The Union Cabinet has approved a proposal to change the name of the State Kerala to “Keralam.” This begins the constitutional process required for altering a State’s name.

Procedure for Changing the Name of a State	
Initiation by the State	• A resolution passed by the State Legislative Assembly requesting the change.
Examination by the Union Government	• The Ministry of Home Affairs examines the proposal. • It seeks No Objection Certificates (NOCs) from agencies such as the Ministry of Railways, Intelligence Bureau, Department of Posts, Survey of India, Registrar General of India, and when relevant, the Ministry of External Affairs.
Constitutional Process	• Under Article 3, a Bill to alter a State’s name can be introduced in Parliament only on the recommendation of the President. • The President refers the Bill to the concerned State Legislature for its views. After the specified period, Parliament may pass the Bill by a simple majority.

Parliamentary Approval and Notification	Once the Bill is passed and receives Presidential assent, the First Schedule of the Constitution is amended. The new name becomes effective after official notification.
--	--

Why did Kerala seek the name change?

- **Linguistic Authenticity:** In Malayalam, the State is called “Keralam.” However, the Constitution records it as “Kerala.” Since states were reorganised largely on a linguistic basis in 1956, the Assembly argued that the official constitutional name should reflect the native linguistic form.
- **Cultural Identity and Dignity:** The change aims to restore historical continuity and indigenous pronunciation. It reflects long-standing aspirations dating back to the Aikya Kerala Movement of the 1920s, which demanded a unified state for Malayalam-speaking people.
- **Historical Usage:** The name Kerala appears in Ashoka’s Rock Edict II as “Keralaputra,” associated with the Chera dynasty. Some scholars link “Keralam” to “Cheram”—where cher means “to join” and alam means “land,” referring to the region ruled by the Cheras.

LEGISLATURE

CONSUMER PROTECTION ACT (CPA), 2019

Context: The Kerala High Court, in a writ against Manappuram Finance, held that actor Mohanlal was not liable as he was only a brand ambassador under the Consumer Protection Act, 2019.

About Consumer Protection Act (CPA), 2019	
About	CPA seeks to protect the interests and rights of consumers in India. It replaced the 1986 Act to address modern market realities, including e-commerce, digital transactions, misleading advertisements, and product liability.
Objectives	- To protect consumer rights against unfair trade practices and exploitation. - To provide simple, speedy, and effective grievance redressal. - To regulate misleading advertisements and protect consumers as a class. - To strengthen the framework for consumer awareness and enforcement
Key Definitions under the Act	• Endorsement: Defined broadly to include any message, statement, depiction, or representation in an advertisement that is likely to make consumers believe it reflects the opinion, belief, finding, or experience of the person or entity featured • Misleading Advertisement: An advertisement that falsely describes a product or service, gives false guarantees, misleads consumers, or conceals material information. • Unfair Trade Practice: Deceptive or unethical methods used to promote sales, including false representations of quality or standards, non-issuance of bills, refusal to take back defective goods, and disclosure of personal consumer information.
Consumer Protection Councils	- The Act establishes Central, State, and District Consumer Protection Councils. - These are advisory bodies aimed at promoting and protecting consumer rights, not adjudicating disputes.
Central Consumer Protection Authority (CCPA)	- A dedicated regulatory and enforcement authority to protect consumers as a class. - It deals with violations of consumer rights, unfair trade practices, and false or misleading advertisements. - It can act suo motu, on complaints, or on government directions. Powers and Functions of the CCPA

	• Direct refunds and discontinuation of unfair trade practices, and order recall of unsafe goods and withdrawal of hazardous services. • Issue directions to discontinue or modify misleading advertisements. • Impose monetary penalties on manufacturers, service providers, advertisers, and endorsers, and prohibit endorsements in appropriate cases. • Conduct investigations through a dedicated Investigation Wing with search and seizure powers.
Consumer Disputes Redressal Commissions	• A three-tier adjudicatory structure: District Commission (up to ₹50 Lakh); State Commission (₹0.5–2 crore); National Commission (above ₹2 crore) • Jurisdiction is based on the value of consideration paid and the consumer's place of residence. • Consumer Mediation Cells are attached to all Commissions to encourage voluntary, speedy, and amicable settlement of disputes. • The Orders of Commissions are enforceable as civil court decrees. • Penal consequences exist for non-compliance, misleading advertisements, and adulterated or spurious goods. • Appeals lie from District → State → National Commission → Supreme Court (appeal to the Supreme Court must be filed within 30 days; delay may be condoned on sufficient cause).
Product Liability Regime (Section 82)	• The Act introduces product liability actions against manufacturers, service providers, and sellers. • Covers harm caused by defective products, deficient services, and failure to warn.
Coverage of Digital Markets	Explicitly extends consumer protection to online platforms, e-commerce, and direct selling.

MOTION OF THANKS

Context: Motion of Thanks was passed without PM Modi's response in Lok Sabha.

About Motion of Thanks

- **Article 87(1)** mandates that the President addresses both Houses of Parliament at the start of the first session after a general election and at the beginning of the first session each year, outlining the reasons for convening Parliament. **This practice traces its origin to the Government of India Act, 1919.**
- According to **Rule 17 of the Lok Sabha's Rules of Procedure and Conduct of Business**, the Motion of Thanks is introduced by one member and seconded by another, forming the basis for discussion on the President's Address.
- During the debate, members (especially from the Opposition) may propose amendments to point out omissions or insufficient coverage in the Address.
- If such amendments are adopted, the Motion of Thanks is passed in its revised form. Historically, the Rajya Sabha has adopted amended motions only on a few occasions (1980, 1989, 2001, 2015, and 2016), while the Lok Sabha has never passed an amendment.
- The Motion of Thanks **must be approved by both Houses**; its defeat can be treated as a loss of confidence in the government, similar to the outcome of a no-confidence motion.

SUBSTANTIVE MOTION

Context: Recently, a MP moved a substantive motion against Leader of Opposition, seeking cancellation of his Lok Sabha membership and a lifetime ban from contesting elections.

What is Substantive Motion?

- A substantive motion is an independent and self-contained proposal placed before the House for approval. It is framed so that the House can take a clear decision through voting.

- The Speaker decides whether a motion qualifies as substantive or should be raised through another procedure.
- **Core Elements:** Not derived from another motion; Complete and clear on its own; Allows the House to adopt, reject, or modify it; Must comply with procedural rules and be admitted by the Speaker.

Procedural Significance of a Substantive Motion	Examples of Substantive Motions
• If accepted by the House, it: ◦ Initiates a formal debate leading to a decision. ◦ Requires voting by members. ◦ Records the will of the House as a formal resolution or order. ◦ Ensures accountability, preventing casual allegations against high authorities without a proper motion.	• All Resolutions: Considered substantive motions under parliamentary rules. • Motion of Thanks: On the President's Address in Parliament. • Election/Appointment Motions: e.g., election of the Deputy Chairman of Rajya Sabha. • Motions concerning conduct of high dignitaries: Such discussions must begin through a substantive motion. • Motion against a Member: For actions like censure, removal from office, or cancellation of membership, since these require a definite decision of the House and have serious legal and political consequences.

PARLIAMENTARY MOTIONS:

SUBSTANTIVE MOTION	SUBSTITUTE MOTION	SUBSIDIARY MOTION
 NATURE Independent & self-contained Expresses House decision directly	 NATURE Alternative to an original motion Replaces original motion with a better alternative	 NATURE Dependent on main motion No meaning without original motion
 CAN STAND ALONE? Yes	 CAN STAND ALONE? No (depends on original motion)	 CAN STAND ALONE? No
 PURPOSE To decide an issue outright	 PURPOSE To replace original motion with better alternative	 PURPOSE To modify, delay, close or regulate main motion
 EXAMPLES No-Confidence, Censure, Resolutions	 EXAMPLES Alternative policy resolution	 EXAMPLES Amendment, Closure, Adjournment of Debate
 KEY RULE Voted upon directly	 KEY RULE Only substitute voted upon (original dropped).	 KEY RULE Further classified into 3 sub-types: • Ancillary motions; • Superseding motions; • Amendments

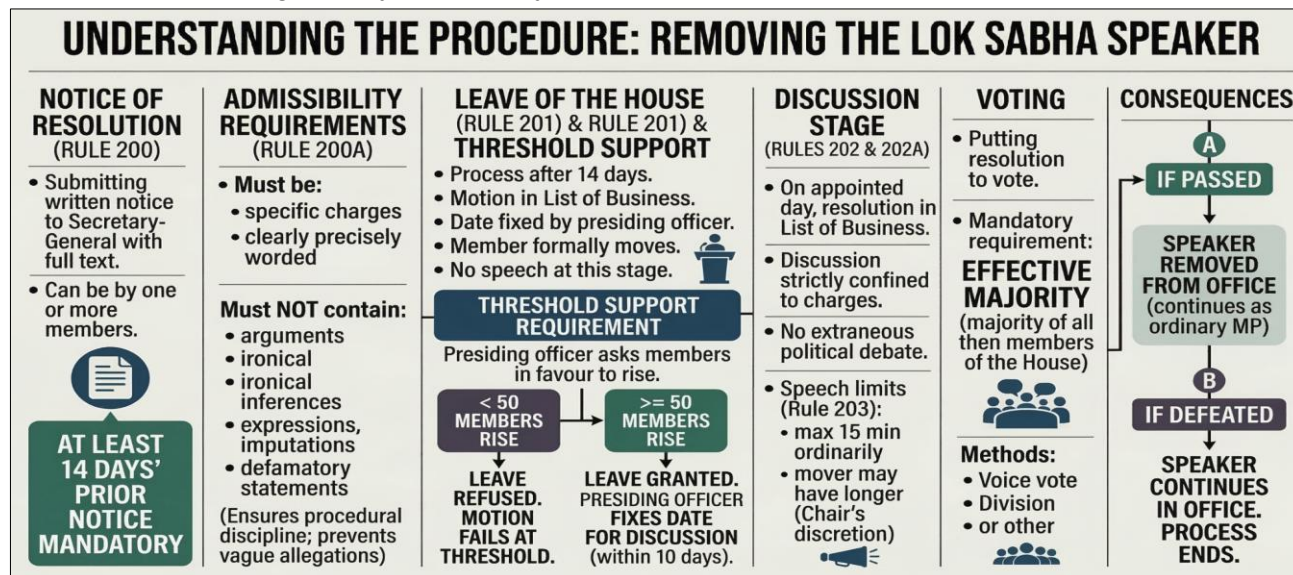
LOK SABHA SPEAKER

Context: Lok Sabha (LS) Speaker Om Birla has decided, on moral grounds, to refrain from presiding over House proceedings until the no-confidence motion against him.

About Lok Sabha (LS) Speaker

- The Speaker is the head and representative of the Lok Sabha, guardian of its powers, privileges, and committees, and the principal spokesperson of the House.
- **Election (Article 93):** Elected by the Lok Sabha from among its members soon after the first sitting of a new House. The President fixes the election date.
- **Salaries and Allowances:** They are fixed by Parliament. They are charged on the Consolidated Fund of India and thus are not subject to the annual vote of Parliament.
- **Tenure (Article 94):** Normally remains in office for the life of the Lok Sabha and continues even after dissolution until the new House meets. The Speaker vacates office if: (a) he ceases to be a Lok Sabha member, (b) resigns by writing to the Deputy Speaker, or (c) is removed.

- **Removal (Article 94(c)):** Speaker is removed by a **resolution** passed by a **majority of all the then members of the Lok Sabha** after 14 days' notice. Under Article 96, the Speaker cannot preside when a removal resolution is under discussion but may participate and vote in the proceedings. They cannot exercise the casting vote on this resolution.
- **Sources of Powers:** Derived from (i) the Constitution of India, (ii) the Rules of Procedure and Conduct of Business of Lok Sabha, and (iii) Parliamentary conventions.
- In the order of precedence, the Speaker ranks sixth, alongside the Chief Justice of India.
- Unlike in Britain, where the Speaker resigns from party membership to remain politically neutral, Indian Speakers generally retain party affiliation.



PARLIAMENTARY FRIENDSHIP GROUPS

Context: The Lok Sabha Speaker recently constituted Parliamentary Friendship Groups (PFGs) with more than 60 countries to strengthen India's global democratic engagement.

What are Parliamentary Friendship Groups (PFGs)?

- PFGs are **country-specific groups of Members of Parliament (MPs)** created to promote **regular engagement between the legislatures of two countries**.
- They function as **instruments of parliamentary diplomacy**, complementing the foreign policy conducted by the executive.
- In India, the initiative has been led by Lok Sabha Speaker Om Birla. In the first phase, PFGs have been formed with over 60 countries, including Sri Lanka, Germany, the United States, Russia, Japan, France, the United Kingdom, Israel, Australia, and Bhutan.
- These groups include MPs from different political parties, ensuring broad political representation. They engage with counterpart legislators in partner countries and promote structured dialogue beyond formal diplomatic channels.
- PFGs are informal but structured platforms. They are not treaty-making bodies and mainly function to facilitate mutual understanding, cooperation, and goodwill between legislatures.

Working Mechanism

PFGs typically operate through:

- Parliamentary delegation visits and reciprocal exchanges.
- Thematic dialogues (for example, on climate legislation or digital regulation).
- Study tours and committee-level interactions.
- Participation in multilateral parliamentary forums.

RIGHT TO RECALL

Context: MP Raghav Chadha proposed Right to Recall (RTR), giving voters the legal right to remove elected representatives before their term ends if they fail to perform.

About Right to Recall (RTR)

- RTR is a mechanism of direct democracy that enables voters to remove an elected representative before the completion of their term.
- In India, it is available only at the local level in certain states, such as Chhattisgarh.
- **Global Examples:** Provisions exist in some states of the United States and in the United Kingdom.

Other Tools of Direct Democracy

- **Referendum:** A proposed law or policy is put before the electorate for approval or rejection; the final decision rests with the voters.
- **Initiative:** Citizens themselves propose a law and place it before the legislature for consideration and enactment.
- **Plebiscite:** Used mainly to decide issues related to sovereignty, territorial disputes, or political status, often linked to the principle of national self-determination.

TRANSGENDER PERSONS (PROTECTION OF RIGHTS) AMENDMENT ACT, 2026

Context: President Murmu has given her assent to the Transgender Persons (Protection of Rights) Amendment Bill 2026 which proposes significant changes to the 2019 law.

- The most contentious provision is the **removal of the right to self-identify one's gender**, which had been recognised by the SC in the judgment of **NALSA v. Union of India**.
- Instead, the Amendment introduces a requirement for medical certification for legal gender recognition.

Aspect	Provisions under 2019 Act	Changes in 2026 Amendment
Definition of Transgender Person	Defined broadly as a person whose gender does not match the gender assigned at birth; includes trans-man, trans-woman, genderqueer, and socio-cultural identities	Definition removed; replaced by a list of specific categories . Explicitly excludes persons with different sexual orientations and self-perceived sexual identities
Categories Included	Includes: (i) socio-cultural identities (kinner, hijra, aravani, jogta), (ii) intersex variations, (iii) trans-man, trans-woman, (iv) genderqueer	Retains socio-cultural identities and intersex persons Removes: trans-man, trans-woman, and genderqueer Adds: (i) eunuch, (ii) persons forced into transgender identity through mutilation, castration, or similar procedures
Recognition of Identity (Certificate)	Self-application to District Magistrate for certificate of identity	Certificate issued after recommendation of a medical board headed by Chief Medical Officer or a Deputy Chief Medical Officer; District Magistrate may consult experts
Change in Name	No explicit provision	Allows change of first name in birth certificate and official documents based on identity certificate
Change in Gender (Post-Surgery)	Person <i>may apply</i> for revised certificate after surgery	Makes it mandatory to obtain revised certificate Hospital must inform District Magistrate
Offences	Includes forced labour, denial of public access, eviction, and physical harm; Punishment: 6 months to 2 years + fine	Retains existing offences and penalties Adds serious offences such as: (i) kidnapping or grievous harm to force transgender identity, (ii) forcing transgender identity for begging or bonded labour

Punishment (Adult Victim)	Not specified separately.	(i) 10 years to life imprisonment + minimum ₹2 lakh fine for severe offences, (ii) 5–10 years + ₹1 lakh fine for forced begging/servitude.
Punishment (Child Victim)	Not specified separately.	(i) Life imprisonment + minimum ₹5 lakh fine, (ii) 10–14 years imprisonment + ₹3 lakh fine for exploitation.

SC ON PAID MATERNITY LEAVE FOR ADOPTIVE MOTHERS

Context: Supreme Court of India ruled that adoptive mothers are entitled to 12 weeks of paid maternity leave, regardless of the child's age at adoption.

About Maternity Benefit Act 1961

- The Maternity Benefit Act, 1961, as amended in 2017, provides paid maternity leave and related benefits to women employees before and after childbirth.
- The Act applies to factories, mines, plantations, government establishments, shops, and other workplaces employing 10 or more persons.
- Women covered under the Employees' State Insurance Act, 1948 are also entitled to maternity benefits under specified conditions.
- Employers with 50+ employees must provide crèche facilities and allow 4 daily work breaks for nursing.
- **Maternity Leave Provisions**
 - Women are entitled to **26 weeks (initially 12 weeks) of paid maternity leave for up to two children.**
 - Adoptive mothers were entitled to 12 weeks of leave only if the child was below three months of age.
 - For women with more than two children, the entitlement is 12 weeks of paid maternity leave.

LOK SABHA (LS) GUILLOTINE MOTION

Context: The LS recently passed the Demands for Grants of various Ministries for 2026–27, amounting to over ₹53 lakh crore, by applying the guillotine, without discussion in Parliament.

About Guillotine Motion

- The guillotine is a parliamentary procedure invoked by the Speaker in the Lok Sabha **to put all remaining Demands for Grants to vote at once, without further discussion.**
- It is used only for Demands for Grants during the Budget Session and is not applied to the routine passage of ordinary bills.

PARLIAMENTARY BUDGET MOTIONS & GRANTS					
CUT MOTIONS 1. Motions by Lok Sabha MPs to reduce a Demand for Grant. Parliamentary tool for control and accountability.			Vote on Account  Withdrawal when Budget not fully passed. Temporary provision (usually 2 months).	Supplementary Grants  Additional funds sought. Original allocation insufficient during financial year.	Excess Grants  Granted when Govt spends more than approved amount. Approval after expenditure.
Policy Cut Motion  Proposes reducing demand to ₹1. Represents diapproval of Govt Policy.	Economy Cut Motion  Proposes specific reduction. Suggests economy and cost-saving.	Token Cut Motion  Proposes reduction of ₹100. Highlights specific grievance or issue.	Token Grant  Approves new expenditure without increasing total spending. Nominal amount (₹1) is placed before Lok Sabha for approval.	Vote of Credit  For unexpected or urgent expenditure (e.g., emergencies). not fully specified.	Exceptional Grant  Provided for a special purpose. Not part of regular budget.

JUDICIARY

WRIT PETITIONS

Context: The Supreme Court agreed to examine petitions filed by the Kerala and Tamil Nadu governments challenging a Kerala High Court ruling that upheld the Enforcement Directorate's right to invoke the writ jurisdiction of constitutional courts.

What Are Writs?

- Writs are **formal written orders issued by constitutional courts** directing a person, authority, or body to perform a duty, correct an illegal action, or refrain from acting beyond their legal powers.
- The **Supreme Court may issue writs under Article 32** to enforce fundamental rights, while **High Courts** can issue writs under **Article 226** for enforcement of fundamental rights as well as for any other legal purpose.
- Writs are **extraordinary remedies** invoked **when ordinary legal remedies are unavailable**, ineffective, or inadequate.
- The grant of a writ is not automatic; courts may refuse relief where an effective alternative remedy exists.
- **Writs ordinarily lie against public authorities**, but they may extend to private bodies where such entities perform public functions or act in collusion with the State in violation of law.

THE FIVE WRITS				
				
HABEAS CORPUS — Protects Personal Liberty	MANDAMUS — Commands Performance of Duty	PROHIBITION — Stops Excess of Jurisdiction	CERTIORARI — Corrects Legal Errors	QUO WARRANTO — Questions Authority to Hold Office
Meaning: "Produce the body." Used to challenge illegal detention. Issued against public authorities and private individuals. Not issued if detention is lawful or ordered by a competent court.	Meaning: "We command." Orders a public authority to perform a legal duty. Cannot be issued against private persons, for discretionary duties, or against President/Governor.	Meaning: "To forbid." Issued by a higher court to stop lower courts/tribunals from exceeding jurisdiction. Only preventive in nature.	Meaning: "To be informed." Quashes or transfers cases from lower courts/tribunals. Both preventive and corrective. Can apply to administrative authorities affecting rights.	Meaning: "By what authority." Challenges illegal holding of a public office. Can be filed by any person. Applies only to substantive public offices created by law.

ARBITRATION COUNCIL OF INDIA

Context: Despite a 2019 amendment to the Arbitration and Conciliation Act, 1996, the Union Government has **not yet constituted the Arbitration Council of India (ACI)**.

About Arbitration Council of India (ACI)

- It is a **statutory body proposed under the Arbitration and Conciliation (Amendment) Act, 2019** to be established by the Central Government.
- The ACI is a body corporate with perpetual succession and is **headquartered in New Delhi**.
- The institutional framework is based on the recommendations of the **Justice B.N. Srikrishna led the High-Level Committee on Arbitration (2017)**.

• **Composition:** Chairpersons (Former SC Judge/ HC CJI or Judge or Expert) with Six Members

Objectives of ACI

- To regulate, promote and standardize institutional arbitration, mediation, conciliation and other ADR (Alternative Dispute Resolution) mechanisms in India.
- To encourage a shift from ad hoc arbitration to institutional arbitration.
- To ensure uniform professional standards in arbitration practice.
- To strengthen India's position as a hub for domestic and international commercial arbitration.

- To facilitate speedy and efficient resolution of commercial disputes.

AMICUS CURIE

Context: The Supreme Court recently directed States to frame a police–media briefing policy within three months, based on the amicus curiae’s manual.

- Amicus Curiae (Latin for "**friend of the court**") refers to a **person** (usually a lawyer, senior advocate, or sometimes an expert/organisation) **who is not a party to the case but is appointed or permitted by the court to assist it.**
- The amicus curiae provides unbiased opinions, helping the court navigate complex legal issues, particularly in cases involving technical or specialized fields.

DEATH PENALTIES

Context: The Death Penalty in India: Annual Statistics Report (2016-2025) was released recently by The Square Circle Clinic

Death Penalties: Meaning and Definition

- The death penalty (capital punishment) refers to the execution of a person after conviction by a court of law for extremely serious crimes.
- It is different from extrajudicial killings, which occur without legal trial or due process.
- In India, the death penalty is permitted only in the “rarest of rare” cases, meaning the crime must be exceptionally brutal and no other punishment is considered adequate.
- **The Indian Penal Code (1860)** formally included the death penalty for crimes like murder, and this provision continued after independence.

Legal Position and Procedure

- **The Bharatiya Nyaya Sanhita (BNS), 2023** retains the death penalty for heinous offences such as murder, terrorism, rape of minors, and mob lynching resulting in death.
- Around **14 categories of crimes** may attract the death penalty, including murder, terrorism, and abetment of mutiny.
- A Sessions Court may award the death sentence, but it must be confirmed by the High Court before execution. **The convicted person has the right to appeal to the Supreme Court.**
- Certain groups are protected from execution, including juveniles (under 18 at the time of the offence), pregnant women, and persons suffering from severe mental illness.

Key Cases

- **Bachan Singh v. State of Punjab (1980):** Introduced the “**rarest of rare**” doctrine, requiring judges to balance aggravating factors (nature of crime) and mitigating factors (age, background, possibility of reform).
- **Mithu v. State of Punjab (1983):** Struck down mandatory death penalties as unconstitutional.
- **Shatrughan Chauhan v. Union of India (2014):** Held that excessive delay in execution may justify commutation.

RIGHT TO BE FORGOTTEN

Context: The Supreme Court issued notice on Indian Express Digital’s plea challenging a December 2025 Delhi HC ruling on applying the Right to Be Forgotten.

What is the Right to Be Forgotten (RTBF)?

- RTBF refers to **an individual’s claim to have personal data removed, erased, or de-indexed from digital platforms** when its continued availability causes harm or is no longer justified.
- It arises from the broader **Right to Privacy**, recognised by the Supreme Court in *Justice K.S. Puttaswamy v. Union of India (2017)* under **Article 21.**
- RTBF is a limited right, not an absolute right.

Legal Position in India

- **India does not yet have a specific, codified right explicitly called RTBF.** The closest statutory provision exists in the Digital Personal Data Protection Act, 2023 (DPDP Act) through the Right to Erasure.
- **Right to Erasure (DPDP Act, 2023)** allows individuals to **request deletion of their personal data when consent is withdrawn or the purpose of data collection is fulfilled.** However, deletion is not automatic.

DOCTRINE OF RECUSAL

Context: The Chief Justice of India (CJI) recused himself from hearing petitions challenging the Chief Election Commissioner and Other Election Commissioners Act, 2023.

What is Recusal?

- Recusal refers to **a judge voluntarily stepping aside from a case due to possible bias or conflict of interest.**
- Based on the principle of natural justice: *nemo judex in causa sua* (**no one should be a judge in their own cause**).
- **Objective:** To ensure Impartiality, Fairness and Public confidence in the judiciary
- **Decision-Making Authority:** The decision to recuse rests solely on the judge's conscience. No litigant can compel recusal (Litigants **can only request** recusal).

Evolution in India:

- **Manak Lal v. Dr. Prem Chand (1957):** Established rule of disqualification in cases of financial interest
- **Ranjit Thakur v. Union of India (1987):** Introduced the test of "real likelihood of bias" Recusal required only when a reasonable apprehension of bias exists (not mere suspicion)

India vs United States:

- **India:** No specific law; governed by judicial precedents and ethical norms
- **United States:** Codified under Section 455, Title 28, US Code. Judges must recuse where impartiality "may reasonably be questioned".

INSTITUTIONS AND BODIES

16TH FINANCE COMMISSION (XVI FC)

Context: The Report of the 16th Finance Commission (Chair: Dr. Arvind Panagariya) was tabled in Parliament on February 1, 2026. The recommendations will apply for the five-year period from 2026–27 to 2030–31.

Finance Commission (Article 280)

- **Constitutional - Quasi Judicial body** established under Article 280, it ensures fair financial relations between the Centre and States
- It is **appointed by the President every five years.**
- **Composition:** Chairman + 4 Members (experts in finance, economics, or administration)
- **Functions:**
 - Recommends how tax revenue is shared between the Union and States.
 - Decides how funds are distributed among states using specific criteria.
 - Suggests Grants-in-Aid to states facing revenue gaps (Article 275).
 - Recommends ways to strengthen finances of Panchayats and Municipalities.
 - Advises on debt management, expenditure control, and fiscal reforms.
 - Examines financial matters referred by the President.
- Submits its report to the President, who lays it before both houses of the Parliament.
- The recommendations are only advisory in nature and not binding on the government.

Key Recommendations

- **Share of states in central taxes:** The 16th Finance Commission (FC) has recommended that the share of states in the divisible pool of central taxes remain at 41%.
 - The divisible pool is calculated after excluding the cost of collection, cesses, and surcharges from the gross tax revenue of the central government.
 - **This share remains unchanged from the 15th Finance Commission period (2021–26).**
- **Devolution criteria:** To distribute central taxes among states, Finance Commissions use a formula with different weightages assigned to specific parameters.
 - The 16th FC has given the highest weight to income distance. **Income distance refers to the gap between a state's per capita GSDP and that of the state with the highest per capita GSDP.** States with lower per capita income receive a higher share, ensuring fairness and balanced development.
 - **New parameter – Contribution to GDP:** It replaces the earlier tax and fiscal effort criterion, which rewarded efficient tax collection.
 - **Other parameters:** Include population, area, and forest cover, similar to the 15th FC.
- **Grants-in-aid:** The 16th FC has recommended grants worth Rs 9.47 lakh crore for the period 2026–31. These include grants for: **Urban and rural local bodies, Disaster management.**
 - The following grants (given by the 15th FC) have been discontinued: Revenue deficit grants, Sector-specific grants (education, justice, statistics, agriculture), State-specific grants
 - A portion of grants to local bodies will be linked to performance, encouraging them to increase their own revenue.
 - **The Special Infrastructure Component** focuses on improving wastewater management systems.
 - **The Urbanisation Premium** incentivises the transition from rural to urban areas.
- **Fiscal roadmap:** The Centre should reduce its fiscal deficit to 3.5% of GDP by 2030–31. States should maintain an annual fiscal deficit limit of 3% of GSDP.
 - The Commission recommends strict discontinuation of off-budget borrowings by states. All such borrowings should be brought onto the budget.
 - **The definition of fiscal deficit and debt should be expanded to include all off-budget borrowings uniformly.**

CRITERIA FOR DEVOLUTION (%)			
Criterion	14th FC (2015–20)	15th FC (2021–26)	16th FC (2026–31)
Income Distance	50.0	45.0	42.5
Area	15.0	15.0	10.0
Population (1971)	17.5	–	–
Population (2011)	10.0	15.0	17.5
Demographic Performance	–	12.5	10.0
Forest Cover	7.5	10.0	10.0
Tax and Fiscal Effort	–	2.5	–
Contribution to GDP	–	–	10.0
TOTAL	100	100	100

UNIVERSITY GRANTS COMMISSION (UGC)

Context: The UGC has notified revised regulations to address caste-based discrimination in higher education institutions, introducing stricter compliance requirements and enforcement mechanisms.

About University Grants Commission (UGC)

- It is a **statutory body** of the Government of India, established under the **University Grants Commission Act, 1956** (Act No. 3 of 1956).
- It serves as the **primary national agency** responsible for the **coordination, determination, and maintenance of standards in university education** across the country.
- Nodal Ministry:** Ministry of Education, Department of Higher Education.
- HQ:** New Delhi with regional offices in Bangalore, Bhopal, Guwahati, Hyderabad, Kolkata and Pune.
- Origin:** The Sargeant Report (1944) recommended a University Grants Committee, formed in 1945. The University Education Commission (1948) under Dr. S. Radhakrishnan recommended creating a statutory UGC.
- Composition:** Chairman, a Vice-Chairman, and ten other members appointed by the Central Government.
- The UGC is vested with **two core responsibilities**:
 - Providing funds (grants) to eligible universities and colleges.
 - Coordinating, determining, and maintaining standards of university education.



ELECTIONS

DELIMITATION

Context: The Centre has begun evaluating options and drafting a roadmap for a nationwide delimitation exercise.

About Delimitation

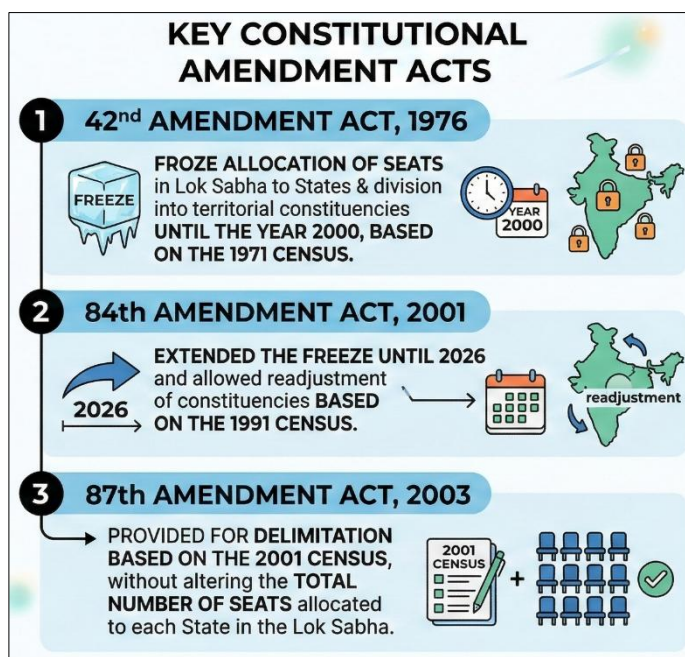
- Delimitation literally means the **act or process of fixing the limits or boundaries of territorial constituencies** in a country or a province that has a legislative body. The task of delimitation is entrusted to a **high-powered body** known as the **Delimitation Commission** or the Boundary Commission.
- In India, Delimitation Commissions have been constituted four times, in 1952, 1963, 1973, 2002.**

Constitutional Provisions for Delimitation

- Articles 82 and 170:** Provide for the readjustment and division of each State into territorial constituencies (Parliamentary and Assembly constituencies) by such authority and in such manner as Parliament may determine by law.
- Articles 330 and 332:** Provide for the re-fixing of the number of seats reserved for Scheduled Castes (SCs) and Scheduled Tribes (STs) in the Lok Sabha and in the Legislative Assemblies of the States.

Legal Status

- The Delimitation Commission orders have the **force of law** and **cannot be challenged before any court**. These orders come into effect on a **date specified by the President of India**.



- Copies of its orders are laid before the Lok Sabha and the concerned State Legislative Assembly, but **neither of them can modify these orders.**

Important Judicial Pronouncements Related to the Delimitation Commission

- **Kishorchandra Chhanganalal Rathod vs. UoI (2024):** SC held that constitutional courts have the power to review the orders of the Delimitation Commission if an order is manifestly arbitrary and inconsistent with constitutional values.
- **Meghraj Kothari v. Delimitation Commission (1966):** The Court held that judicial interference should be restricted to avoid unnecessary delays in the election process, but this does not impose an absolute bar on the constitutional courts' power to review Delimitation Commission orders.

NONE OF THE ABOVE (NOTA)

Context: The Supreme Court has observed that, even after more than a decade of its introduction, NOTA has had limited influence on the selection of candidates by political parties.

About NOTA

- NOTA allows **voters to participate in an election without selecting any of the contesting candidates.**
- The option was introduced following the **Supreme Court's 2013 judgment in *PUCL vs Union of India***, which directed the Election Commission of India (ECI) to provide a NOTA button on Electronic Voting Machines (EVMs).
- It was first **implemented in the 2013 Legislative Assembly elections** in Chhattisgarh, Mizoram, Rajasthan, Madhya Pradesh, and Delhi.
- The Election Commission clarifies that **NOTA votes are counted but treated as 'invalid votes'**. Even if NOTA secures the highest number of votes in a constituency, the candidate with the next highest votes is declared the winner. Thus, NOTA does not affect the final electoral outcome.
- In the case of ***Shailesh Manubhai Parmar v. ECI***, Supreme Court **quashed introduction of NOTA in Rajya Sabha Elections** as RS elections use open ballot system, and secrecy (basis of NOTA) does not apply.
- In certain local body elections, states and Union Territories such as Maharashtra, Haryana, Puducherry, Delhi, and Chandigarh have treated **NOTA as a "fictional electoral candidate"**. In such cases, if NOTA receives the highest votes, fresh elections are conducted.

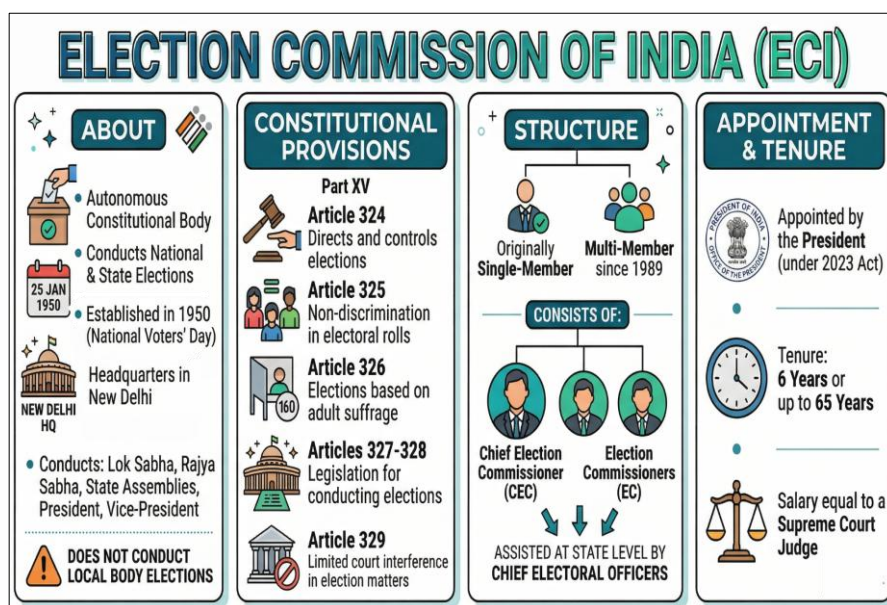
IMPEACHMENT MOTION AGAINST CHIEF ELECTION COMMISSIONER

Context: Recently, opposition Members of Parliament (MPs) moved notices in both Houses of Parliament seeking the removal of Chief Election Commissioner (CEC) Gyanesh Kumar.

Process for Removal of the Chief Election Commissioner (CEC)

- **Constitutional and Legal Basis:**
 - **Article 324(5) of Constitution:** Provides that the CEC can be removed only in the **same manner and on the same grounds as a judge of the Supreme Court (SC)**. It also ensures that the service conditions of the CEC cannot be altered to their disadvantage after appointment.
 - **Section 11(2) - CEC and Other ECs (Appointment, Conditions of Service and Term of Office) Act, 2023:** States that the CEC can be removed from office only in the same manner and on the same grounds as an SC judge.
 - **Judges Inquiry Act, 1968:** The procedure for the removal of a judge, which also applies to the CEC, is laid down under this Act.
- **Grounds for Removal:** The CEC can be removed only on the grounds of **Proven misbehaviour or Incapacity**
- **Initiation of Removal Motion:** A motion for removal may be introduced in either House of Parliament.

- The notice must be signed by: At least 100 MPs in the Lok Sabha, or At least 50 MPs in the Rajya Sabha
- The notice is submitted to the Speaker of the Lok Sabha or the Chairman of the Rajya Sabha, who may admit or reject the motion.
- **Constitution of Inquiry Committee:** If the motion is admitted, a three-member investigative committee is constituted, comprising:
 - The Chief Justice of India (CJI) or a judge of the Supreme Court
 - The Chief Justice of a High Court
 - A distinguished jurist
 - If notices are submitted in both Houses on the same day, the committee is constituted jointly by the Speaker and the Chairman.
- **Inquiry by the Committee:** The committee frames charges against the CEC and conducts an inquiry similar to a judicial proceeding.
- **During the investigation:** Evidence is examined, Witnesses may be cross-examined
 - The CEC is given a full opportunity to defend himself or herself before the committee.
 - After completing the inquiry, the committee submits its report to the presiding officer of the concerned House.
- **Consideration in Parliament:** If the committee finds misbehaviour or incapacity, the motion is taken up for discussion in the House. The CEC is again given an opportunity to defend himself or herself during parliamentary consideration.
- **Voting Requirement (Special Majority):** For the motion to be passed in each House of Parliament, it must secure:
 - A majority of the total membership of the House (i.e., more than 50%), and
 - A two-thirds majority of members present and voting
 - The motion must be passed separately by both the Lok Sabha and the Rajya Sabha.
- **Final Removal:** Once both Houses pass the motion with the required special majority, it is sent to the President of India. The President then issues the order removing the CEC from office.
- **Protection for Other Election Commissioners:** Other Election Commissioners cannot be removed except on the recommendation of the CEC.



GOVERNANCE

WATER MANAGEMENT

Context: In Dec 2025, Indore faced a severe health emergency due to contaminated drinking water.

About Water Management

- Water supply is a State subject under the Seventh Schedule of the Constitution.

- To decentralize water management, the **Constitution (73rd and 74th Amendments)** empowers local bodies:
 - **Eleventh Schedule (Panchayats)**: Entrusts rural bodies with minor irrigation, water management, watershed development, and drinking water.
 - **Twelfth Schedule (Municipalities)**: Entrusts urban bodies with water supply for domestic, industrial, and commercial purposes.
- At the national level, the Union Ministry of Housing and Urban Affairs oversees urban water infrastructure through programmes such as AMRUT and AMRUT 2.0.
- The Bureau of Indian Standards (BIS) has specified drinking water quality standards in India under IS 10500:2012.

ASPIRE SCHEME

Context: Under the ASPIRE Scheme 1,16,726 beneficiaries have been trained through 109 Livelihood Business Incubators

About ASPIRE Scheme

- The ASPIRE Scheme (A Scheme for Promotion of Innovation, Rural Industry and Entrepreneurship) is a **Central Sector Scheme** launched in 2015.
- It addresses unemployment and low income in **rural areas** by **promoting entrepreneurship**, skills, and micro-enterprise development, especially among **women and SC/ST communities**.

Objectives	Approach
• Promote rural entrepreneurship and innovation • Generate sustainable livelihoods and local employment • Support skill development and incubation of micro-enterprises • Encourage self-employment in non-farm rural sectors.	• Establishment of Livelihood Business Incubators (LBIs) • Skill training linked to self-employment and wage employment • Capacity building through awareness and mentoring programmes • Inclusive data monitoring (gender and social category-wise since 2022)
Funding	
• Funding for Plant and Machinery: · Up to INR 1 crore for government agencies. Up to INR 75 lakh for private agencies • Operational Expenditure Support: Up to INR 1 crore for both government and private agencies to cover costs related to manpower, running incubation programs, and skill development.	

- **Ministry:** Ministry of Micro, Small and Medium Enterprises (MSME)
- **Implementing Agencies:** Ministry of MSME with State/UT MSME and Industry Departments, Financial institutions (SIDBI, Banks, CGTMSE), and CPSUs

EMPLOYEES' PROVIDENT FUND ORGANISATION (EPFO)

Context: The Employees' Provident Fund Organisation (EPFO), India's premier retirement fund body, is undertaking a new phase of digital and institutional reforms- EPFO 3.0.

About Employees' Provident Fund Organisation (EPFO)

- It is a premier **statutory body** under the **Ministry of Labour and Employment**, established in **1952** to provide social security to the organised workforce.
- **Functions:** It manages compulsory, contributory provident fund, pension, and insurance **schemes** ensuring retirement savings and financial security for employees.
 - Employees' Provident Funds Scheme 1952 (EPF)
 - Employees' Pension Scheme 1995 (EPS)

- Employees' Deposit Linked Insurance Scheme 1976 (EDLI)
- **Active members and corpus:** It currently has nearly 8 crore active members and maintains a corpus of around ₹28 lakh crore.
- **Coverage:** Coverage is being extended to **all establishments with 20 or more employees**, regardless of industry, under the new Social Security Code.

DENOTIFIED TRIBES

Context: Denotified, nomadic and semi-nomadic tribes are seeking a separate column in the 2027 Census and demanding constitutional recognition through a distinct Schedule.

About Denotified Tribes (DNTs)

- DNTs are communities that were once labelled as “criminal tribes” under the colonial **Criminal Tribes Act, 1871 (amended in 1924)**.
- The law allowed the British administration to register, monitor, and restrict entire communities on the assumption that they were naturally inclined toward crime.
- Many of these groups were nomadic or semi-nomadic, moving from place to place for livelihood.
- The Criminal Tribes Act was repealed in 1952, and the **communities listed under it were officially “denotified” (their criminal label was removed)**.
- Since then, they have collectively been referred to as Denotified, Nomadic, and Semi-Nomadic Tribes (DNT/NT/SNT).
- However, unlike Scheduled Castes (SC), Scheduled Tribes (ST), or Other Backward Classes (OBC), many of these communities **did not receive a clear or uniform constitutional classification after Independence**.

Commissions and Committees on DNTs

- **Ananthasayanam Ayyangar Committee (1949):** Its recommendations contributed to the repeal of the Criminal Tribes Act.
- **Kaka Kalelkar Commission (1953):** First Backward Classes Commission that examined socially and educationally backward groups.
- **Lokur Committee (1965) and Mandal Commission (1980):** Considered the status of backward communities, including some DNT groups.
- **Renke Commission (2008):** Focused specifically on the problems faced by Denotified and Nomadic Tribes.
- **Idate Commission (2017):** Identified over 1,200 DNT/NT/SNT communities and found that 267 communities were not classified as SC, ST, or OBC, recommending completion of their classification.

PM RAHAT SCHEME

Context: The Prime Minister approved the launch of the PM RAHAT Scheme.

About PM RAHAT (Road Accident Victim Hospitalization and Assured Treatment) Scheme

- It is a national **emergency healthcare initiative** approved by the Government of India **to provide immediate cashless medical treatment to road accident victims**.
- It aims **to ensure that accident victims receive timely medical care without financial barriers**, especially during the “**Golden Hour**”, the first 60 minutes after an accident when prompt treatment can significantly reduce fatalities.

Key Features

- **Cashless Treatment:** Every road accident victim is eligible for cashless medical treatment up to ₹1.5 lakh per person, regardless of whether the accident occurs on national highways, state highways, or local roads.
- **Coverage Period:** Treatment costs are covered for up to 7 days from the date of the accident.
- **Stabilization Care:** **Non-life-threatening cases** (Up to 24 hours of stabilization treatment) and **Life-threatening cases** (Up to 48 hours of critical stabilization, pending police authentication)
- **Integration with Emergency Services:** The scheme is linked with the Emergency Response Support System (ERSS) – 112 helpline. Victims, bystanders, or **Good Samaritans (Rah-veer)** can call 112 to request ambulances or locate the nearest hospital.
- **Funding and Payment Mechanism:** Treatment costs are reimbursed through the Motor Vehicle Accident Fund (MVAf). If the vehicle involved is insured, funds come from insurance company contributions. For uninsured or hit-and-run cases, the Government of India provides budgetary support. Approved claims must be paid to hospitals within 10 days,
- **Grievance Redressal:** Each district will appoint a Grievance Redressal Officer under the District Road Safety Committee, chaired by the District Collector/DM.

OBJECTIVES



Ensure no life is lost due to lack of treatment



Remove financial obstacles



Improve coordination among responders, hospitals, police



Structured response in Golden Hour (nearly 50% deaths preventable)

TECHNOLOGY FRAMEWORK



eDAR (Electronic Detailed Accident Report) prepared by police



TMS 2.0 (Transaction Management System) for digital claims



Police Authentication confirms eligibility and seriousness

PM CARES, PMNRF, NDF

Context: The PMO informed the Lok Sabha Secretariat that questions related to PM CARES Fund, the Prime Minister's National Relief Fund (PMNRF), and the National Defence Fund (NDF) are inadmissible in Lok Sabha as they are made up of voluntary public contributions and not from allocations from the Consolidated Fund of India.

PMNRF (Prime Minister's National Relief Fund)	• Set up in January 1948 by Prime Minister Nehru through a public appeal to help Partition refugees. • Today, it provides immediate relief to families affected by natural calamities (floods, cyclones, earthquakes), major accidents, riots, and partial financial aid for medical treatment. • It consists entirely of public contributions, is managed from the Prime Minister's Office, and donations are eligible for 100% tax deduction under Section 80G. • It is not a statutory body created by Parliament.
NDF (National Defence Fund)	• Established in 1962 (during the Sino-Indian War) to receive voluntary donations for strengthening national defence. • The fund is used exclusively for the welfare of members of the Indian Armed Forces (including para-military forces) and their dependents. • It is administered by an Executive Committee chaired by the Prime Minister (with Defence, Finance, and Home Ministers as members). • It runs solely on public contributions with no government budgetary support and qualifies for 100% tax exemption under Section 80G. • Accounts are maintained with the Reserve Bank of India.
PM CARES Fund (Prime Minister's Citizen Assistance and)	• Established on 27 March 2020 as a public charitable trust under the chairmanship of the Prime Minister. • Objective: To provide relief during any kind of emergency or distress situation (public health crises, natural calamities, man-made disasters).

Relief in Emergency Situations Fund)	• It supports healthcare infrastructure, research, and direct assistance to affected people. • It receives only voluntary public donations and contributions qualify for 100% tax deduction under Section 80G of the Income Tax Act. • The fund was created specifically to handle situations like the COVID-19 pandemic.
--------------------------------------	---

VIBRANT VILLAGES PROGRAMME-II

Context: The Home Minister launched the ₹6,839 crore Vibrant Villages Programme-II in Assam.

About Vibrant Villages Programme-II (VVP-II)

- VVP-II is a **Central Sector Scheme** (100% funded and implemented by the Central Government), approved in April 2025 with an outlay extending till FY 2028–29.
- **It aims to develop villages along International Land Borders (ILBs) that were not covered under VVP-I.**
- **Coverage:** 1,954 villages across 334 blocks in 15 States and 2 UTs, including Assam, Punjab, Rajasthan, and West Bengal.
- **Implementing Ministry: Ministry of Home Affairs (MHA).**

About VVP- I

- VVP-I, approved in 2023 as a Centrally Sponsored Scheme (jointly funded by the Centre and States and implemented by State Governments), focused on developing 662 villages in 46 blocks along the northern border.
- It covered villages in Arunachal Pradesh (455), Himachal Pradesh (75), Sikkim (46), Uttarakhand (51), and Ladakh (35), with emphasis on infrastructure, livelihood generation, and reducing outmigration from border areas.



MEMBERS OF PARLIAMENT LOCAL AREA DEVELOPMENT SCHEME

Context: 21 MPs recommended works under the Members of Parliament Local Area Development Scheme (MPLADS) outside their State or constituency, according to a report.

About Members of Parliament Local Area Development Scheme (MPLADS)

- MPLADS is a **Central Sector Scheme** launched on December 23, 1993.
- **It allows MPs to recommend developmental works in their constituencies. Each MP can recommend projects worth ₹5 crore per year.**
- It focuses on **creating durable community assets** based on local needs like drinking water, roads, education, public health, and sanitation.

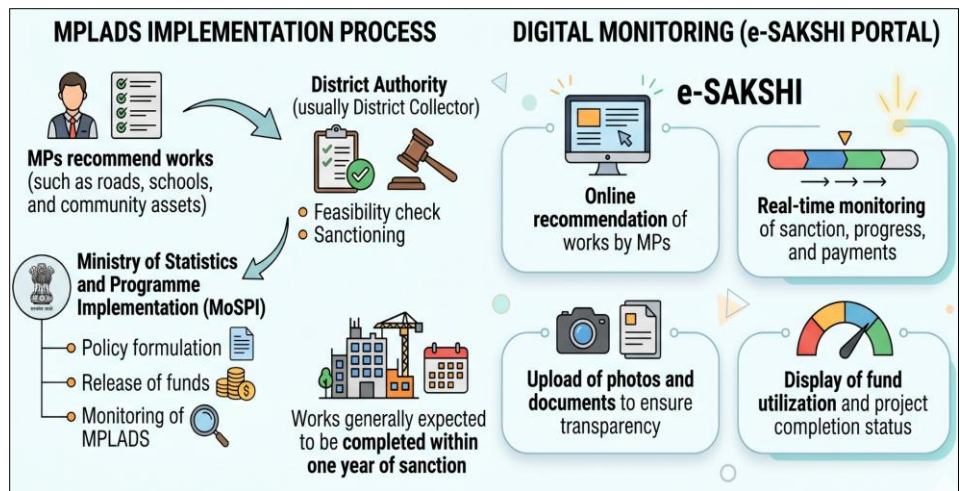
Area of Recommendation

- **Lok Sabha MPs:** Can recommend works in the district(s) of their constituency.
- **Rajya Sabha MPs:** Can recommend works in one or more districts of the State from which they are elected.

- **Nominated MPs:** Can recommend works anywhere in India.

Exceptions

- MPs can recommend up to ₹50 lakh per year for works outside their normal area of jurisdiction (earlier ₹25 lakh; revised in April 2023).
- Up to ₹1 crore per year can be contributed for rehabilitation and reconstruction in areas affected by severe natural calamities.



CENSUS 2027 MASCOTS

Context: Recently, the Union Home Minister soft-launched four digital tools and formally unveiled the mascots- “Pragati” (female) and “Vikas” (male)- for Census 2027, India’s first digital census.

About the Mascots for Census 2027

- **Pragati:** Female enumerator mascot.
- **Vikas:** Male enumerator mascot.

Objective of Mascots:

- To serve as friendly public faces of Census 2027.
- To help communicate census information, objectives, and awareness among citizens.
- To symbolize the equal participation of women and men in nation-building and the vision of Viksit Bharat 2047.

About the Four Digital Tools for Census 2027

These are Developed by the Centre for Development of Advanced Computing (C-DAC).

- **Houselisting Block Creator (HLBC) Web Application:** A web-based mapping tool that uses satellite imagery to help officials digitally create houselisting blocks for standardized geographic coverage.
- **HLO Mobile Application:** A secure, offline mobile application for enumerators to collect houselisting data during field visits. It works on Android and iOS, supports 16 regional languages, and enables direct field-to-server data upload, thereby reducing paperwork.
- **Self-Enumeration (SE) Portal:** A first-time online facility for households to self-enumerate. Citizens can submit their household details online before the field survey. It generates a Self-Enumeration ID (SE ID) for verification by enumerators.
- **Census Management and Monitoring System (CMMS) Portal:** A centralized digital platform used by officials at sub-district, district, and state levels for planning and monitoring census operations.



ASMITA INITIATIVE

Context: The Union Ministry of Youth Affairs and Sports recently organised a nationwide athletics league- ASMITA, across the country to celebrate women in sports on International Women’s Day.

What is the ASMITA Initiative?

- **ASMITA (Achieving Sports Milestones by Inspiring Women Through Action)**, launched in 2021, is a unique initiative aimed at promoting and celebrating women in sports.
- It is part of the **Khelo India programme's** gender-inclusive mission to encourage women's participation in sports through leagues and competitions.
- **Objective:** To encourage participation among young women aged 14 to 28 years by creating a supportive and vibrant environment for them to showcase their talent.
- **Focus:** Athletics events such as 100 metres, 200 metres, and 400 metres, conducted across age groups, Under-13, 13–18 years, and 18+ categories.
- **Implemented by:** Sports Authority of India (SAI), under the Ministry of Youth Affairs and Sports, in partnership with MY Bharat.

About Mera Yuva Bharat (MY Bharat)

- An autonomous body, set up by the Ministry of Youth Affairs & Sports, that provides an overarching institutional mechanism, powered by technology, for youth development and youth-led development.
- Launched on 31st October 2023 on Rashtriya Ekta Diwas, marking the birth anniversary of Sardar Vallabhbhai Patel.

EGRAMSWARAJ PORTAL

Context: Over ₹3 lakh crore (cumulative) payments have been routed through the platform, marking a major push in digital governance at the Gram Panchayat level.

About eGramSwaraj Portal

- **Launch:** Launched in 2020 by the Ministry of Panchayati Raj (MoPR).
- **Objective:** To enhance transparency, accountability, and efficiency in Panchayati Raj Institutions (PRIs) through digital governance.
- **Framework:** Developed under the e-Panchayat Mission Mode Project and integrated with the Public Financial Management System (PFMS).
- **Role of PFMS:** Enables real-time payments to vendors and service providers, ensuring smooth fund flow and reducing delays.
- **Core Functions:** Covers planning, budgeting, accounting, monitoring, and asset management on a single digital platform.
- **Planning Tool :** Facilitates preparation and online submission of Gram Panchayat Development Plans (GDPs).
- **Key Features:** Supports decentralised planning, real-time progress reporting, work-based accounting, and online payments.
- **Governance Impact:** Improves credibility of Panchayats, promotes better fund utilisation, and enables citizens to access local governance data.

SADHANA SAPTAH INITIATIVE

Context: Sadhana Saptah marks a step toward building a future-ready civil services system in India.

About Sadhana Saptah Initiative

- It is an initiative under **Mission Karmayogi** (National Programme for Civil Services Capacity Building). It aims to **develop skills for citizen-centric governance**.
- Organised by the **Department of Personnel and Training, Capacity Building Commission, and Karmayogi Bharat**.
- Brings together Central Ministries, States/UTs, and training institutions on a common platform.

Key Features

- **Based on three Sutras:** Technology, Tradition, and Tangible Outcomes.
- Focuses on achieving the vision of Viksit Bharat 2047.
- Offers learning via iGOT Karmayogi courses, group discussions, webinars, and workshops.

- Builds competencies such as leadership, communication, data analysis, project management, and digital governance.

MISCELLANEOUS

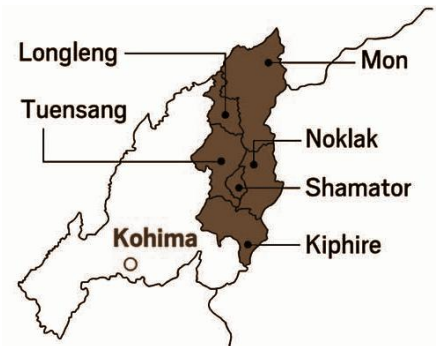
FRONTIER NAGALAND TERRITORIAL AUTHORITY (FNTA)

Context: A tripartite agreement has been signed between the Union Government, the Nagaland State Government, and the Eastern Nagaland People's Organisation (ENPO) to establish the FNTA.

- ENPO is the apex body representing eight recognised Naga tribes, Konyak, Sangtam, Chang, Khiamniungan, Yimkhiung, Tikhir, Phom, and Sumi, across the six eastern districts of Nagaland.

About Frontier Nagaland Territorial Authority (FNTA)

- FNTA is a newly created autonomous administrative body to **address the long-standing political, economic, and developmental concerns** of the eastern districts of Nagaland **without creating a separate state**.
- **Area Covered:** Six eastern districts: Tuensang, Mon, Kiphire, Longleng, Noklak, and Shamator
- **Key Provisions:**
 - Devolution of powers over 46 subjects to the FNTA
 - Establishment of a mini-secretariat headed by an officer of the rank of Additional Chief Secretary or Principal Secretary
- **Constitutional Position:** It does not change Article 371(A), which protects Naga customs, traditions, and land rights.



BADRINATH-KEDARNATH TEMPLE COMMITTEE (BKTC)

Context: Committees of the Chota Char Dham shrines (Gangotri, Yamunotri, Kedarnath, and Badrinath) in Uttarakhand are considering banning non-Hindus from temple premises. The proposal was raised by the Badrinath–Kedarnath Temple Committee (BKTC).

About Badrinath-Kedarnath Temple Committee (BKTC)

- The BKTC is the statutory body responsible for the administration, governance, and financial management of the Badrinath and Kedarnath temples in Uttarakhand.
- It oversees temple functioning, manages donations and endowments, and ensures that religious traditions are maintained.
- **Legal Basis:** The committee derives its authority from the **United Provinces Shri Badrinath and Kedarnath Temples Act, 1939**. The Act was amended in 1948, with further amendments over time, including provisions introduced in 2025.
- **Composition:** The committee consists of **a President and seven members**, nominated by the Uttarakhand government. A 2025 amendment allows the appointment of up to two Vice-Presidents.
- **Key Functions**
 - **Temple Administration:** Manages daily operations, pilgrim facilities, and governance.
 - **Financial Management:** Oversees temple funds, donations, and endowments.
 - **Trusteeship of Funds:** Temple funds legally belong to the deities of Badrinath and Kedarnath, and the committee manages them in trust.
 - **Appointment of Religious Functionaries:** Appoints the Rawal (head priest) and Naib Rawal (assistant priest).
- **Role of the State Government**

- Appoints **Mukhya Karyadhikari (Chief Executive Officer)** after consulting the committee President.
- Can supersede committee decisions when necessary.
- Decisions to terminate the Rawal or Naib Rawal can be appealed to the state government.
- Appoints the auditor for temple accounts and endowments.
- Requires the committee to submit periodic reports on temple administration.

LIVE EVENTS DEVELOPMENT CELL (LEDC)

Context: The Ministry of Information and Broadcasting (MIB) recently established a **LEDC** to facilitate the expansion of the “concert economy”.

What is a Live Events Development Cell (LEDC)?

- It is a **single-window facilitation mechanism** constituted by the MIB to **promote the structured growth of India’s live entertainment and concert economy**.
- **Objective:** To support and coordinate the rapidly expanding live events industry, which includes music concerts, theatre and cultural performances, sports, and large-format live events.

RESPONSIBLE NATIONS INDEX

Context: Responsible Nation’s Index was launched by World Intellectual Foundation (WIF) in collaboration with Jawaharlal Nehru University (JNU) and Indian Institute of Management (IIM) Mumbai.

About Responsible Nations Index

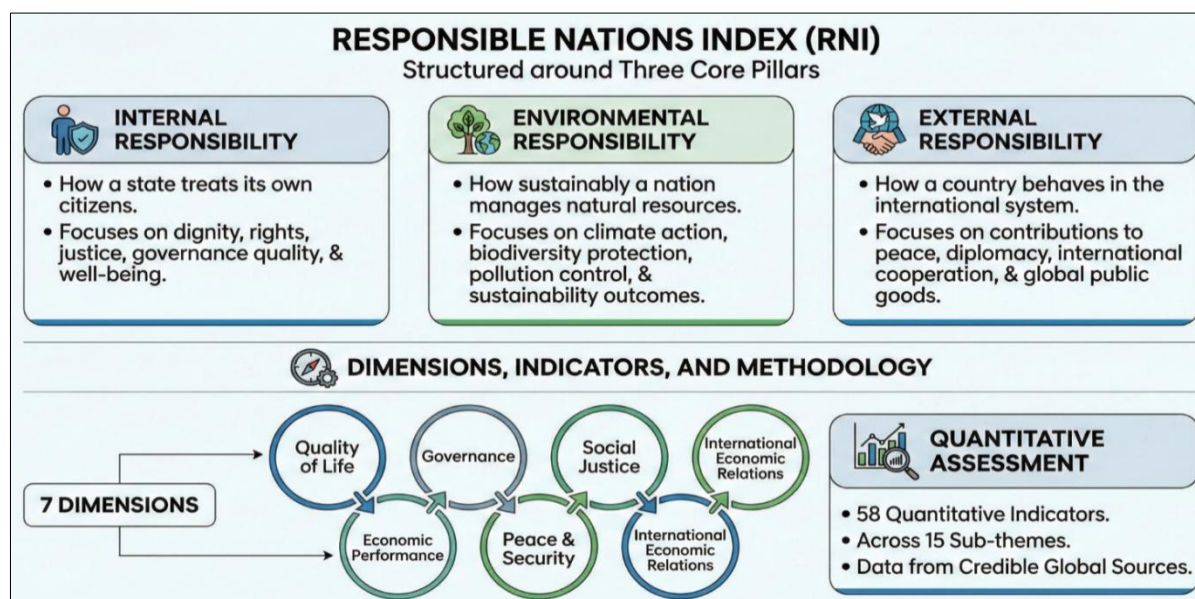
- It is a first-of-its-kind global ranking framework launched by India to assess countries not by economic size or military power, but by ethical governance, social well-being, environmental stewardship, and international responsibility.

Objective of RNI

- To move global discourse beyond GDP and hard power.
- To encourage ethical, inclusive, and sustainable governance.
- To provide a normative benchmark for responsible state behaviour.
- To redefine global leadership as responsibility-driven rather than dominance-driven.

Coverage and Rankings (RNI 2026)

- **Countries covered:** 154
- **Top Performers:** 1st: Singapore; 2nd: Switzerland; 3rd: Denmark.
- **India’s Performance:** Ranked 16th globally, ahead of major powers such as the United States (66th) and China (68th).



INDIAN COUNCIL FOR CULTURAL RELATIONS

Context: The Minister of State for External Affairs attended a community reception in Yangon, Myanmar, highlighting the role of the Indian Council for Cultural Relations (ICCR) in strengthening cultural ties.

About Indian Council for Cultural Relations (ICCR)

- It is an **autonomous organisation under the Ministry of External Affairs**, Government of India, **established in 1950 by Maulana Abul Kalam Azad**, India's first Education Minister.
- It promotes India's cultural diplomacy through exchanges and partnerships with other countries.
- It operates a network of cultural centres (37) abroad to showcase Indian culture.

Key Functions

- Administers scholarship programmes for foreign students under 21 Schemes, Six schemes are directly funded by ICCR; others are implemented on behalf of the Ministry of External Affairs and the Ministry of AYUSH
- Organizes and participates in international conferences and seminars
- Participates in major cultural festivals abroad and organizes "**Festivals of India**", along with exchange of performing artist groups
- Runs the Distinguished Visitors Programme, inviting eminent personalities to India and sending Indian experts abroad for lectures

Objectives

- Contribute to policies and programmes on external cultural relations
- Strengthen cultural ties and mutual understanding with other countries
- Promote cultural exchange between India and the world

WAVES OTT

Context: Recently, the Publications Division made its flagship journals Yojana and Kurukshetra available free of cost on Prasar Bharati's WAVES OTT platform.

About WAVES OTT Platform

- WAVES is a **digital platform developed by Prasar Bharati** to meet India's growing demand for streaming services. It offers live TV, video-on-demand, games, radio streaming, and e-commerce services through the ONDC network. It was launched in 2024.
- Provides on-demand content such as movies, shows, e-books, and archival visuals.
- Streams live events, including religious programmes, sports (e.g., cricket), and major national events. Includes games suitable for all age groups.
- WAVES support its interface in 10+ languages and hosts content in 26+ languages.
- Currently offers access to around 65 live channels, including private broadcasters.

LOOK OUT CIRCULARS

Context: The Ministry of Home Affairs (MHA) recently revised its Look Out Circular (LOC) guidelines.

What is a Look Out Circular (LOC)?

- An LOC is an **alert issued by law enforcement agencies to the Bureau of Immigration (BoI)** (Ministry of Home Affairs) **to monitor or restrict the movement of a person across international borders.**

Objective

- To prevent a person wanted in a criminal case, economic offence, or national security investigation from leaving India.
- To enable authorities to detain, question, or inform the requesting agency when the person appears at an airport, seaport, or land border.

Legal Framework

- **LOCs do not originate from any specific statute.** However, the concept is indirectly reflected in the **Passport Act, 1967**, which empowers authorities to suspend passports and inform immigration authorities to restrict travel.

IMMIGRATION, VISA, FOREIGNERS REGISTRATION & TRACKING (LVFRT) SCHEME

Context: The Union Cabinet approved the continuation of the IVFRT Scheme beyond 31 March 2026 for a period of five years (April 2026 to March 2031), with a budget outlay of ₹1800 crore.

What is the IVFRT Scheme?

- It is a **Central Sector project** of the **Ministry of Home Affairs (MHA)** aimed at integrating and modernising immigration, visa issuance, and foreigner registration systems in India.
- It provides a **secure, technology-driven, and unified digital platform for managing cross-border movement and monitoring foreigners**.
- The core objective of the IVFRT is to modernize and upgrade immigration and visa services within a secure and integrated service delivery framework. It aims to facilitate legitimate travellers while strengthening national security.
- The project was initially approved in **2010** till September, 2014 with repeated continuations.
- The scheme covers 117 Immigration Posts (IPs), 15 FRROs, and 854 Foreigners Registration Officers (FROs)/Superintendents of Police (SPs)/Deputy Commissioners of Police (DCPs) across the country.
- It provides a **Strategic Transformation Approach**, a comprehensive modernisation of immigration and visa systems, not merely a technical upgrade.

Focus on Three Core Pillars:

- **Emerging Technology Innovations:** Adoption of advanced technologies, including unified digital platforms, mobile-based services, self-service kiosks, revamped application architecture, and strengthened network frameworks for improved efficiency and user experience.
- **Core Infrastructure Transformation:** Expansion and modernisation of Immigration Posts, Foreigners Regional Registration Offices (FRROs), and data centres to build a resilient and scalable nationwide system.
- **Technology and Service Optimisation:** Improvement of service delivery through integrated systems, enhanced efficiency, and seamless user experience.

PB-SHABD

Context: PB-SHABD, launched in 2024, has had its free membership extended till March 2027.

Prasar Bharati – Shared Audio-Visuals for Broadcast and Dissemination (PB-SHABD)

- PB-SHABD was launched by **Prasar Bharati** (under the Ministry of Information and Broadcasting) as a shared feed service.

- Prasar Bharati is an autonomous body and a public service broadcaster, established in 1997 under the **Prasar Bharati Act, 1990**, to provide autonomy to Doordarshan and Akashvani.

KEY FEATURES OF PB-SHABD				
COMPREHENSIVE COVERAGE	ACCURATE CONTENT	LIVE FEED FEATURE	MEDIA REPOSITORY	REGULAR UPDATES
DELIVERING LATEST NEWS FROM ACROSS INDIA OVER 50 CATEGORIES COVERED: AGRICULTURE, TECHNOLOGY, FOREIGN AFFAIRS, POLITICAL DEVELOPMENTS AVAILABLE IN MAJOR INDIAN LANGUAGES THROUGH REGIONAL NEWS UNITS (RNU) & HEADQUARTERS.	TIMELY, ACCURATE, & AUTHENTIC NEWS NO SUBSCRIPTION FEES, LOGOS, OR MANDATORY ATTRIBUTION FAKE OR EDITED CONTENT IDENTIFIED AND BLOCKED PROMPTLY.	VIEWING OF LIVE EVENTS OF NATIONAL IMPORTANCE OFFICIAL PRESS CONFERENCES SPECIAL EVENTS PROVIDED WITHOUT LOGOS OR WATERMARKS.	PUBLIC ARCHIVAL LIBRARY EASY ACCESS TO PAST FOOTAGE & CONTENT.	CONTINUOUS UPDATES PROVIDED: WEATHER REPORTS, INTERVIEWS, EXPERT OPINIONS, ARTICLES HELPING USERS SAVE TIME AND EFFORT.

- It provides a **wide range of copyright-free daily news content**, including video, audio, text, and photographs, to organised broadcasters such as YouTubers, podcasters, and news channels.

GOVERNMENT BANK DASHBOARD AND MANUAL LAUNCHED

Context: The Controller General of Accounts (CGA) launched two major initiatives aimed at strengthening the governance and efficiency of banks handling government transactions.

Government Bank Dashboard	Government Bank Manual
• It introduces real-time, data-driven monitoring of critical banking functions related to government transactions. • It tracks key performance indicators such as remittance timelines, scroll compliance, reconciliation status, transaction success rates, and adherence to service-level standards.	• It provides a comprehensive and standardised framework for banks handling government business. • Its objective is to reduce ambiguity, mitigate operational risks, and strengthen accountability across all stakeholders.

About Controller General of Accounts of India (CGAI)

- CGA is the **Principal Accounting Adviser** to Government of India and is **responsible for establishing and maintaining a technically sound Management Accounting System.**
- The CGA functions under the **Department of Expenditure, Ministry of Finance.**
- The CGA **prepares monthly and annual analyses** of expenditure, revenues, borrowings, and various fiscal indicators for the Union Government.
- It submits the Annual Appropriation Accounts (Civil) and Union Finance Accounts to Parliament in accordance with **Article 150 of the Constitution.**
- Along with these documents, a **Management Information System (MIS) report** titled **Accounts at a Glance** is prepared and shared with Members of Parliament.

GRUH SUGAM PORTAL

Context: The **National Housing Bank (NHB)** recently launched the Gruh Sugam Portal to promote a cost-effective housing finance system for defence and government personnel.

Salient Features of the Portal

- **End-to-End Digital Loan Application:** Defence personnel, paramilitary forces, and Central/State government employees can apply for housing loans entirely online through their respective administrative units, eliminating the need to visit banks or financial institutions physically.
- **Unified Digital Marketplace:** Enables transparency and helps users discover the most suitable loan offers.
- **Improved Loan Processing Efficiency:** Streamlines procedures to reduce delays in loan approval and disbursement.
- **Grievance Redressal Mechanism:** Provides a system for addressing user complaints and issues.
- **Seamless Institutional Integration:** Integrates NHB with lending institutions to ensure smooth and efficient operations.
- **Real-Time Query Resolution:** Offers an online chat facility for instant resolution of user queries.

SOCIAL ISSUES

HEALTH

EUTHANASIA

Context: For the first time, the SC allowed passive euthanasia (withdrawal of life support) for a patient in a long-term vegetative state.

About Euthanasia:

- Euthanasia refers to intentionally ending a person's life to relieve suffering in cases of terminal illness or irreversible conditions.
- **Ethical aspect:** Balances dignity and autonomy of the patient with the sanctity of life.
- **Medical aspect:** Applied when treatment becomes futile, burdensome, and offers no chance of recovery.
- **Types of Euthanasia:**
 - **Active Euthanasia:** Deliberate act (e.g., lethal injection) to end life. It is **illegal** in India.
 - **Passive Euthanasia:** Withdrawal or withholding of life-sustaining treatment. Legally permitted under strict conditions.
- **Legal Framework in India:**
 - **Bharatiya Nyaya Sanhita (BNS), 2023:** Active euthanasia may amount to culpable homicide. Assisting suicide can attract criminal liability
 - **Passive Euthanasia:** Allowed as it lets the disease take its natural course. Linked to Article 21 (Right to Life), which includes the right to live with dignity
- **Law Commission Recommendations: 196th Report (2006) and 241st Report (2012):** Supported legalising passive euthanasia Suggested safeguards and procedures

Related Cases

- **Aruna Shanbaug v. Union of India (2011):** Allowed passive euthanasia under strict conditions, with approval from the High Court and medical experts.
- **Common Cause v. Union of India (2018):** Recognised right to die with dignity as part of Article 21; legalised Living Wills and set guidelines.
- **Common Cause v. Union of India (2023):** Simplified procedure by reducing court involvement and introducing a two-tier medical board system.

EDUCATION

SKILLS OUTCOMES FUND

Context: The Minister of Skill Development and Entrepreneurship, has launched a national campaign to establish the Skills Outcomes Fund.

About Skills Outcomes Fund

- It is a first-of-its-kind initiative **aimed at creating better livelihood opportunities for youth from low-income backgrounds**. It focuses on outcomes-based financing (OBF), where funding is linked to verified employment results, not just training completion.
- **Objective:** To mobilise public and private capital and scale outcome-based models in India's skilling ecosystem.
- **Institutional Framework:** Anchored by the **National Skill Development Corporation (NSDC)** under the Ministry of Skill Development and Entrepreneurship (MSDE). **Implemented in partnership with non-profit and philanthropic organisations.**

- It is a **Demand-Driven Model**, where training is aligned with industry needs, ensuring better job placement outcomes.
- **Focus Sectors:** IT and IT-enabled services (IT-ITeS), Banking, Financial Services, and Insurance (BFSI), Automotive and manufacturing, Healthcare, Logistics and supply chains, Electronics and semiconductors, Green jobs and sustainability sectors
- It **builds on the Skill Impact Bond (2021)**, India's first outcomes-based skilling initiative led by NSDC.

VULNERABLE SECTIONS

PROTECTION OF CHILDREN FROM SEXUAL OFFENCES (POCSO) ACT 2012

Context: SC has urged the Union Law Secretary to consider steps to prevent the misuse of the POCSO Act, 2012, particularly in cases involving consensual adolescent relationships.

- To address misuse of the law, a “**Romeo and Juliet**” exception has been proposed, under which consensual relationships between adolescents close in age (such as a 16 and 17-year-old) would not attract criminal liability, thereby preventing unnecessary incarceration under the POCSO framework.

Protection of Children from Sexual Offences (POCSO) Act 2012

- It is the first comprehensive law in India to address child sexual abuse. Administered by the Ministry of Women and Child Development, the Act aims to:
 - Protect children from sexual assault, harassment, and pornography.
 - Establish Special Courts for speedy trials.
 - Amended in 2019 to introduce stricter penalties for specific offences.

Key Provisions:

- **Gender-neutral:** Defines a child as any person under 18 years.
- **Mandatory Reporting:** Failure to report a sexual offence by a person in charge of an institution (excluding children) is punishable.
- **No Time Limit:** Abuse can be reported at any time, even years after the incident.
- **Confidentiality:** Prohibits disclosure of the victim's identity in media unless approved by Special Courts.

PREVENTION OF SEXUAL HARASSMENT (POSH) ACT, 2013

Context: The Supreme Court expanded the PoSH Act by allowing a woman to file complaints with her own workplace's ICC even if the harasser belongs to another workplace.

About PoSH Act, 2013

- The PoSH Act, 2013, formally known as the **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act**, is a law aimed at protecting women from sexual harassment in workplaces.
- It is derived from the Supreme Court judgment in *Vishaka v. State of Rajasthan (1997)*.

Key Definitions and Sections

- **Sexual Harassment:** It includes one or more of the following unwelcome acts or behaviour (directly or by implication), including – Physical contact or advances; A demand or request for sexual favours; Making sexually coloured remarks; Any other unwelcome physical, verbal, or non-verbal conduct of a sexual nature.
- **Workplace:** Any place visited by an employee arising out of or during employment, including transportation provided by the employer, in organised and unorganised sectors.

- **Aggrieved Woman:** It includes all women, regardless of age or employment status, in organised or unorganised sectors, and in public or private establishments. Covers clients, customers, and domestic workers.

GRIEVANCE REDRESSAL MECHANISM IN POSH ACT	
 INTERNAL COMPLAINTS COMMITTEE (ICC) Mandatory in every public or private organisation employing 10 or more employees. Composition of ICC: Minimum four members, with at least half being women: • A Presiding Officer; must be a woman • Two employee members, preferably committed to women's causes or having social work or legal experience; • One member from an NGO or association committed to women's causes.	 LOCAL COMPLAINTS COMMITTEE (LCC) Constituted by the District Officer to receive complaints from organisations with fewer than 10 workers. Composition of LCC: Minimum five members, with at least half being women: • A Chairperson from eminent women in social work committed to women's causes; • One woman member working at the block, taluka, tehsil, ward, or municipal level; • Two members (at least one woman) from NGOs or associations committed to women's causes; • The concerned district officer dealing with social welfare or women and child development (member ex-officio).
 Tenure of ICC and LCC members: Three years.	 Both ICC and LCC have powers similar to those of a civil court.

- **Procedure for Filing a Complaint:** Any aggrieved woman or her legal heir may file a complaint before the ICC or LCC. The complaint must be filed within three months of the incident. The ICC or LCC may extend this period by a further three months for valid reasons.
- **Conciliation:** Before initiating an inquiry, the ICC or LCC may, at the aggrieved woman's request, attempt conciliation. No monetary settlement shall form the basis of conciliation.
- **Inquiry into the Complaint:** The ICC or LCC may forward the complaint to the police or conduct an inquiry, to be completed within 90 days. The inquiry report must be submitted to the employer within 10 days.
- **Action Against the Perpetrator:** If allegations are proved, the ICC or LCC shall recommend action by the employer as per applicable service rules.
- **Appeal:** An appeal may be filed by the aggrieved woman or the respondent before the appropriate court or tribunal within 90 days.

SANKALP SCHEME

Context: The Public Accounts Committee (PAC) recently criticised the government for the "lackadaisical" implementation of the SANKALP scheme.

About the SANKALP Scheme

- Skills Acquisition and Knowledge Awareness for Livelihood Promotion (SANKALP) is a **Centrally Sponsored Scheme** of the **Ministry of Skill Development and Entrepreneurship (MSDE)**.
- It was **launched in 2018** with World Bank loan assistance. Initially scheduled until March 2023, the scheme was later **extended to March 2024**.
- **Objective:** To strengthen short-term skill training and institutional capacity in the skill development ecosystem.
- **Total outlay:** ₹4,455 crore [World Bank loan (₹3,300 crore), State leverage (₹660 crore), Industry leverage (₹495 crore)]
- **Key Result Areas:** Institutional strengthening at national, state, and district levels; Quality improvement and assurance of skill development programmes; Inclusion of marginalized populations in skill training initiatives
- **Implementation Features:**
 - World Bank funding is linked to DLIs (Disbursement Linked Indicators), meaning funds are released after specific performance targets are achieved.
 - IIM Indore functions as the Independent Verification Agency (IVA).

- **Focus areas include:** Recognition of Prior Learning (RPL); District Skill Committees; Skill India Portal; Gender Action Plan; State Incentive Grants.

Steps Taken by the Government to Promote Skill Development & Entrepreneurship

- **Skill India Mission (SIM):** Launched in 2015, the mission aims to equip youth with industry-ready and future-ready skills through nationwide training networks under the Ministry of Skill Development and Entrepreneurship (MSDE). It functions as the umbrella mission for India's skill development initiatives.
- **Skill India Programme:** Approved for 2022–23 to 2025–26, this programme merges three major schemes into a single Central Sector Scheme:
 - **PM Kaushal Vikas Yojana (PMKVY) 4.0 (2022–26):** Launched in 2015, it provides short-term skill training and upskilling/reskilling
 - **PM National Apprenticeship Promotion Scheme (PM-NAPS):** To promote apprenticeship training in the country and increase engagement of apprentices in industrial establishments.
 - **Jan Shikshan Sansthan (JSS) Scheme:** Provides vocational training to non-literates, neo-literates, and school dropouts (aged 15-45) to enhance employability and income. Priority groups are women, SCs, STs, OBCs and minorities in the rural areas and urban low-income areas

PANKHUDI PORTAL

Context: The Ministry of Women and Child Development has launched PANKHUDI Portal.

- The PANKHUDI portal has been created to **serve as a bridge between organisations, individuals, and corporates under CSR initiatives**, enabling meaningful partnerships to support activities aligned with three flagship missions — Mission Saksham Anganwadi & Poshan 2.0, Mission Shakti, and Mission Vatsalya.
- It provides a seamless digital platform that **connects contributions with services under these missions**, promoting the holistic development of women and children and encouraging active participation in nation-building.
- The portal will also provide a nationwide view of projects, track their progress, and enable stakeholders to participate meaningfully in the collective effort of nation-building.
- **Stakeholders:** Individuals, Non-Resident Indians (NRIs), Non-Governmental Organisations (NGOs), and corporate entities through CSR.

CHILD TRAFFICKING

Context: India's efforts against child trafficking are under renewed scrutiny following recent judicial directions and data showing low conviction rates despite large-scale rescues.

Understanding Child Trafficking

- A grave human rights violation involving the recruitment, transportation, harbouring, or receipt of children for exploitation.
- Forms of exploitation include forced labour, sexual exploitation, slavery, servitude, and organ removal.

Legal Definitions: International and Domestic

- **International Framework: The Palermo Protocol (2000)** defines child trafficking as the exploitation of a child irrespective of consent — a principle adopted by India. India signed it on December 12, 2002, and officially ratified it in May 2011.
- **Domestic Law:** Bharatiya Nyaya Sanhita (BNS), 2023 provides a broad definition covering coercion, deception, abuse of power, and inducement for multiple forms of exploitation (physical, sexual, economic, and organ trafficking).

Constitutional Protection

Key Legislations

- | | |
|---|---|
| <ul style="list-style-type: none"> • Article 23: Prohibits trafficking and forced labour. • Article 24: Bans child labour in hazardous industries. • Article 39(e) & (f): Directs the State to ensure the protection, dignity, and healthy development of children. | <ul style="list-style-type: none"> • BNS, 2023: Criminalises trafficking and the buying and selling of minors. • Immoral Traffic (Prevention) Act, 1956: Targets sexual exploitation. • Juvenile Justice (Care and Protection of Children) Act, 2015: Provides for care, rehabilitation, and reintegration. • POCSO Act, 2012: Contains stringent, gender-neutral provisions and provides for fast-track courts for speedy trials |
|---|---|

NATIONAL SCHEDULED TRIBES FINANCE AND DEVELOPMENT CORPORATION

Context: The National Scheduled Tribes Finance and Development Corporation (NSTFDC) celebrates its 25th Foundation Day on 10 April at New Delhi.

About NSTFDC (HQ: New Delhi)

- Established in **2001**, it is a **Public-Sector Undertaking (PSU)** under the **Ministry of Tribal Affairs, Government of India**.
- **Objective:** To promote the socio-economic and educational development of Scheduled Tribes (STs) by supporting self-employment and income generation, leading to economic independence.
- **Composition: Managed by a Board of Directors** comprising representatives from: Central Government; State Channelising Agencies (SCAs); NABARD; Industrial Development Bank of India (IDBI); Tribal Cooperative Marketing Development Federation of India (TRIFED); Three eminent members from Scheduled Tribes

Key Functions

- Create awareness about concessional schemes among ST communities.
- Provide skill development and capacity-building support for beneficiaries and officials of State Channelising Agencies (SCAs).
- Offer concessional finance for viable income-generating activities through SCAs and other agencies.
- Facilitate market linkages for tribal products.

E-SAFEHER INITIATIVE

Context: Recently, the Centre for Development of Advanced Computing (C-DAC), Hyderabad, under the MeitY, and Reliance Foundation announced the launch of the e-SafeHER initiative.

About e-SafeHER Initiative

- It is a **cybersecurity awareness training programme** aimed at empowering one million women across rural India.
- It seeks to strengthen last-mile cybersecurity awareness, especially among rural women who are increasingly using digital platforms for financial transactions, livelihoods, and access to essential services.
- The initiative leverages Ministry of Electronics and Information Technology (MeitY)'s **Information Security Education and Awareness (ISEA) Programme** and will be jointly delivered by **C-DAC, Hyderabad** and **Reliance Foundation**
- The initiative aims to empower one million **"Cyber Sakhis" (digital friends/companions)** in rural India over a period of three years.

About Information Security Education and Awareness (ISEA)

- It is an initiative of the Ministry of Electronics and Information Technology (MeitY).
- It was **launched in 2005** and is currently in its third phase (from October 2023 onwards).
- **Purpose:** To develop human resources in the field of information security and to promote awareness about cyber hygiene and cybersecurity among the general public.

- **Aim:** To build a safe, trusted, and secure cyberspace through capacity building and awareness.

JUANG TRIBE

Context: A 16-year-old Juang tribal girl in Odisha has helped change village attitudes toward child health and child marriage.

About Juang Tribe

- Juang is one of the 13 **Particularly Vulnerable Tribal Groups (PVTGs)** among 62 tribes in Odisha. **They are mainly found in Keonjhar and Dhenkanal districts.**
- **Language:** Speak the Juang language, part of the Munda branch of Austroasiatic languages.
- **Occupation:** Traditionally depended on hunting, gathering, and small-scale cultivation. After forests were declared reserves during British rule, many shifted to basket-weaving and barter trade for essentials.
- **Clothing:** Earlier called “leaf-wearers” (Patuas); women wore leaf girdles, while men used loincloths.
- **Beliefs:** Practice mainly animistic traditions with the sun as the supreme deity. Also incorporate some Hindu beliefs along with tribal gods and goddesses.

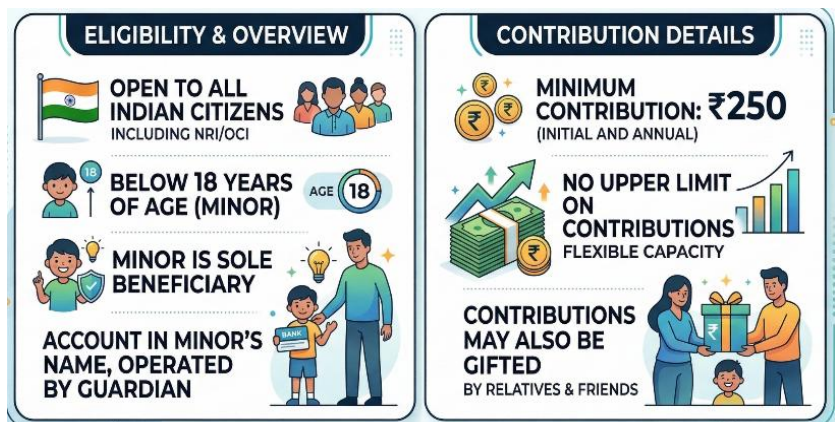
MISCELLANEOUS

NPS VATSALYA SCHEME

Context: The PFRDA issued NPS Vatsalya Scheme Guidelines 2025 to strengthen long-term financial security for Minors.

About National Pension System Vatsalya (NPS Vatsalya)

- NPS Vatsalya is a **contributory pension scheme** regulated and administered by the **Pension Fund Regulatory and Development Authority (PFRDA)**. It is designed specifically for **Indian minor citizens up to the age of 18 years**.
- NPS Vatsalya was announced in the Union Budget for FY 2024-25.



INTERNATIONAL RELATIONS

INDIA'S BILATERAL RELATIONS

FREE TRADE AGREEMENTS

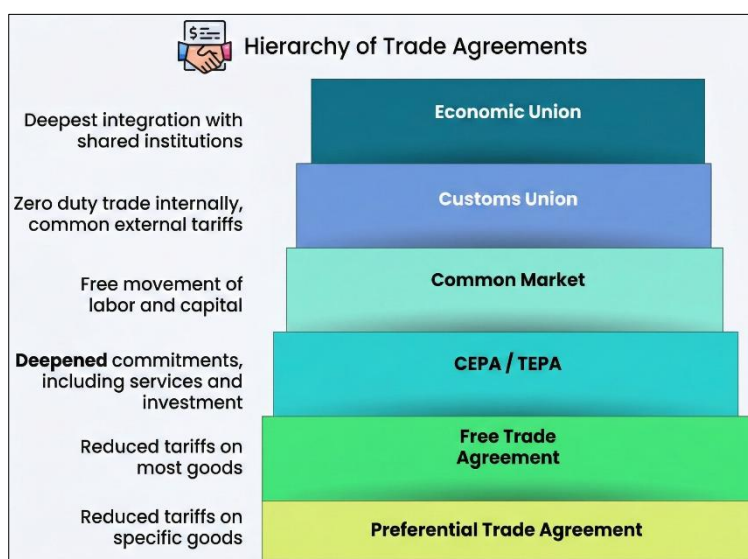
Context: India's recent Free Trade Agreement (FTA) with the European Union has added another link to its expanding global trade network.

What is a Free Trade Agreement (FTA)?

- A FTA is a formal agreement between two or more countries (or regional groups) aimed at reducing or eliminating barriers to trade.
- These barriers usually include import tariffs, quotas, and regulatory restrictions that make international trade more difficult.

India's Recent Push for Bilateral Trade Deals

- **India-UAE CEPA (2022):** A comprehensive partnership covering trade in goods, services, and digital commerce.
- **India-Australia ECTA (December 2022):** Ensures improved access to important raw materials and strengthens supply chains.
- **India-EFTA TEPA (March 2024):** Concluded with the European Free Trade Association economies (Iceland, Liechtenstein, Norway, and Switzerland)
- **India-UK CETA (July 2025):** Provides duty-free entry for 99% of Indian exports and seeks to raise bilateral trade to \$112 billion by 2030.
- **India-Oman CEPA (December 2025):** Removes tariffs on more than 99% of India's exports to Oman.
- **India-New Zealand FTA (December 2025):** The conclusion of negotiations completes India's objective of trade agreements with all RCEP economies except China.
- **India-EU FTA (January 2026):** "Mother of all deals," it covers almost 99% of India's export value to the European Union.



Legal Basis for Free Trade Agreements

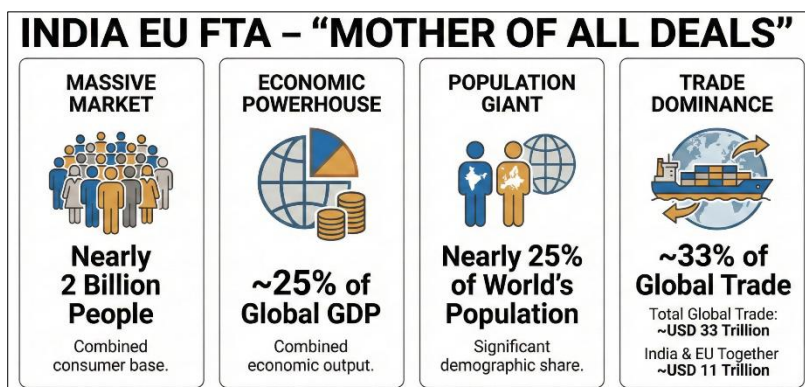
- Under the World Trade Organization (WTO) system, countries are generally required to follow the Most Favoured Nation (MFN) principle, treating all trading partners equally. However, **Article XXIV of the GATT** permits the creation of free trade agreements as an exception.
- These arrangements must cover a substantial share of trade among members and **should not raise barriers against non-members**.
- Another provision, the **Enabling Clause**, allows **developing countries to lower tariffs on selected products without fully opening their markets**.

INDIA-EU FTA

Context: India and the European Union have concluded a comprehensive Free Trade Agreement (FTA), described by EU leadership as the "mother of all deals."

About India EU FTA

- It is among the largest bilateral trade agreements globally in terms of economic size, regulatory depth, and population coverage.
- The agreement **provides India preferential access to all 27 EU member states** under a **single customs union framework**.



What India Gains from the India–EU FTA

- Immediate duty elimination by the EU on 70.4% of tariff lines**, covering 90.7% of India's export value.
- Phased tariff elimination over 3–5 years on another 20.3% of tariff lines, covering 2.9% of exports.
- Partial reductions or quota-based access on 6.1% of tariff lines, covering 6% of exports.
- Overall, more than 99% of India's export value to the EU benefits from tariff concessions.**
- Broader commitments across 144 services sub-sectors, including IT/ITeS, professional services, education, and business services
- Exclusions:** Beef, sugar, rice, chicken meat, milk powder, honey, bananas, soft wheat, garlic, and ethanol are excluded. Quota-based access (not full liberalisation) applies to select items such as sheep and goat meat, grapes, cucumbers, dried onions, and rum.

What India Has Offered the EU

- Immediate elimination on 49.6% of tariff lines**, covering 30.6% of trade value.
- Phased elimination on 39.5% of tariff lines, covering 63.1% of trade value over 5, 7, or 10 years.
- Overall coverage includes 92.1% of tariff lines and 97.5% of trade value.**
- Wine:** Duties reduced from about 150% to 30% for wines priced €2.5–€10 and to 20% for wines above €10 over seven years. Cheap wine is excluded, and all concessions are quota-based
- Automobiles:** Tariffs reduced from 110% to 10%, strictly under quotas. Cars priced below ₹25 lakh are excluded, while higher-end vehicles are divided into quota brackets to protect domestic manufacturers.
- Exclusions:** Sensitive agriculture sectors such as beef, poultry, dairy, fish and seafood, cereals (rice and wheat), fruits and vegetables, nuts, edible oils, tea, coffee, spices, and tobacco are excluded.

INDIA INTERNATIONAL INSTITUTE OF DEMOCRACY AND ELECTION MANAGEMENT

Context: The India International Conference on Democracy and Election Management (IICDEM) 2026 was organized by the Election Commission of India (ECI) through IIIDEM in January, 2026.

Theme: "Democracy for an inclusive, peaceful, resilient and sustainable world."

About India International Institute of Democracy and Election Management (IIIDEM)

- IIIDEM is an autonomous institution under India's Election Commission (ECI), established in **June 2011** to enhance election management expertise and promote democratic values.
- IIIDEM is a global knowledge and capacity-building centre dedicated to advancing democratic governance and strengthening electoral integrity.
- It serves as an international forum for dialogue, learning, and innovation on democratic processes, bringing together experts, institutions, and practitioners from around the world.

- IIIDEM was created to professionalize election processes, drawing from ECI's mandate under the Indian Constitution for conducting national, state, and presidential polls.
- **Operates under ECI leadership with a Director General.**
- It features five wings: Training and Capacity Development, Voter Education, Research and Documentation, International Cooperation, and Administration.

SECOND INDIA-ARAB FOREIGN MINISTERS' MEETING

Context: India hosted the second India–Arab Foreign Ministers' Meeting in New Delhi, bringing together 22 members of the **League of Arab States**, a decade after the first meeting in Bahrain.

About Arab League

- The League of Arab States is a regional organisation of Arab countries formed in **1945** to **promote political, economic, cultural, and security cooperation among its members.**
- Founded on March 22, 1945, in Cairo, Egypt, following the Alexandria Protocol of 1944.
- **Founding Members:** Egypt, Iraq, Jordan, Lebanon, Saudi Arabia, and Syria.
- **Membership:** 22 Arab countries from West Asia and North Africa. (*India is an Observer*)
- **Headquarters:** Cairo, Egypt
- **Objectives**
 - Strengthen coordination and collaboration among Arab states.
 - Safeguard the sovereignty, territorial integrity, and independence of members.
 - Promote common positions on regional conflicts, especially the Palestine issue.
 - Enhance cooperation in trade, education, culture, health, and media.



SUMMITS AND ORGANISATIONS

INTERNATIONAL RENEWABLE ENERGY AGENCY (IRENA)

Context: The sixteenth session of the International Renewable Energy Agency (IRENA) Assembly concluded in Abu Dhabi, UAE with adoption of IRENA's Medium-term Strategy 2023-2027 Evaluation and Work Programme.

About International Renewable Energy Agency (IRENA)

- IRENA is an intergovernmental organization focused on **advancing renewable energy globally**, founded in **2009** with its **headquarters in Abu Dhabi, UAE.**
- IRENA supports countries transitioning to sustainable energy through policy advice, research, and international cooperation.
- It promotes renewables like solar, wind, hydropower, geothermal, ocean, and bioenergy to drive energy access, security, and low-carbon growth.
- **Membership:** Over 170 countries and the European Union. India is a founding member.
- **Key Functions**
 - Promotes adoption of renewable energy worldwide and provides policy advice, capacity building, and technical assistance to member countries.
 - Acts as the **official custodian for tracking progress on the “UAE Consensus” goals adopted at COP28.**
 - Publishes the **World Energy Transitions Outlook**, a major report assessing global renewable energy transitions.

UN CONVENTION AGAINST CORRUPTION (UNCAC)

Context: The 11th Conference of the States Parties (COSP-11) to the UN Convention against Corruption concluded with the adoption of the Doha Declaration, 2025.

About the UN Convention against Corruption

- It is the **only legally binding universal international instrument against corruption**.
- **Adopted:** 2003 by the UN General Assembly, New York | **Enforced:** 2005
- **Objectives:** Prevent and combat corruption; Promote integrity, transparency, and accountability; Facilitate international cooperation; Enable recovery of assets obtained through corruption
- **Membership:** 140 signatories and 192 States Parties. **India has been a Party to the Convention since 2011.**
- The UN Office on Drugs and Crime (UNODC) in Vienna serves as the Secretariat.

WORLD SUMMIT ON THE INFORMATION SOCIETY

Context: The year 2025 marked 20 years since the inception of WSIS.

About World Summit on the Information Society (WSIS)

- WSIS is a **two-phase UN summit**, first introduced by Tunisia in 1998 to create an evolving multi-stakeholder platform to address issues raised by information and communication technologies (ICTs) at the national, regional, and international levels.
- **Phase I: Geneva, 2003;** Adopted the *Declaration of Principles and Plan of Action*
- **Phase II: Tunis, 2005;** Adopted the *Tunis Agenda for the Information Society*
- **Goal:** To build “a people-centered, inclusive, and development-oriented Information Society”.
- **WSIS Forum:**
 - **Co-organised annually by** International Telecommunication Union, UNESCO, UNDP, UNCTAD
 - **Co-hosted by:** International Telecommunication Union (ITU), Swiss Confederation
- **Review Process:** Periodic assessment through WSIS+10 and WSIS+20 to evaluate progress and future priorities in global digital cooperation.

THREE SEAS INITIATIVE (3SI)

Context: 2025 3SI Summit (in April, 2025 at Warsaw, Poland), marked the 10th anniversary of 3SI.

About Three Seas Initiative (3SI)

- 3SI is a **regional forum promoting infrastructure and economic ties among 13 EU countries** between the **Baltic, Adriatic, and Black Seas**.
- **Formation:** Established in 2015 by the former Presidents of Poland and Croatia.
- **Members:** Austria, Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. (All are EU states; 12 are NATO allies).
- **Key Goals:** It prioritizes cross-border projects in energy, transport, and digital sectors to boost economic growth and EU cohesion.
- **Three Seas Initiative Investment Fund (3SIIF)** was established in 2019 and mobilizes private capital for strategic projects.



INTERNATIONAL TELECOMMUNICATIONS UNION

Context: The World Telecommunication Development Conference (WTDC-25) of the International Telecommunication Union, held once every four years, concluded in Baku, Azerbaijan.

About the International Telecommunication Union (ITU)

- ITU is a **UN specialized agency** focused on **information and communication technologies (ICTs)**. It coordinates global telecom standards, spectrum allocation, and digital access initiatives. It is oldest agency in the UN family
- **History:** Originated as the **International Telegraph Union** in **1865**, to regulate cross-border telegraphy. It **joined the UN family in 1947** and has since evolved to address radio, satellites, mobile networks, and the internet.
- **Members:** 194 Member States (**Including India**) and more than 1000 companies, universities and international and regional organizations.
- **Headquarters:** Geneva, Switzerland, with regional offices on every continent

WASHINGTON ACCORDS FOR PEACE AND PROSPERITY

Context: The agreement between the Democratic Republic of the Congo (DRC) and Rwanda was signed in December, 2025, in Washington, D.C, under U.S. facilitation by US President Trump.

About Washington Accords for Peace and Prosperity

- The accords bundle a **core peace agreement**, a **Regional Economic Integration Framework (REIF)**, and **bilateral U.S. pacts with each nation**.
- They mandate a permanent **ceasefire**, Rwandan troop withdrawal from eastern DRC, neutralization of armed groups like **M23 rebels** and **FDLR** (Democratic Forces for the Liberation of Rwanda, an ethnic Hutu rebel group), and **humanitarian access**.
- **Aim:** To rebuild trust between DRC and Rwanda and to ensure lasting peace and stability in the mineral-rich eastern regions of DRC, including Katanga, Kivu, and Ituri.
 - **DRC is the world's largest producer of cobalt**, accounting for nearly 70% of the global supply.

ACCRA CONVENTION, 2025

Context: The **United Nations Convention on Negotiable Cargo Documents**, known as the Accra Convention, was adopted by the UN General Assembly on December 15, 2025.

About Accra Convention (United Nations Convention on Negotiable Cargo Documents)

- The Convention establishes a **uniform legal framework for the issuance and use of Negotiable Cargo Documents (NCDs)**.
 - NCDs are a **form of document of title**, issued in paper or electronic form, **representing goods in transit** irrespective of the mode of transport (sea, rail, road, or air). They confer rights over goods to the holder which are transferrable.
- The Convention extends the benefits of negotiable documents beyond maritime transport to **multimodal transport**. It enables the **use of a single NCD for the entire journey**.
- **Aim:** To facilitate trade finance, enable the sale of goods in transit, promote multimodal transport, and support the digitalization of global trade.
- NCDs have the same legal value as physical delivery of goods, even when issued digitally.
- It complements existing transport law conventions such as: Hamburg Rules, Rotterdam Rules.

TRUMP UNVEILS THE 'BOARD OF PEACE'

Context: Donald Trump unveiled a Board of Peace at Davos. The first meeting of the new Board was held in Washington, DC.

About Trump's Board of Peace

- Proposed in September 2025, the Board of Peace is a **US-led intergovernmental platform for global conflict resolution and post-war reconstruction**.

- Conceived to **oversee “Phase Two” of the US-brokered Gaza ceasefire following the 2023–25 conflict**
- It was endorsed by the UN Security Council (Resolution 2803) to support Gaza reconstruction, but is operating outside the UN system.
- **Immediate Mandate:**
 - Supervision of the National Committee for the Administration of Gaza (NCAG), a Palestinian technocratic authority.
 - Oversight of Gaza’s reconstruction and the disarmament of Hamas.
- **Leadership:** Chaired by Donald Trump, Key members include Jared Kushner, Tony Blair, and Marco Rubio.
- **Composition:** Participating countries include USA, Argentina, Saudi Arabia, Israel, the UAE, Egypt, Turkey, Qatar, Pakistan, Indonesia, and Vietnam. **India** Joined as an Observer. (as of Feb 2026)

MERCOSUR

Context: The European Union and the Mercosur bloc are set to sign their long-pending free trade agreement in Asuncion, concluding negotiations that began in 1999.

About MERCOSUR (Southern Common Market)

- MERCOSUR is a **South American trade bloc** established in 1991 by Argentina, Brazil, Paraguay, and Uruguay to facilitate free trade, investment, and the movement of goods, services, and people.
- Established by the **Treaty of Asunción**, it represents the world's 6th largest economy. The **1994 Protocol of Ouro Preto** formalized its structure as a customs union with a common external tariff.
- **Members:** Argentina, Brazil, Paraguay, Uruguay, and Bolivia. [*Venezuela (suspended)*]
- **Associate members:** Chile, Colombia, Ecuador, Guyana, Panama, Peru, and Suriname,
- **Headquarters:** Montevideo, Uruguay

- ➔ Mercosur aims to:
- Create a common market
 - Eliminate internal trade barriers
 - Harmonise economic policies
 - Enable free movement of goods, services, capital, and people
 - Promote regional trade and cooperation

28TH COMMONWEALTH SPEAKERS’ CONFERENCE (CSPOC)

Context: The 28th Conference of Speakers and Presiding Officers of the Commonwealth (CSPOC) was hosted by India in New Delhi. The 29th CSPOC will be held in London in 2028.

About Conference of Speakers and Presiding Officers of the Commonwealth (CSPOC)

- Established in **1969**, CSPOC serves as a **high-level forum for Speakers and Presiding Officers of Commonwealth legislatures**.
- It brings together **Speakers and Presiding Officers from 53 national parliaments of sovereign Commonwealth states and 14 semi-autonomous parliaments**.
- It focuses on strengthening democratic governance, constitutional institutions, and parliamentary practices.
- CSPOC functions as an **independent parliamentary body, with no formal affiliation to the Commonwealth Parliamentary Association (CPA) or the Commonwealth Secretariat**.
- It is convened **biennially**, with a Standing Committee meeting in the intervening year to ensure continuity, finalise agendas, and take organisational decisions. **Canada has hosted its secretariat since inception**.

India’s Role in CSPOC

- India has been a consistent and active participant, hosting CSPOC four times: 1970–71, 1986, 2010, and 2026.

- India chaired the CSPOC Standing Committee meeting in Guernsey (January 2025), shaping the agenda and institutional direction for the 2026 Conference.

PAX SILICA

Context: India has joined the Pax Silica initiative by becoming a signatory to the Pax Silica Declaration.

- Pax Silica is a U.S.-led strategic initiative that seeks to develop a secure, resilient, and innovation-driven silicon and semiconductor supply chain.
- **Members:** Japan, Republic of Korea, Singapore, the Netherlands, United Kingdom, Israel, United Arab Emirates, Australia, and **India**.

(Detailed Explanation in Prelims KnockOut Part 1, Page 116)

INDO-PACIFIC OCEANS INITIATIVE (IPOI)

Context: Spain has become the newest participant in the Indo-Pacific Oceans Initiative (IPOI).

About Indo-Pacific Oceans Initiative (IPOI)

- **India launched IPOI in 2019**, at the 14th East Asia Summit in Bangkok, Thailand. It builds on PM Modi's 2015 SAGAR (Security and Growth for All in the Region) vision.
- IPOI is a **collaborative platform designed to strengthen cooperation across the Indo-Pacific region**. The **Indo-Pacific** refers to the **connected maritime region stretching from the Indian Ocean to the Pacific Ocean**.
- The initiative operates as a **voluntary** and **non-treaty arrangement**, encouraging countries to work together in support of an open maritime space and a rules-based regional order.
- It functions without formal membership lists or strict institutional structures.
- **Objective:** To promote cooperation for a free and open Indo-Pacific and the rules-based regional order, which will contribute towards strengthening safety, stability and development in the maritime domain.
- **The seven pillars of the IPOI are:** Maritime Security; Maritime Ecology; Maritime Resources; Capacity Building and Resource Sharing; Disaster Risk Reduction and Management; Science, Technology and Academic Cooperation; and Trade, Connectivity and Maritime Transport.

INDIA'S BID FOR FULL IEA MEMBERSHIP

Context: At its recent ministerial meeting, the International Energy Agency (IEA) acknowledged progress on India's request for full membership. India is currently an associate member.

About International Energy Agency (IEA)

- The IEA was established in **1974** following the global oil crisis triggered by the Arab oil embargo during the **Yom Kippur War**.
- It was created by 17 OECD countries to strengthen collective energy security.

- **Core Objectives:** Ensure stable oil supplies; Coordinate emergency responses to energy supply disruptions; Mandate minimum strategic oil reserves for member countries.

- **Headquarters:** Paris, France

Emergency Mechanism

- A central objective of the IEA is to **safeguard stable oil supplies and anticipate potential disruptions through coordinated action.**
- A key feature of its framework requires each member **country to maintain minimum strategic oil stocks to cushion supply shocks.**
- This emergency mechanism has been activated multiple times, including during the 1991 Gulf War and after Russia's invasion of Ukraine in 2022.



Membership Structure

- The IEA family is made up of 32 Member countries, 13 Association countries, and 5 Accession countries seeking IEA membership
- In 2015, the IEA created an associate membership category for non-OECD countries. India became an associate member in 2017.
- **Associate members** can participate in discussions but **do not have voting rights.**

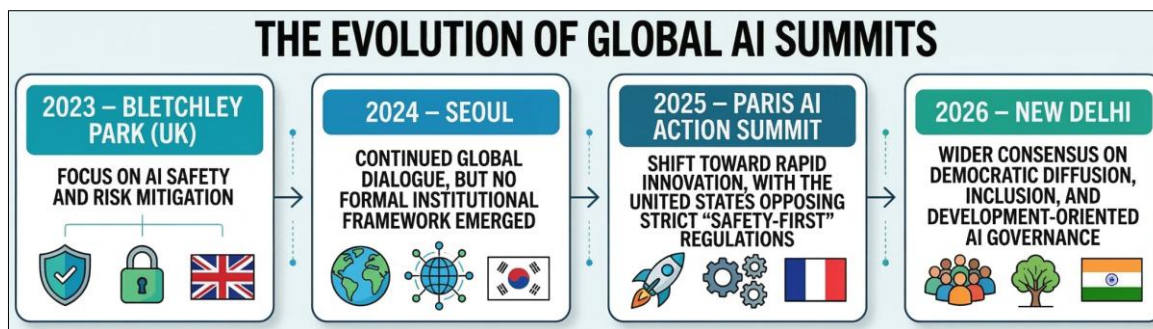
WEIMAR TRIANGLE

Context: In January 2026, the Weimar Triangle engaged with India for the first time.

- The Weimar Triangle is a key **political, diplomatic, and security cooperation framework** established in **1991** in Weimar, Germany, involving **France, Germany, and Poland.**
- **Designed to foster reconciliation and European integration post-Cold War**, it supports Poland's NATO/EU integration, security, and policy alignment.
- After Poland's accession to the EU in 2004, it became a forum for cooperation ahead of EU negotiations.
- It is an informal, non-institutionalized framework focusing on high-level meetings (summits, foreign ministers) and civil society, including youth and academic exchanges.

INDIA AI IMPACT SUMMIT 2026

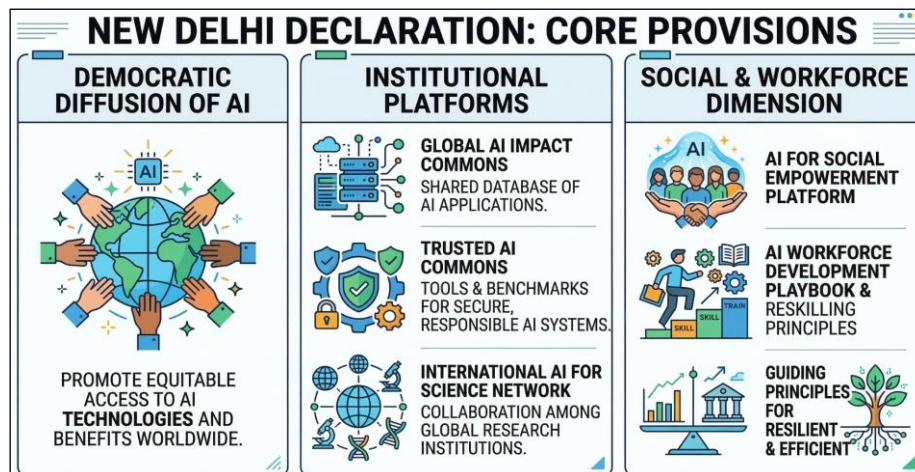
Context: The India AI Impact Summit concluded with 88 countries and international organisations adopting the New Delhi Declaration on AI, which is voluntary and non-binding. Switzerland will host the 2027 AI Summit in Geneva.



Key Outcomes and Controversies

- **Diplomatic Success:**

88 signatories, including the United States, China, France, Australia, and the United Kingdom. Participation was broader than in previous summits. India joined the US-led Pax Silica initiative to strengthen resilient technology supply chains.



- **Investment Commitments:** Total commitments of \$250 billion were announced. Around \$20 billion was allocated for frontier deep-technology research.
- **Indigenous Milestone:** **Sarvam AI** launched India's first domestically trained multi-billion-parameter large language models under the IndiaAI Mission.
- **Domestic Investment Announcements**
 - **Reliance Industries:** ₹10 lakh crore investment in AI infrastructure over seven years.
 - **Adani Group:** Announced a comparable large-scale investment plan.
- **Global Technology Expansion**
 - **Google:** \$15 billion investment in AI and data centre infrastructure, including subsea cable projects.
 - **OpenAI–Tata partnership:** Leasing of 100 MW data centre capacity and deployment of enterprise AI solutions.
 - **Anthropic–Infosys collaboration** on AI development.
 - **Yotta Data Services:** \$2 billion expansion of GPU-powered computing infrastructure.

39TH AU SUMMIT

Context: The 39th Ordinary Session of the African Union (AU) Assembly was held in Addis Ababa, Ethiopia.

Theme: “Assuring Sustainable Water Availability and Safe Sanitation Systems to Achieve the Goals of Agenda 2063.”

About the African Union (AU) [HQ: Addis Ababa, Ethiopia]

- The AU is a continental intergovernmental organisation comprising 55 African countries.
- It was launched in 2002 in Durban, South Africa, replacing the Organisation of African Unity (OAU), which had been established in 1963.
- **Organs:** Assembly of Heads of State and Government and the Executive Council.
- **Objectives**

- Promote unity and solidarity among African states.
- Defend sovereignty and territorial integrity of member countries.
- Accelerate political and socio-economic integration across the continent.
- Promote peace, security, democracy, and human rights.
- Advance sustainable development under Agenda 2063, Africa's long-term development blueprint.
- **Major Initiatives**
 - **African Continental Free Trade Area (AfCFTA):** Seeks to create the world's largest free trade area by number of participating countries.
 - Conflict resolution and peacekeeping missions in regions such as Sudan and Somalia.

BHARAT BODHAN AI CONCLAVE 2026

Context: The Bharat Bodhan AI Conclave 2026 was a national-level event held at Bharat Mandapam, New Delhi.

About Bharat Bodhan AI Conclave 2026

- Organised by the **Ministry of Education** and anchored by the **IIT Madras Bodhan AI Foundation**, it served as a **pre-summit to the India AI Impact Summit**.
- The conclave aimed **to advance the integration of Artificial Intelligence (AI) across India's education ecosystem**, bringing together senior officials, academic leaders, industry experts, and AI-driven startups.
- A key highlight was the **launch of the Bharat EduAI Stack**, an open and interoperable architecture designed to develop and scale AI-powered learning solutions nationwide.
- **Core Focus Areas:** AI for School Education; AI for Higher Education; AI for Skilling and Workforce Readiness; AI Research and Deep Technology

FORGE INITIATIVE

Context: The United States announced the launch of FORGE during the inaugural Critical Minerals Ministerial held in Washington, D.C.

- The meeting brought together delegations from over 55 countries, including **India**, to enhance cooperation in securing and diversifying global critical mineral supply chains.

About FORGE (Forum on Resource, Geostrategic Engagement) Initiative

- FORGE has been introduced as the **successor to the Minerals Security Partnership (MSP)**.
 - The **MSP** (launched in 2022) **previously focused on strengthening critical mineral supply chains** to support economic growth and climate-related goals.
 - The MSP was composed of 14 countries and the EU: Australia, Canada, Estonia, Finland, France, Germany, India, Italy, Japan, Norway, South Korea, Sweden, the United Kingdom, the United States, and the European Union.
- **FORGE aims to promote collaboration among partner countries** at both policy and project levels. It seeks to build diversified, resilient, and secure supply chains for critical minerals.

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (IOC)

Context: The Intergovernmental Oceanographic Commission of UNESCO has released the Integrated Ocean Carbon Research (IOCR), 2026 report.

About Intergovernmental Oceanographic Commission of UNESCO

- IOC promotes international cooperation in marine sciences for better ocean and coastal management. The aim is to enhance understanding of oceans and their role in Earth systems.
- IOC/UNESCO was created in 1961 by UNESCO's General Conference.
- **Membership:** Comprises 153-member countries, including India.
- **Secretariat:** Located in Paris, France.

- IOC leads the Global Ocean Observing System (GOOS), supports marine research under UNCLOS, and aids sustainable development in developing countries

WTO MC14

Context: The 14th Ministerial Conference (MC14) of the WTO, held in Yaoundé (Cameroon), ended inconclusively. The conference also witnessed a stalemate over the Investment Facilitation for Development (IFD) Agreement, which, despite support from 129 members, could not be adopted due to India's opposition.

About WTO Ministerial Conference

- The WTO Ministerial Conference serves as the **organization's highest decision-making body**, convening trade ministers roughly **every two years to address global trade issues by consensus**.
- **Functions:** Negotiates global trade rules; Provides direction on issues like agriculture, subsidies, digital trade

About Investment Facilitation for Development (IFD)

- The Investment Facilitation for Development Agreement (IFDA), also known as IFD, is a **plurilateral WTO initiative** launched in 2017 at MC11 by over 70 members, now backed by about 129 of 166 WTO countries (excluding India).
- It aims to boost foreign direct investment (FDI) flows, particularly to developing and least-developed countries, by:
 - Enhancing regulatory transparency
 - Streamlining administrative procedures (such as approvals and digitalisation)
 - Promoting international cooperation, technical assistance, and responsible business conduct
- **What IFD Does NOT Cover:** Market access, Investment protection, Investor-State Dispute Settlement (ISDS), Government procurement, Subsidies
- The agreement is **plurilateral** in nature, meaning it is binding only on participating members, and it **incorporates Special and Differential Treatment provisions**, allowing developing countries to implement commitments according to their capacities.

GLOBE NETWORK

Context: India recently hosted the 12th Steering Committee Meeting of the Global Operational Network of Anti-Corruption Law Enforcement Authorities (GlobE Network).

What is the GlobE Network?

- It is a **global platform of specialised anti-corruption law enforcement agencies**, created under the **Riyadh Initiative** during **Saudi Arabia's G20 Presidency (2020)**, and operates within the framework of the **United Nations Convention Against Corruption (UNCAC)**.
- It was established in 2021 and is open to anti-corruption law enforcement authorities of all UN Member States and States parties to the UN Convention against Corruption (UNCAC).
- It **facilitates direct, practitioner-level cooperation in the investigation**, prosecution, and asset recovery of corruption cases.
- **Membership:** GlobE comprises **135 member countries** (including India) and 250 member authorities, along with 18 observers, including EUROPOL, the World Bank, and the International Association of Anti-Corruption Authorities.
- **Steering Committee:** The Core Governance Body consists of 15 member countries, including **India, Brazil, China, Italy, Nigeria, Saudi Arabia, South Africa, and the UAE**.

India's Role in the GlobE Network

- India joined the network in 2022, with the **Central Bureau of Investigation (CBI)** and the **Enforcement Directorate (ED)** as member agencies. It was elected to the 15-member Steering Committee in 2024.

- During India's G20 Presidency (2023), it prioritised asset recovery and operational cooperation.

WORLD BUDDHIST PEACE CONFERENCE 2026

Context: Hyderabad hosted the inaugural World Buddhist Peace Conference 2026.

- The conference brought together ministers, monks, scholars, and delegates from over 20 countries to promote dialogue on peace, reconciliation, and ethical leadership.
- The summit was themed around Buddhist approaches to conflict resolution, reconciliation, and healing.
- The summit concluded with a visit to **Buddhavanam at Nagarjunasagar**.
- It was organised by the **Buddhavanam project of the Telangana Tourism Development Corporation** in collaboration with international Buddhist institutions.

OPEC AND OPEC+

Context: OPEC+ has decided to increase oil production quotas by 206,000 barrels per day (bpd) starting in May 2026

About OPEC+

- OPEC+ is an alliance of major oil-exporting countries. It was formed in **2016** as an extension of the Organization of the Petroleum Exporting Countries (OPEC).
- It includes 22 members: **12 OPEC countries** along with 10 non-OPEC producers- Azerbaijan, Bahrain, Brunei, Kazakhstan, **Russia**, Mexico, Malaysia, South Sudan, Sudan, and Oman.
- The group meets regularly to decide crude oil production levels in the global market.
- Its main aim is to coordinate output and maintain stability in oil prices.

About OPEC (Organization of the Petroleum Exporting Countries)

- A permanent intergovernmental organisation established at the Baghdad Conference in 1960.
- **Founding members:** Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.
- **Current Members:** Algeria, Congo, Gabon, Equatorial Guinea, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, UAE, and Venezuela.
- **Headquarters:** Vienna, Austria.
- It ensures fair and stable oil prices for producers and steady supply to consumers and provides fair returns to investors in the petroleum sector.
- It operates on unanimity with the principle of "one member, one vote."

IMPORTANT EVENTS IN NEWS

MONROE DOCTRINE

Context: The Trump administration's National Security Strategy explicitly called for reasserting and enforcing the Monroe Doctrine to restore U.S. preeminence in the Western Hemisphere.

What is Monroe Doctrine?

- Proclaimed by **President James Monroe in 1823**, it stated that the **Americas were off-limits to further European colonization or interference**, with the **U.S. committing not to interfere in European affairs**.
- **Roosevelt Corollary (1904):** The United States would exercise "international police power" in the Western Hemisphere as a last resort. The U.S. could intervene to stabilize countries, ensure debt repayment, and protect American interests.

BULGARIA ADOPTS THE EURO

Context: Bulgaria successfully adopted the euro as its official currency on January 1, 2026, becoming the 21st member of the eurozone.

About the Eurozone

- The Eurozone is a **monetary union of European Union countries** that have adopted the **euro (€) as their official currency, managed by the European Central Bank (ECB)**.
- It promotes economic stability through a shared monetary policy while member states retain fiscal independence.
- The ECB, headquartered in Frankfurt, sets interest rates and oversees inflation targets around 2%.
- **Member Countries:** 21 EU member states: Austria, Belgium, Bulgaria, Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, and Spain.
- **EU Countries Outside the Eurozone (6):** Czechia, Denmark, Hungary, Poland, Romania, and Sweden. *All EU members except Denmark are legally required to adopt the euro once they meet certain economic conditions, known as economic convergence criteria.*
- **Other Countries Using the Euro**
 - **With formal agreements (limited coin minting allowed):** Andorra, Monaco, San Marino, Vatican City
 - **Without formal agreements:** Montenegro and Kosovo. These countries use the euro as their main currency, even though they are not part of the Eurozone or the ECB system.

EU'S CARBON BORDER TAX BEGINS

Context: The European Union has operationalised the **Carbon Border Adjustment Mechanism (CBAM)** from January 1, imposing a carbon-linked levy on imports of emission-intensive goods.

About Carbon Border Adjustment Mechanism (CBAM)

- It is the **European Union's policy to impose a carbon price on imports of high-emission goods, preventing "carbon leakage"** where production shifts to countries with laxer climate rules.
- It ensures that imported products face a similar carbon cost as those produced within the EU under its Emissions Trading System (ETS).
- It aligns with the **Paris Agreement** and **EU's Fit for 55** decarbonization goals. It promotes cleaner global production without undermining EU climate targets or violating WTO rules
- CBAM will apply in its definitive regime from 2026, with a transitional phase of 2023 to 2025.
- **Covered Goods:** Cement, iron and steel, aluminium, fertilisers, electricity, and hydrogen
- CBAM works by **requiring importers of carbon-intensive goods to declare the embedded CO₂ emissions in their products**. They must buy and surrender **CBAM certificates priced at the EU ETS carbon allowance rate (€/tonne CO₂)**, ensuring imports face the same carbon cost as EU-made goods.

UN LAUNCHES ROAD SAFETY FINANCING FRAMEWORK IN INDIA

Context: The United Nations, in partnership with Rajasthan, Kerala, Tamil Nadu, and Assam, has launched a Road Safety Financing Framework in India.

About the Road Safety Financing Project

- It aims to **strengthen institutional capacity** and reduce the human and economic costs of road accidents.
- The initiative will be coordinated by the **UN Resident Coordinator's Office, with funding from the UN Road Safety Fund**.
- The initiative is implemented in partnership with the **Ministry of Road Transport and Highways, State Governments, WHO, UNICEF and Save LIFE Foundation**.
- The campaign features celebrities advocating simple steps such as wearing seat belts and helmets, driving within speed limits, and avoiding mobile phone use while driving.
- **Objectives**
 - Strengthen national and state capacities to implement road safety action plans.

- Reduce road fatalities and serious injuries, which often cause long-term disabilities.
- Improve systemic planning and financial mechanisms for road safety interventions.

About UN Road Safety Fund (UNRSF)

- It was established in 2018 as a **UN multi-partner trust fund**, mobilizing financing primarily for road safety initiatives in low and middle-income countries, where over 90% of global road fatalities occur.
- Launched at UNHQ in New York on April 12, 2018, it aims to coordinate impactful investments aligned with SDG 3.6 (halving road deaths by 2030).

DEMOGRAPHIC WINTER

Context: China's population has declined for the fourth consecutive year, highlighting a major demographic transition.

About Demographic Winter

- It refers to a **stage in which population growth slows or declines over a long period**. It is generally marked by **fertility rates falling below the replacement level of 2.1 children per woman**, meaning the population cannot naturally replace itself.
- Another key feature is an **inverted population pyramid**, where the share of elderly people rises while the proportion of young people shrinks.

MUNICH SECURITY CONFERENCE (MSC) 2026

Context: The 62nd Munich Security Conference (MSC) was held in February 2026 in Munich, Germany. India was represented by External Affairs Minister S. Jaishankar.

About the Munich Security Conference (MSC)

- The MSC is **the world's leading independent forum on international security policy**.
- **Held annually in Munich** each February, it promotes "peace through dialogue" by bringing together global leaders, defence officials, and security experts to discuss major security challenges.
- The conference functions as an important platform for transatlantic coordination, trust-building, and strategic dialogue in an increasingly multipolar world.
- The MSC was **established in 1963** by Ewald-Heinrich von Kleist-Schmenzin. It was originally conceived as a forum for dialogue and conflict prevention during the Cold War.
- Over time, the MSC evolved into a **major global platform for transatlantic cooperation and international security discussions**.
- Its agenda now includes emerging geopolitical, technological, and strategic challenges.

Purpose and Objectives

- Promote international conflict resolution.
- Encourage open dialogue among policymakers and security experts.
- Strengthen alliances and multilateral cooperation.
- Provide an informal setting for high-level diplomatic engagement.

ARCTIC SENTRY

Context: NATO launched a military mission in February 2026 to enhance security in the Arctic and High North regions.

About Arctic Sentry

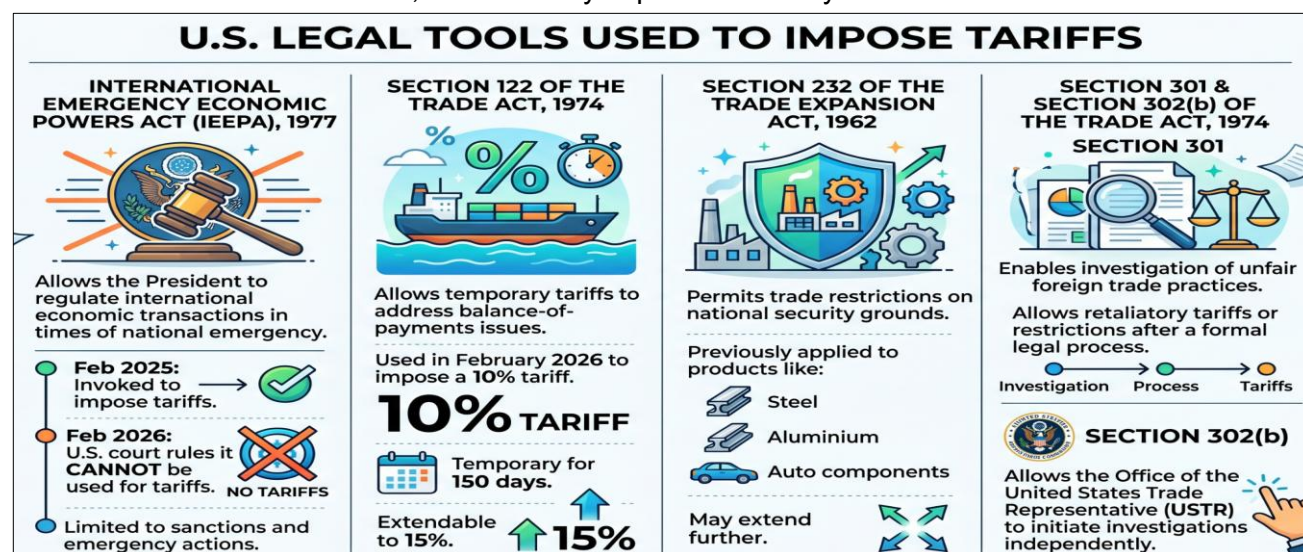
- It coordinates multi-domain operations across air, sea, land, cyber, and space to boost surveillance, intelligence sharing, and allied readiness.
- It is led by **Joint Force Command Norfolk (JFC Norfolk)** that serves as a bridge between North America and Europe for NATO.

SECTION 301 INVESTIGATION INTO INDIA

Context: The United States has initiated Section 301(b) investigations against India and several other economies to assess whether their trade practices adversely affect U.S. commerce.

About Section 301 of the U.S. Trade Act

- Section 301 of the Trade Act of 1974 **empowers the U.S. government to investigate foreign trade practices considered unfair or harmful to U.S. businesses.**
- Investigations are **conducted by the Office of the United States Trade Representative.**
- If violations are established, the U.S. may impose retaliatory tariffs or other trade restrictions.



US STRIKE ON KHARG ISLAND

Context: The United States carried out a major bombing raid on Kharg Island in Iran, targeting military installations.

Geographical Location of Kharg Island

- Kharg Island is a small **coral island** located in the northern Persian Gulf, about 25–30 km off the mainland coast of Iran. The island is approximately 8 km long and covers an area of about 20 sq. km.
- Its landscape is dominated by **oil storage tanks, export jetties, pipelines, and an airstrip.**
- Historically, the island was part of regional trade routes and was controlled by Dutch and British forces before emerging as Iran's primary energy export hub.
- **Pipelines connect major Iranian oil fields such as Ahvaz, Marun, and Gachsaran to Kharg Island,** enabling the export of crude oil through deep-water terminals.
- As much of Iran's coastline is shallow, Kharg Island's deep-water jetties allow very large crude carriers to dock and load oil efficiently.



CONFLICT AREAS IN NEWS

Region	Context	Notes
Rafah Crossing (Gaza)	Border crossing partially reopened	Southernmost exit point from Gaza Borders Egypt's Sinai Peninsula Other crossings: Erez and Kerem Shalom
Donetsk Region	Ongoing conflict in Ukraine	One of two key regions of Donbas (other: Luhansk) Borders Russia (east) and Sea of Azov (south), which connects to Black Sea via Strait of Kerch

(Eastern Ukraine)		
Chagos Archipelago (Indian Ocean)	US urged UK not to transfer control to Mauritius	Located northeast of Mauritius. Diego Garcia is its largest island with UK–US military base; UK agreed in 2025 to return Chagos to Mauritius while leasing Diego Garcia for 99 years (after 2019 ICJ ruling and global pressure)
El-Fasher (Sudan)	Reports of possible genocide during siege by paramilitary group	Key conflict zones: Khartoum (capital), Darfur region (El Geneina, Zamzam Camp), Kordofan (El Obeid), Blue Nile state Affected communities include Masalit, Zaghawa, and Fur
Bamako (Mali)	Fuel supply routes to Bamako and southern Mali are experiencing disruptions	The capital and largest city of the landlocked West African nation An economic blockade is enforced by the Al-Qaeda-affiliated group Jama'at Nusrat al-Islam wal-Muslimin (JNIM)
Rakhine State (Myanmar)	Arakan Army (AA) consolidated control over Rakhine	It is Western Myanmar coastal state bordering the Bay of Bengal and Bangladesh, key for Rohingya refugee camps and maritime routes.

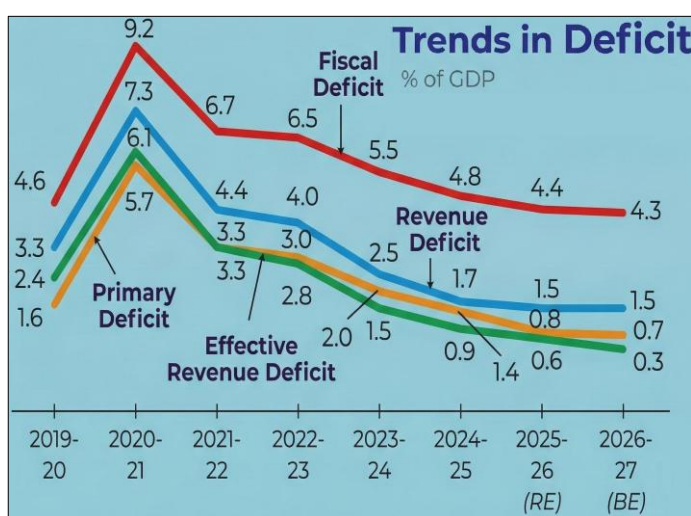
ECONOMY AND INFRASTRUCTURE

BUDGET 2026-27

Context: The Union Budget 2026-27, presented by Finance Minister Nirmala Sitharaman on 1 February 2026, focused on the theme of "**Yuva Shakti-driven growth for Viksit Bharat**". The budget was the first to be prepared in **Kartavya Bhawan** and was **guided by three key kartavyas (duties)**: accelerating economic growth, fulfilling citizen aspirations, and advancing Sabka Saath, Sabka Vikas

Budget Highlights

- **Expenditure:** The government is estimated to spend Rs 53,47,315 crore in 2026–27, which is 7.7% higher than the revised estimate of 2025–26. Interest payments account for 26% of total expenditure and 40% of revenue receipts.
- **Receipts:** Receipts (excluding borrowings) in 2026–27 are estimated at Rs 36,51,547 crore, about 7.2% higher than the revised estimate of 2025–26. Tax revenue, which forms the major share of receipts, is expected to increase by 8% over the revised estimate for 2025–26.
- **GDP:** The government has estimated a nominal GDP growth rate of 10% in 2026–27 (i.e., real growth plus inflation).
- **Deficits:** Revenue deficit in 2026–27 is targeted at 1.5% of GDP, the same as the revised estimate for 2025–26. Fiscal deficit is targeted at 4.3% of GDP, lower than the revised estimate of 4.4% in 2025–26.
- **Debt:** The central government aims to reduce its outstanding liabilities to around 50% of GDP by March 2031. In 2026–27, outstanding liabilities are estimated at 55.6% of GDP.

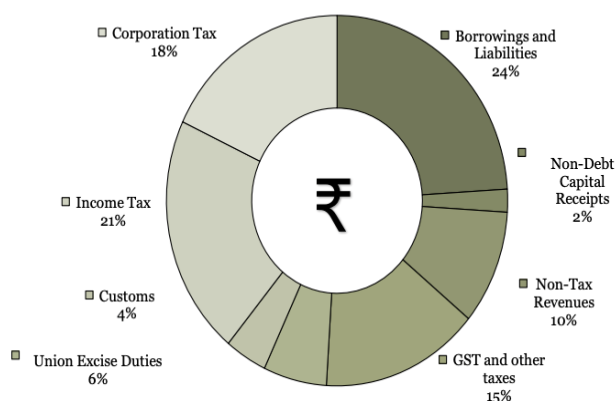


Policy Highlights

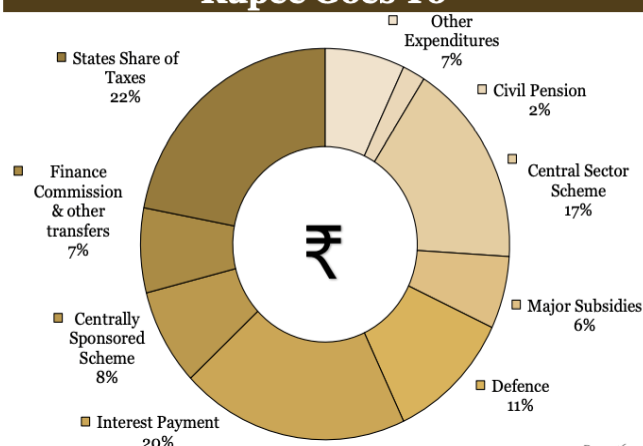
- **Finance and Economy:**
 - A **High-Level Committee on Banking for Viksit Bharat** will review the banking sector
 - **FEMA (Non-debt Instruments) Rules** will be simplified
 - **Persons Resident Outside India (PROI)** allowed to invest in listed equity via **Portfolio Investment Scheme**, with investment limit increased from 5% to 10%
 - New market-making framework for corporate bonds and derivatives
 - Rs 100 crore incentive for **municipal bond** issuances above Rs 1,000 crore
- **Industry and Commerce:**
 - Revival of 200 legacy industrial clusters with modern technology
 - **Integrated textile programme** with five components: (i) National Fibre Scheme, (ii) Textile Expansion and Employment Scheme, (iii) National Handloom and Handicraft Scheme, (iv) Tex-Eco Initiative, (v) Samarth 2.0
 - **Mahatma Gandhi Gram Swaraj initiative** for khadi and handicrafts
 - Promotion of **Champion SMEs** through: (i) SME Growth Fund (Rs 10,000 crore) (ii) Top-up of Self-Reliant India Fund, (iii) Liquidity support
- **Infrastructure:**
 - Public capital expenditure increased from Rs 11.2 lakh crore to Rs 12.2 lakh crore
 - **Infrastructure Risk Guarantee Fund** to boost private investment
 - **Development of five tourism destinations in Purvodaya states**

- **A Scheme for Development of Buddhist Circuits** in Arunachal Pradesh, Sikkim, Assam, Manipur, Mizoram and Tripura
- Deployment of 4,000 electric buses
- **New freight corridor:** Surat–Dankuni
- 20 national waterways to be operationalised
- **Schemes for construction equipment and container manufacturing**
- **Urban Development:**
 - Development of **City Economic Regions (CERs)** with Rs 5,000 crore per region over five years
 - Seven **high-speed rail corridors** proposed: Mumbai-Pune; Pune-Hyderabad; Hyderabad-Bengaluru; Hyderabad-Chennai; Chennai-Bengaluru; Delhi-Varanasi; Varanasi-Siliguri.
- **Labour and Employment:**
 - Standing Committee on Education to Employment and Enterprise
 - Focus on service sector and impact of AI on jobs
- **Education:**
 - Creation of five university townships in industrial corridors
 - Support to Indian Institute of Creative Technologies, Mumbai
 - Establishment of animation, VFX, gaming, and comics labs in: 15,000 schools and 500 colleges
- **Energy:**
 - Electronics Component Manufacturing Scheme outlay increased to Rs 40,000 crore
 - **Dedicated Rare Earth Corridors in Odisha, Kerala, Andhra Pradesh, Tamil Nadu**
 - Rs 20,000 crore for **carbon capture and storage (5 years)**
 - **Launch of Semiconductor Mission 2.0**
- **Health:**
 - Establishment of **Allied Health Professional institutions**
 - Creation of five regional medical hubs for medical tourism
 - Establishment of three All India Institutes of Ayurveda
 - New **National Institute of Mental Health and Neuro Sciences (NIMHANS-2) in northern India.**
- **Pharmaceuticals:**
 - Launch of **Biopharma SHAKTI scheme** (Strategy for Healthcare Advancement through Knowledge, Technology and Innovation) to focus on biologics and biosimilars
 - Establishment of 3 new NIPERs and upgrade of 7 existing institutes
- **Agriculture:**
 - **Bharat-VISTAAR**, a multilingual AI tool to integrate the AgriStack portals and the ICAR package on agricultural practices with AI systems
 - Tax deductions extended to cooperative members supplying cotton seeds and cattle feed
 - Credit-linked subsidy for animal husbandry
 - Coconut promotion scheme to boost production
 - **Integrated development of 500 reservoirs and Amrit Sarovars**
- **Welfare:**
 - **Divyang Sahara Yojana** focused on improving access to high-quality assistive devices for eligible Divyangjan and senior citizens
 - **Divyangjan Kaushal Yojana** to provide industry-relevant, customised training to Divyangjan in sectors such as Information Technology, AVGC, hospitality, and food and beverage services

Rupee Comes From



Rupee Goes To



MONEY AND BANKING

INDIA'S NEW GDP SERIES

Context: The Ministry of Statistics and Programme Implementation (MoSPI) has released a new National Accounts Statistics (NAS) series with 2022–23 as the base year.

Key Structural Changes

- **Base Year Revision:** Base year updated from 2011–12 to 2022–23 to reflect the current economic structure.
- **Better Sector Measurement**
 - **Private Corporate Sector:** Shift from assigning a company's Gross Value Added (GVA) to a single sector to an **activity-wise revenue share approach**.
 - **Government Sector:** Inclusion of housing services for government employees and better coverage of autonomous bodies and local governments.
 - **Household Sector:** Use of Annual Survey of Unincorporated Sector Enterprises (ASUSE) and Periodic Labour Force Survey (PLFS) for direct annual estimates instead of extrapolation.
- **Improved Consumption Measurement:** Private Final Consumption Expenditure (PFCE) estimated using Household Consumer Expenditure Surveys, production data, and administrative datasets.
- **Integration of New Data Sources:** Expanded use of GST data for regional output estimation, corporate value addition, and identifying active firms.
- **Financial Sector Improvements**
 - **Banking sector:** Data from RBI's Statistical Tables Relating to Banks in India (STRBI).
 - **NBFC sector:** Use of actual financial data from the Ministry of Corporate Affairs, replacing proxy estimates.
- **Better Coverage of Informal Sector:** Expanded use of ASUSE data to capture informal enterprises, insurance agents, and Gross Fixed Capital Formation (GFCF) in the unincorporated sector.
- **Agriculture Sector Improvements:** Updated datasets and methodologies based on studies by specialised agricultural and fisheries research institutes.
- **Methodological Upgrade – Double Deflation:** Replacement of the single deflator method with double deflation, applying **separate inflation adjustments to inputs and outputs**.
- **Integration with Supply and Use Tables (SUT):** National accounts will incorporate SUT to track production, imports, intermediate consumption, and final demand.

- **Improved State Data:** Better reporting from states, local bodies, and autonomous institutions.

DID YOU KNOW?

- India compiles its GDP estimates according to the **2008 System of National Accounts (SNA 2008)**, an internationally accepted statistical framework.
- With the **UN Statistical Division introducing SNA 2025** (likely to be adopted globally by 2029–30) India plans to align with this updated standard in its next base year revision.
- Additionally, as a subscriber to the **IMF's Special Data Dissemination Standard (SDDS)**, India follows global benchmarks for statistical quality and transparency.

(For Detailed Explanation on GDP, refer to Prelims KnockOut Part 1 – Page 217)

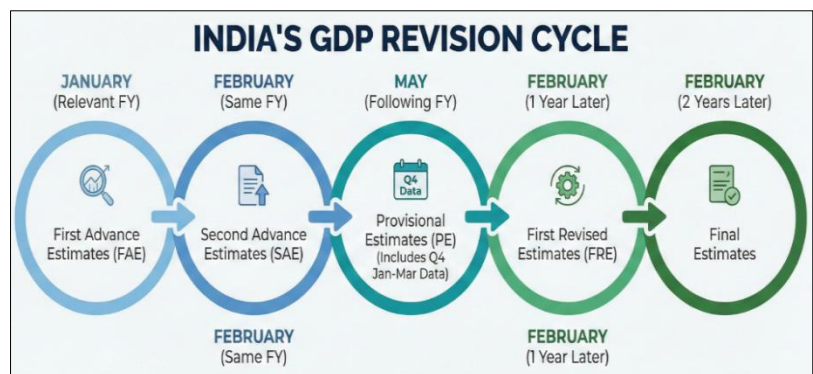
FIRST ADVANCE ESTIMATE (FAE)

Context: The National Statistics Office (NSO), under the Ministry of Statistics and Programme Implementation (MoSPI), has released the First Advance Estimate (FAE) of India's Gross Domestic Product (GDP) for the financial year 2025–26.

- India's **Real GDP** is estimated at ₹201.90 lakh crore, with **growth projected at 7.4%** in FY 2025–26 compared with 6.5% in FY 2024–25.

What are First Advance Estimates (FAE)?

- The FAE are typically published in the first week of January and provide the first official projection of GDP growth for the ongoing financial year.
- They are called “advance” estimates because they are **released before the financial year** (April to March) concludes.
- Although released after the third quarter, **they do not include complete Q3 GDP data**, which is incorporated later in the Second Advance Estimates (SAE).
- The Union Finance Ministry uses the FAE as an **important input while preparing Budget allocations for the next financial year**.



DEPOSIT INSURANCE

Context: The Central Board of Directors of the Reserve Bank of India (RBI) approved a risk-based deposit insurance framework for banks.

Deposit Insurance in India

- Deposit insurance is a government-backed protection system that safeguards depositors' money if a bank fails.
- It is administered by the **Deposit Insurance and Credit Guarantee Corporation (DICGC)**, a wholly owned subsidiary of the Reserve Bank of India (RBI). The functions of the DICGC are governed by the provisions of 'The DICGC Act, 1961'.
- Deposits are insured up to **₹5 lakh per depositor per bank**, covering both principal and interest. The coverage applies to savings, fixed, current, and recurring deposits.
 - **Exceptions** include: Deposits of foreign Governments; Deposits of Central/State Governments; Inter-bank deposits
- **What's Not covered?:** Deposits mobilized by NBFC, Deposits mobilized by Land Development Banks, Mutual funds, Stocks and bonds, Exchange Traded Funds (ETFs).
- **Coverage:** Commercial banks, co-operative banks, regional rural banks, and local area banks. *Primary cooperative societies are not insured.*

- **Premium:** The insurance premium is fully borne by the insured bank, **not depositors**.
- **Payout:** If a bank goes into liquidation, DICGC pays up to ₹5 lakh per depositor to the liquidator within two months of receiving the claim list, or within 90 days of the bank being placed under All-Inclusive Directions (AID) by the RBI, whichever is applicable.

CENTRAL BANK DIGITAL CURRENCY (CBDC)

Context: The RBI has proposed that BRICS countries link their official CBDCs to make cross-border trade and tourism payments easier.

About Central Bank Digital Currency (CBDC)

- A CBDC is a digital form of a country's official currency, issued and regulated by the central bank.
- Unlike cryptocurrencies such as Bitcoin or Ethereum, which are decentralized, a CBDC is fully controlled by the government and functions as a legal tender

Two Main Types:

- **Retail CBDC:** Used by the general public for everyday transactions.
- **Wholesale CBDC:** Used by banks and financial institutions for interbank settlements.
- Many countries, including China (Digital Yuan), India (Digital Rupee), Brazil, Japan, Russia, etc. are actively developing their CBDCs.

RBI's Retail CBDC- Digital Rupee (e₹)

- The Digital Rupee (e₹) is India's Central Bank Digital Currency (CBDC)—a digital version of the physical Rupee (₹) issued by the Reserve Bank of India (RBI).

Key Features of e₹:

- **Issued by RBI:** The Digital Rupee is officially issued by the RBI in electronic form and retains the fundamental features of physical cash, such as RBI's guarantee, ease of use, and finality of settlement.
- **Stored in Digital Wallets:** Users can store e₹ in digital wallets and use it for transactions, just like physical currency.
- **Modes of Transaction:** e₹ can be transacted via digital wallets provided by banks and non-banking financial institutions (NBFCs) for both person-to-person (P2P) and person-to-merchant (P2M) payments.
- **Issuance Process:** Similar to paper currency, the RBI creates and issues e₹ electronically to banks and non-banks. These institutions then distribute e₹ and facilitate digital wallet onboarding for customers.
- **Legal Tender Status:** Under Section 26 of the RBI Act, 1934, every banknote is legal tender in India. Since e₹ is the digital equivalent of a banknote, it holds the same legal status and is an RBI liability.
- **Programmability Feature:** e₹ can be programmed for specific uses by governments or corporations. It allows restrictions based on parameters such as expiry dates, geographic locations, merchant categories, and virtual payment addresses (VPAs). Currently, its applications are being explored in Direct Benefit Transfers (DBT), interest subvention schemes, loans, and employee allowances.

SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA (SIDBI)

Context: The Union Cabinet has approved an equity infusion of ₹5,000 crore into the SIDBI to expand credit availability for micro, small, and medium enterprises (MSMEs) and to help SIDBI maintain a strong capital to risk-weighted assets ratio (CRAR).

About Small Industries Development Bank of India (SIDBI)

- SIDBI is the **apex financial institution** dedicated to the **promotion, financing, and development** of the **Micro, Small, and Medium Enterprises (MSME)** sector.
- It was **established under the SIDBI Act, 1989**, initially set up as a wholly-owned subsidiary of the Industrial Development Bank of India (IDBI) in 1990.
- In 2000, it was delinked from IDBI and became an **independent development financial institution under the Ministry of Finance, Government of India**.
- Headquartered in **Lucknow, Uttar Pradesh, supervised by the RBI**.
- SIDBI carries out its mandate through the following channels:
 - Indirect lending:** Provided through banks, Small Finance Banks (SFBs), Non-Banking Financial Companies (NBFCs), Microfinance Institutions (MFIs), and new-age fintech companies.
 - Direct lending:** Extended to address existing credit gaps in the MSME sector.
 - Fund of Funds:** Supports emerging startups to promote entrepreneurship through dedicated funding channels.
 - Facilitator role:** Acts as a nodal agency for various MSME-oriented schemes.



CBDC BASED DIGITAL FOOD CURRENCY

Context: A Central Bank Digital Currency (CBDC)-based Digital Food Currency pilot has been launched in Gujarat.

About the CBDC-based Digital Food Currency pilot

- The initiative is implemented by the **Union Government**, in collaboration with the **Reserve Bank of India** and the **Government of Gujarat** under the Public Distribution System (PDS).
- The pilot is currently being conducted in the districts of Ahmedabad, Anand, Valsad, and Surat.
- It represents an extension of the Digital India vision into the food distribution system.**
- In later phases, the programme will expand to the Union Territories of Puducherry, Chandigarh, and Dadra and Nagar Haveli and Daman and Diu.



COUNTRY PARTNERSHIP FRAMEWORK (CPF)

Context: India and the World Bank Group have announced a new CPF to help accelerate India's next phase of growth, with the private sector-led job creation at the core of this partnership.

About Partnership Country Framework (CPF)

- It is the World Bank's primary strategic planning tool for guiding its engagement with a borrowing country over 4-10 years.
- It aligns World Bank Group (WBG) support with the country's national development goals, focusing on reducing poverty and boosting shared prosperity.
- CPFs set specific objectives, results frameworks, and indicators based on the country's Systematic Country Diagnostic (SCD), which identifies binding constraints to growth.



NON-PERFORMING ASSETS (NPA)

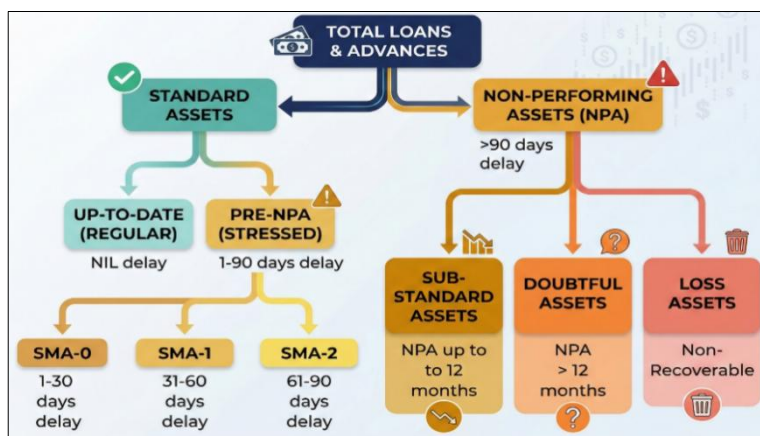
Context: According to the Report on Trend and Progress of Banking in India 2024–25 released by the RBI, the NPAs of Indian banks have fallen to a multi-decade low, with the Gross NPA (GNPA) ratio declining to 2.1% by late 2025.

What are Non-Performing Assets (NPAs)?

- NPAs refer to loans or advances for which interest or principal payments remain overdue for more than 90 days.

NPAs are measured as:

- Gross NPA (GNPA):** The total value of loans where repayment of principal or interest has remained overdue.
- Net NPA (NNPA):** Calculated by subtracting provisions (funds set aside by banks to cover expected losses) from the gross NPAs.



RESERVE BANK - INTEGRATED OMBUDSMAN SCHEME (RB-IOS), 2026

Context: The Reserve Bank of India (RBI) has issued a revised Integrated Ombudsman Scheme, which will come into effect on July 1, 2026.

About RB-IOS, 2026

- The scheme is designed to provide a cost-effective, speedy, and non-adversarial grievance redress mechanism for resolving complaints related to deficiency in services offered by regulated entities (REs) such as banks and Non-Banking Financial Companies (NBFCs).
- It aims to strengthen the existing RBI Ombudsman system and improve the efficiency of handling customer complaints against regulated financial institutions.
- RBI Ombudsman:**
 - The RBI may appoint one or more of its officers as RBI Ombudsman and RBI Deputy Ombudsman, generally for a tenure of three years.
 - Complaints submitted under the scheme will be examined by the RBI Ombudsman or the RBI Deputy Ombudsman.

- There is **no upper limit** on the **amount involved** in a dispute that may be brought before the RBI Ombudsman. The Ombudsman can award compensation up to ₹30 lakh.

- Appeal Mechanism:** Either the Regulated Entity or the complainant may file an appeal before the Appellate Authority within 30 days.
- Nodal Officer:** Each Regulated Entity must appoint a Principal Nodal Officer at its head office to provide information and coordinate in matters related to complaints filed under the scheme.
- Centralised Receipt and Processing Centre (CRPC):** The RBI will establish a CRPC to receive and process complaints submitted under the scheme.

REGULATED ENTITIES (UNDER RB-IOS 2026)		
 COMMERCIAL & CO-OPERATIVE BANKS Commercial Banks, Regional Rural Banks, State Co-operative Banks, Central Co-operative Banks, Scheduled Primary (Urban) Co-operative Banks, and Non-Scheduled Primary (Urban) Co-operative Banks	 NON-BANKING FINANCIAL COMPANIES (NBFCs) Inclusion Criteria: authorized to accept deposits; OR have customer interface, with an assets size of ₹100 crore. Excluded NBFCs: all Housing Finance Companies, Core Investment Company (CIC), Infrastructure Debt Fund-Non Banking Financial Company (IDF-NBFC), Non-Banking Financial Company - Infrastructure Finance Company (NBFC-IFC), Non-Operative Financial Holding Company (NOFHC), Primary Dealers (PDs), Mortgage Guarantee Companies (MGC)	 NON-BANK PPI ISSUERS all Non-bank Prepaid Payment Instruments Issuers.
Deposit Size Requirement: ₹50 crore and above	 CREDIT INFORMATION COMPANIES Credit Information Companies.	

NEW CPI 2024 SERIES

Context: The Ministry of Statistics and Programme Implementation has released the Consumer Price Index (CPI) 2024 series, with 2024 as the new base year. Using the updated series, retail inflation for January was estimated at 2.75%.

About Consumer Price Index (CPI)

- The CPI measures the average change in prices of goods and services consumed by households over time. It is compiled and released by the **Ministry of Statistics and Programme Implementation**, on a monthly basis.
- CPI tracks the prices of items in a representative consumption basket such as food, housing, fuel, clothing, transport, and services.
- The index uses a base year (assigned the value 100) against which changes in prices are measured to calculate inflation rates.

New CPI 2024 Series

- The government has released a new CPI series with 2024 as the base year, replacing the earlier 2012 base year.
- Under this revision, 2024 is assigned an index value of 100, and price changes relative to this year determine inflation rates.
- The CPI 2024 series adopts the

CPI WEIGHTS: COMPARISON BETWEEN CPI 2012 AND CPI 2024 SERIES					
Divisions	Combined CPI 2012 Weights (%)	Combined CPI 2024 Weights (%)	Divisions	Combined CPI 2012 Weights (%)	Combined CPI 2024 Weights (%)
Food and beverages	42.617	36.753	Health	5.900	6.100
Paan, tobacco and intoxicants	2.380	2.989	Transport	6.394	8.796
Clothing and footwear	6.527	6.383	Information and communication	3.323	3.609
Housing, water, electricity, gas and other fuels	16.888	17.665	Recreation, sport and culture	1.547	1.516
Furnishings, household equipment and routine household maintenance	3.656	4.469	Education services	3.513	3.333
Health	5.900	6.100	Restaurants and accommodation services	3.246	3.348
			Personal care, social protection and miscellaneous goods and services	4.006	5.038

Classification of Individual Consumption According to Purpose (COICOP), developed by the United Nations Statistics Division.

- Updated Consumption Basket**

- The CPI basket has been revised using data from the Household Consumption Expenditure Survey 2023–24, replacing the earlier 2011–12 survey.
- The new basket includes 358 goods and services, compared with 299 items previously: Goods: increased from 259 to 308 items and Services: increased from 40 to 50 items
- **Key Enhancements**
 - Rural house rent has been included in the CPI basket for the first time.
 - Greater representation of modern consumption items, such as online media services and fuels like CNG and PNG.
 - Expanded use of digital and administrative data sources for items including telephone charges, rail and air fares, fuel prices, postal charges, and OTT subscriptions.
- **Price Collection Methodology**
 - The new CPI series introduces **Computer Assisted Personal Interviewing (CAPI)** for price data collection.
 - Under this system, field investigators collect prices using handheld electronic devices with built-in validation checks and real-time monitoring.
 - CAPI improves data quality, timeliness, and consistency, while physical market price collection continues to remain the primary basis for CPI compilation.

REVISED GUIDELINES OF LEAD BANK SCHEME

Context: The RBI recently released draft guidelines to revise the Lead Bank Scheme (LBS) to streamline its operations and improve coordination of development activities at the district level.

About Lead Bank Scheme

- Launched by the RBI in 1969, it **assigns a lead bank to each district to bridge credit gaps.**
- It was introduced by the RBI in 1969 based on the recommendations of the Gadgil Study Group (1969) and the Nariman Committee (1969).
- The scheme seeks to improve credit flow to priority sectors while deepening financial inclusion across rural and semi-urban areas.

Revised Guidelines

- A **designated commercial bank in each district will act as the Lead Bank**, coordinating credit activities of financial institutions and stakeholders to promote financial inclusion.
- Focus will be on strengthening **State Level Bankers' Committees (SLBCs) and Lead District Manager offices** to improve coordination among banks, government bodies, and development agencies.
- **SLBC Convenor Banks** will regularly review operational challenges, coordinate with state government officials, and support expansion of banking services.
- Banks will also monitor the Credit-Deposit (CD) Ratio (credit disbursed relative to deposits mobilized) and aim to achieve a 60% benchmark across rural and semi-urban branches at the national level.
- Convenor banks are encouraged to highlight infrastructure or administrative constraints (such as road or digital connectivity, power supply, law and order, and security issues) that may hinder banking expansion and financial inclusion.

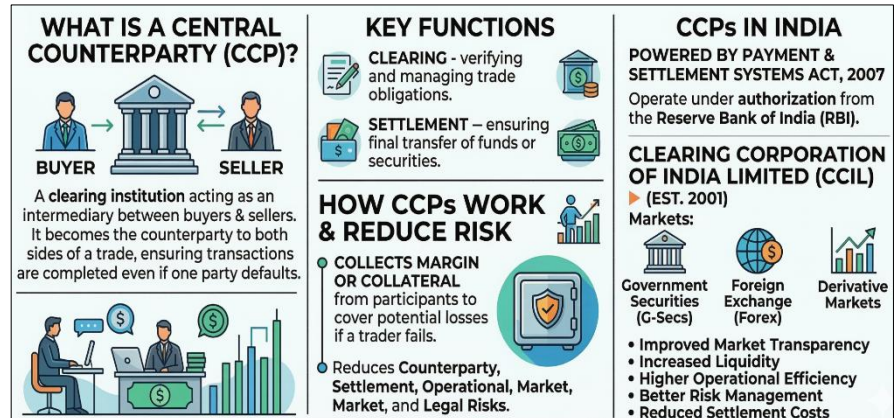
RBI - ESMA MOU

Context: The Reserve Bank of India (RBI) signed a Memorandum of Understanding (MoU) with the European Securities and Markets Authority (ESMA).

About the RBI - ESMA MoU

- The MoU **enables ESMA to formally recognise the Clearing Corporation of India Limited (CCIL)** and other RBI-regulated Central Counterparties (CCPs).
 - European Securities and Markets Authority (ESMA) is the EU's financial markets regulator and supervisor.

- Recognition allows these Indian clearing institutions to provide clearing services to financial firms and trading platforms based in the European Union (EU).
- The MoU does not create legally binding obligations or override domestic laws; it only facilitates regulatory coordination.
- Under the European Market Infrastructure Regulation (EMIR), CCPs located outside the EU must be recognised by ESMA to offer clearing services to EU financial institutions.



RBI COMPENSATION FRAMEWORK FOR DIGITAL FRAUD VICTIMS

Context: RBI has proposed a draft framework to compensate victims of small-value digital fraud.

Key Features of the Proposed Framework

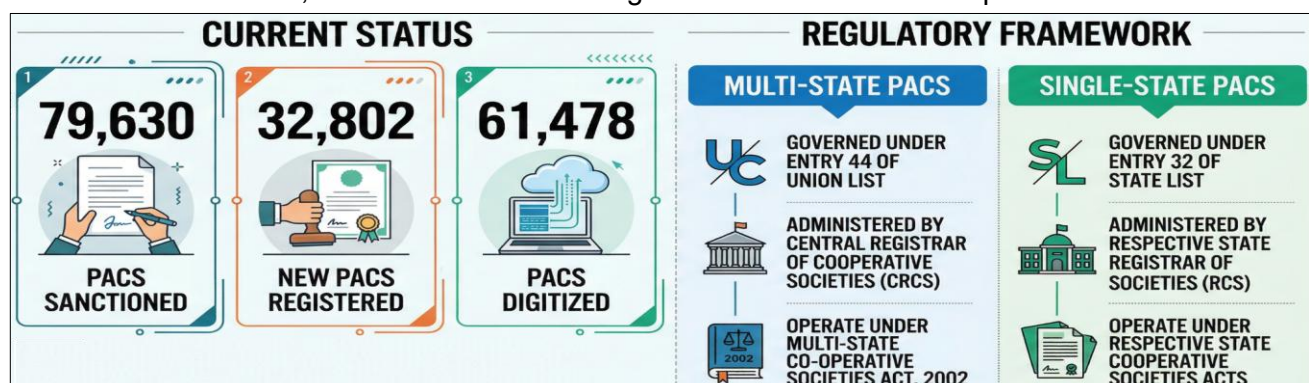
- **Compensation Cap:** Compensation limited to ₹25,000 or 85% of the fraud amount, whichever is lower. The victim must bear at least 15% of the loss.
- **Cost Sharing:** RBI will bear 70% of the compensated amount. Banks will contribute 15%.
- **Scope:** The framework focuses on small-value digital fraud cases.
- **Coverage of User Error:** Compensation may be allowed even if OTP or credentials were shared under deception.
- **One-Time Relief:** Compensation is available only once in a lifetime, encouraging caution while preventing repeated negligence.

PRIMARY AGRICULTURAL CREDIT SOCIETIES (PACS)

Context: The All India Organisation of Chemists & Druggists has opposed granting restricted drug licences to PACS across India.

About Primary Agricultural Credit Societies (PACS)

- PACS are grassroots institutions within the short-term cooperative credit structure.
- They function as a last-mile link, connecting rural borrowers with higher financial institutions such as: District Central Cooperative Banks (DCCBs), State Cooperative Banks (StCBs), Scheduled Commercial Banks, and National Bank for Agriculture and Rural Development



Initiatives for Promotion of PACS

- **PACS Computerisation Project:** Introduces a common ERP-based national software to improve efficiency and transparency.
- **National Cooperation Policy (NCP) 2025:** Focuses on expanding membership. Encourages participation of women and weaker sections in leadership roles.

- **Adoption of Model Bye-laws:** Enables PACS to function as multipurpose service centres, such as: PM Kisan Samridhi Kendras, Common Service Centres, Warehousing facilities
- **Inclusive Governance:** Ensures representation of women and SC/ST members in cooperative boards under the Multi-State Cooperative Societies (Amendment) Act, 2023.

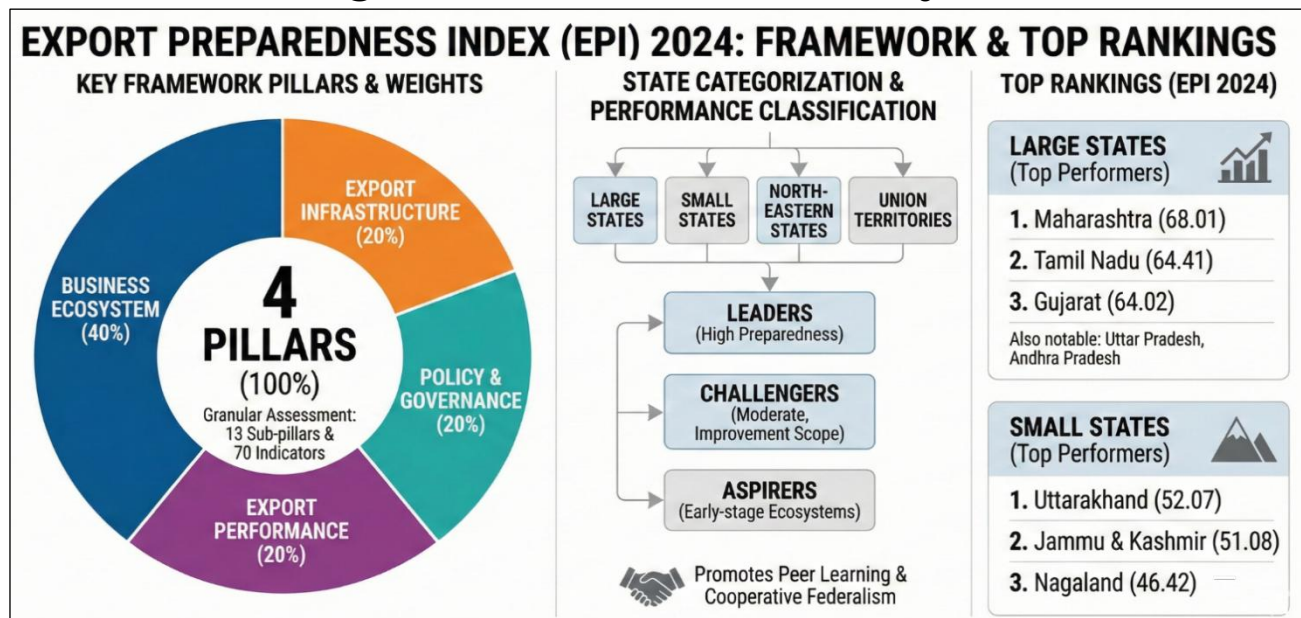
INDUSTRY AND INFRASTRUCTURE

EXPORT PREPAREDNESS INDEX 2024

Context: The Export Preparedness Index (EPI) 2024, the fourth edition of a comprehensive index was released by NITI Aayog.

About Export Preparedness Index (EPI)

- It assesses the export readiness of India's States and Union Territories (UTs), providing an evidence-based framework to evaluate subnational export ecosystems' strength, resilience, and inclusiveness.
- This aligns with India's goals of achieving USD 1 trillion in merchandise exports by 2030 and the vision of Viksit Bharat @2047. The first edition was launched in August 2020.



ONE STATION ONE PRODUCT SCHEME (OSOP)

Context: OSOP scheme has emerged as a powerful platform for promoting local craftsmanship.

About One Station One Product Scheme

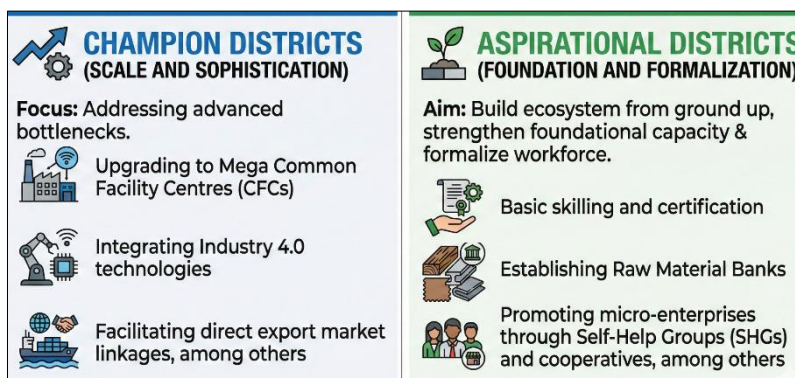
- Launched in **2022**, the **scheme pairs each selected railway station with a single distinctive local or regional product**, sold to passengers from dedicated stalls at the station.
- Launched by the Ministry of Railways and implemented by **Indian Railways**.
- OSOP has expanded to more than 2,000 railway stations, with 2,326 outlets operational.
- The **National Institute of Design designed the stall infrastructure** to ensure a consistent and attractive presentation across locations.
- These outlets now provide direct market access to millions of railway passengers daily and have become a **source of livelihood for over 1.32 lakh artisans, weavers, and small producers**. Beyond the numbers, OSOP is helping to **revive traditional crafts and regional specialties** that had been losing prominence.

DISTRICT-LED TEXTILES TRANSFORMATION (DLTT) INITIATIVE

Context: The **Ministry of Textiles** has announced the District-Led Textiles Transformation (DLTT) initiative, aimed at promoting inclusive and sustainable growth of the textile sector across India.

About District-Led Textiles Transformation (DLTT) Initiative

- The initiative seeks to **transform 100 high-potential districts into Global Export Champions** and **develop 100 Aspirational Districts** into self-reliant textile hubs through a district-specific approach.
- It is based on a data-driven evaluation of districts using three key parameters: **export performance, MSME ecosystem, and workforce presence**.
- Based on this assessment, districts have been classified into **Champion and Aspirational categories** to enable targeted interventions for maximum impact.
- Special emphasis is placed on **Purvodaya convergence** in the **eastern and northeastern regions**. These areas are prioritized for tribal belt development, connectivity improvement, and GI tagging to position unique cultural handicrafts in premium global markets.



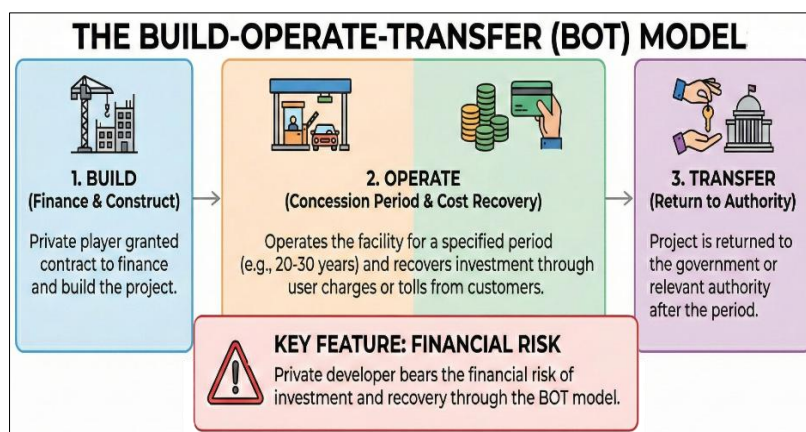
GREENFIELD CORRIDOR IN MAHARASHTRA

Context: The Cabinet Committee on Economic Affairs (CCEA) has approved a greenfield corridor connecting Nashik, Solapur, and Akkalkot in Maharashtra.

- The 374-km (6 lane) project will be built on **BOT (toll) mode** to enhance regional and inter-state connectivity and support integrated transport under the PM Gati Shakti National Master Plan.

About PM Gati Shakti National Master Plan

- Launched in **2021**, it is a **transformative approach aimed at promoting economic growth and sustainable development** through **integrated infrastructure planning**.
- The plan seeks to **improve logistics efficiency by reducing project delays** and cost overruns while creating seamless connectivity for economic zones.
- It **brings together various ministries, departments, and state governments** on a single digital platform for coordinated planning and execution.
- It aligns projects under the National Infrastructure Pipeline with the GatiShakti framework.
- It synchronizes projects across seven key engines — *Railways, Roads, Ports, Waterways, Airports, Mass Transport, and Logistics* — thereby breaking departmental silos.
- It is developed as a **Digital Master Planning tool by the Bhaskaracharya National Institute for Space Applications and Geoinformatics (BISAG-N)**, built on a dynamic Geographic Information System (GIS) platform integrating data from multiple ministries and departments.



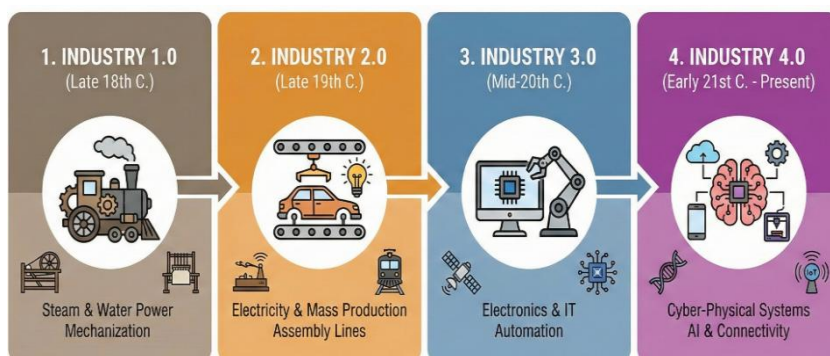
CENTRE FOR FOURTH INDUSTRIAL REVOLUTION IN ANDHRA PRADESH

Context: The World Economic Forum (WEF) has decided to establish five new Centres for the Fourth Industrial Revolution, including one in Andhra Pradesh.

- Besides Andhra Pradesh, the other new centres will be located in France, the U.K., and the UAE. Two such centres already exist in India, in **Mumbai (MH)** and **Hyderabad, Telangana**.
- The focus areas of these centres will include AI innovation, energy transition, cyber resilience, and frontier technologies. They will address regional needs while advancing international dialogue and cooperation.
- The new centres will become part of the Forum's Fourth Industrial Revolution Network.

About Fourth Industrial Revolution Network (FIRN)

- Launched by the WEF in 2017, the FIRN is a platform for multi-stakeholder collaboration, bringing together the public and private sectors around shared technology challenges.
- It helps ensure the responsible development and deployment of emerging technologies to address global priorities while minimising risks.



DEEP TECH START-UPS

Context: The Union Government has relaxed norms for deep-tech start-ups to avail financial assistance from the **Department of Scientific and Industrial Research (DSIR)**.

- The DSIR provides **financial assistance of up to ₹1 crore to start-ups** under the **Industrial Research and Development Promotion Programme (IRDPP)** only if they demonstrate sustainability and viability for a minimum period of three years.
- The Centre has now removed the three-year viability criterion for deep-tech start-ups. However, start-ups will be required to maintain appropriate evaluation standards linked to technological maturity.

About Deep Tech

- Deep tech refers to **revolutionary, science-based, and engineering-intensive innovations designed to solve complex, real-world problems**.
- Unlike mainstream "shallow" or consumer tech, it tackles complex, real-world problems with high technical risk but transformative potential.
- It involves **long-term research and development**, requires significant upfront capital, and aims to create, rather than merely disrupt, markets.
- Key examples include **artificial intelligence (AI), quantum computing, biotechnology, robotics, and advanced materials**.

STARTUP INDIA

Context: This year, National Startup Day on 16 January marked a landmark decade of the Startup India Initiative.

About Startup India Scheme

- Startup India is a **flagship initiative launched to foster entrepreneurship and innovation across the country**. It provides recognition, tax benefits, and support to eligible startups, significantly boosting India's startup ecosystem.
- Startup India was formally launched on January 16, 2016, by the **Department for Promotion of Industry and Internal Trade (DPIIT)**.

- The initiative has evolved from a policy-focused framework into a comprehensive, multi-dimensional platform supporting startups at every stage, from ideation to scaling operations.
- Over 2 lakh startups have been recognized as of late 2025, with India now hosting over 120 unicorns valued at more than \$350 billion collectively.

INITIATIVES UNDER STARTUP INDIA			
 Fund of Funds for Startups (FFS) - Managed by SIDBI, Corpus: ₹10,000 crore. - Invests through SEBI-registered AIFs. - Committed to 140+ AIFs, ₹25,500+ cr invested. - Supported 1,370+ startups.	 Startup India Fund of Funds 2.0 - Corpus: ₹10,000 crore for venture capital mobilization. - Focus: Deep tech & innovative manufacturing. - Supports early-growth founders, expands funding beyond metros. - Addresses high-risk capital gaps, strengthens domestic VC ecosystem.	 Credit Guarantee Scheme for Startups (CGSS) - Implemented by NCGTC, providing collateral-free loans. 330+ loans worth ₹800+ crore guaranteed.	 Startup India Seed Fund Scheme (SISFS) - Corpus: ₹945 crore for proof of concept, prototyping, trials, & market entry. - Approved for 215+ incubators. - Overseen by Expert Advisory Committee (EAC).
 Startup India Hub Digital platform connecting startups with investors, mentors, incubators, & institutions.	 National Mentorship Portal (MAARG) Provides nationwide access to mentorship, advisory, and support for startups.	 Startup India Investor Connect Portal - Developed with SIDBI to connect startups with investors. - Enables access to multiple investors through a single application.	

CHIPS TO START-UP (C2S) PROGRAMME

Context: Recognising chip design as a strategic national priority, the Ministry of Electronics and Information Technology (MeitY) has implemented the Chips to Start-up (C2S) Programme.

About Chips to Start-up (C2S) Programme

- Launched in **2022**, the C2S Programme is an **umbrella capacity-building initiative of MeitY**, with a total outlay of **₹250 crore over five years**, covering **academic institutions across India**.
- **Nodal Ministry:** MeitY | **Nodal Agency:** Centre for Development of Advanced Computing (C-DAC).
- It targets the **development of 85,000 industry-ready professionals** across undergraduate, postgraduate, and doctoral levels.
- It aims to accelerate the **incubation of 25 start-ups and enable 10 technology transfers**.
- It also seeks to provide access to SMART lab facilities, train one lakh students, generate 50 patents, and support at least 2,000 focused research publications.
- The **ChipIN Centre at C-DAC Bengaluru** is one of India's largest facilities, **providing shared semiconductor design infrastructure** to academic institutions and start-ups across the country.

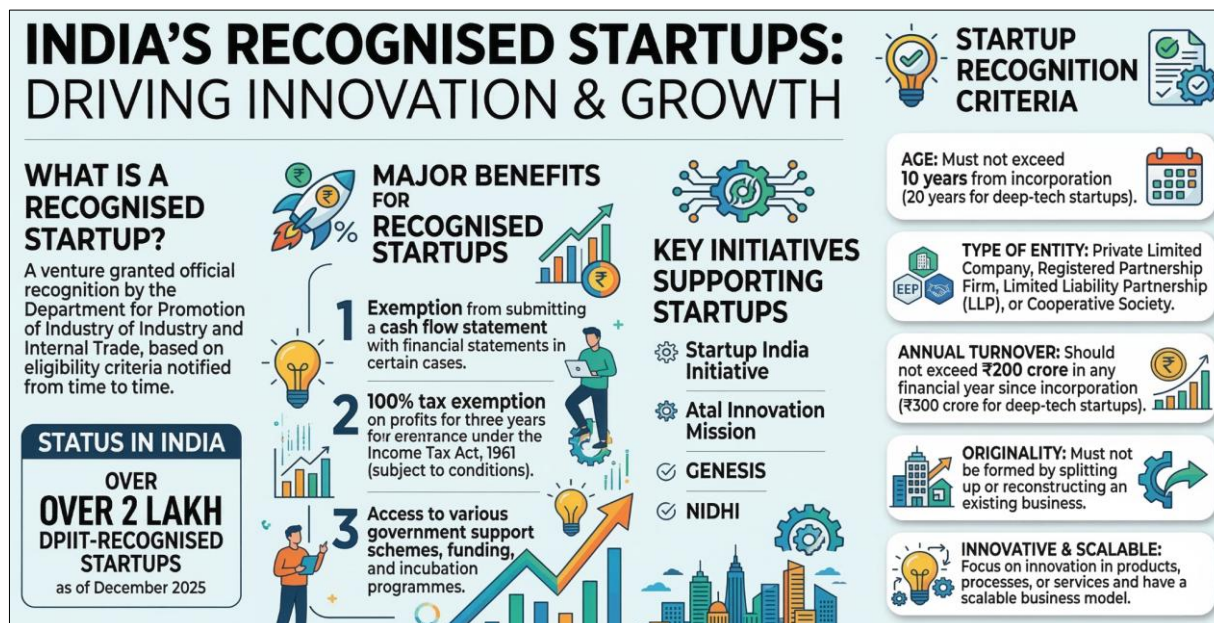
STARTUP RECOGNITION FRAMEWORK REVISED

Context: The government has revised the startup recognition framework under the Startup India Action Plan.

Key Revised Norms

- **Enhanced Turnover Threshold:** The turnover limit for startup recognition has been increased from ₹100 crore to ₹200 crore.
- **Dedicated Category for Deep Tech Startups:** For firms working on advanced and breakthrough technologies. (i) Age limit for recognition increased from 10 years to 20 years (ii) Turnover ceiling raised to ₹300 crore.
- **Inclusion of Cooperative Societies:** The framework now allows cooperative societies to qualify for startup recognition.

- **Eligible entities include:** Multi-State Cooperative Societies Act, 2002 registered multi-state cooperatives; Cooperative societies registered under State or Union Territory cooperative laws.



STAR LABELLING

Context: The government has made energy efficiency star-labelling mandatory on appliances, including refrigerators, televisions, LPG gas stoves, cooling towers, and chillers from 2026.

BEE Star Ratings

- BEE Star Ratings are an important component of the **Standards and Labelling (S&L) Programme**.
- Managed by the **Bureau of Energy Efficiency (BEE)** under the **Ministry of Power**, they help consumers choose products that save electricity and reduce bills.
- **Mandatory Appliances:** Examples include ceiling fans, electric geysers, tubular fluorescent lamps, colour televisions, etc.
- **Voluntary Appliances:** These include general-purpose industrial motors, computers, microwave ovens, etc.

COKING COAL

Context: Coking coal has been included in **Part D** of the **First Schedule of the Mines and Minerals (Development and Regulation) (MMDR) Act**, which lists **Critical and Strategic Minerals**.

About Coking Coal

- Coking coal is a crucial **raw material used in steel production through the blast furnace route**. It is also used in cement, chemical, and petrochemical industries.
- It has **high carbon content, low ash and impurities**, and unique caking properties that allow it to form coke when heated.
- India has an estimated **37.37 billion tonnes of coking coal reserves**, primarily located in Jharkhand, with additional deposits in Madhya Pradesh, West Bengal, and Chhattisgarh.
- At present, **about 95% of the coking coal required by the steel sector is imported**, resulting in a significant outflow of foreign exchange.

About the Mines and Minerals (Development and Regulation) Act, 1957

- MMDR Act is India's **primary legislation governing the mining sector**, which regulates prospecting, mining operations, and mineral development while balancing state and central government roles.
- **The Act provides for the establishment of:**

- **District Mineral Foundation (DMF):** Created to support the welfare of communities and regions affected by mining activities.
- **National Mineral Exploration Trust (NMET):** Set up to promote mineral exploration and strengthen efforts to curb illegal mining.
- **Amendments in 2023:**
 - Six minerals were removed from the list of 12 atomic minerals.
 - The Central Government was given exclusive authority to auction mineral concessions for critical minerals.
 - A new exploration licence was introduced to encourage the exploration of deep-seated and critical minerals.

YANTRA INDIA LIMITED GRANTED MINIRATNA STATUS

Context: Yantra India Limited has recently been granted Miniratna Category-I status by the government.

- Yantra India Limited is one of the seven Defence Public Sector Undertakings (DPSUs) created after the corporatisation of the Ordnance Factory Board in 2021.
- It functions under the administrative control of the Department of Defence Production.

(For Explanation on Miniratna Status, Refer to Prelims KnockOut Part 1; Page 156)

AI-PRENEURS OF INDIA

Context: The Atal Innovation Mission, under NITI Aayog, has launched “AI-Preneurs of India.”

- It is a **flagship coffee table book** that chronicles the **journeys of 45 pioneering AI startups developing solutions for real-world challenges**.
- The book features **startups working across more than 30 sectoral domains**, including healthcare, education, sustainability, mobility, sports analytics, deep technology, and social impact.
- Drawing from the nationwide network of **Atal Incubation Centres**, it reflects the geographic and thematic diversity of India’s AI innovation ecosystem, extending beyond traditional technology hubs.

COLLATERAL FREE LOAN DOUBLED FOR MSMES

Context: The Reserve Bank of India has doubled the limit for collateral-free loans to micro, small and medium enterprises (MSMEs) from ₹10 lakh to ₹20 lakh.

About MSMEs

- The Government of India revised the MSME classification in the Union Budget 2025-26.
- **The new composite criteria** (investment in plant & machinery or equipment + annual turnover) **apply uniformly to both manufacturing and service enterprises**. Investment excludes land and buildings; turnover is based on GST returns.
- **Number of MSMEs in India:** Over 7.47 crores
- **Employment:** ~32.82 crore people (second-largest employer after agriculture).
- **GDP contribution:** 31.1%.
- **Manufacturing output:** 35.4%.
- **Exports:** 48.58% of India’s total exports.

Enterprise Type	Investment Limit	Annual Turnover Limit
Micro	≤ ₹2.5 crore	≤ ₹10 crore
Small	≤ ₹25 crore	≤ ₹100 crore
Medium	≤ ₹125 crore	≤ ₹500 crore

ACC-PLI SCHEME

Context: The Advanced Chemistry Cell Production Linked Incentive (ACC-PLI) Scheme has recently faced implementation challenges.

About Advanced Chemistry Cell Production Linked Incentive (ACC-PLI) Scheme

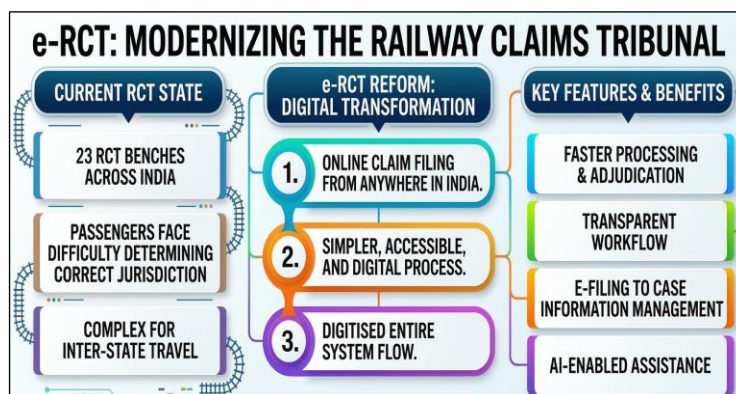
- **Advanced Chemistry Cells (ACCs)** are components used in modern batteries (such as lithium-ion batteries) that power electric vehicles and energy storage systems. These differ from traditional lead-acid batteries used in cars and inverters.
- The scheme, formally known as, “National Programme on Advanced Chemistry Cell (ACC) Battery Storage, was **launched by the Ministry of Heavy Industries** in **2021** to establish 50 GWh of battery cell manufacturing capacity in India by 2026.
- With an outlay of ₹18,100 crore, the scheme aimed to attract large manufacturers by requiring a minimum investment of ₹1,100 crore.
- In return, firms could receive a maximum incentive of ₹2,000 per kWh of battery capacity produced.
- Companies were also required to achieve 25% domestic value addition within two years and 60% within five years.

RAIL TECH POLICY AND ERCT

Context: The Ministry of Railways has launched the RailTech Policy and introduced complete digitisation of the Railway Claims Tribunal (RCT).

About RailTech Policy

- The RailTech Policy aims **to promote large-scale adoption of technologies** such as Artificial Intelligence (AI), drones, and the Internet of Things (IoT) in the railway sector.
- It seeks **to engage innovators, startups, industry, and research institutions** to foster innovation in Indian Railways.
- The policy introduces a **dedicated RailTech Portal** and simplifies the selection process for innovators.
- Under the **funding structure**, if a **startup or innovator proposes a viable technological solution**, Indian Railways will support up to **50% of the development cost**.
- After successful trials, long-term procurement orders may be placed to enable large-scale deployment.



BHARAT AUDYOGIK VIKAS YOJANA (BHAVYA) YOJNA

Context: The Union Cabinet has approved the Bharat Audyogik Vikas Yojana (BHAVYA) with an allocation of ₹33,660 crore for developing **100 plug-and-play industrial parks across the country**.

Objective	To develop world-class industrial infrastructure, unlock manufacturing potential, and drive India's economic growth.
Implementation Framework	Building on the success of Industrial Smart Cities under the National Industrial Corridor Development Programme (NICDP) To be implemented in partnership with states and private sector players.
Beneficiaries	• Primary Beneficiaries: Manufacturing units, MSMEs, startups, and global investors seeking ready-to-use industrial infrastructure. • Secondary Beneficiaries: Workers, logistics providers, service sector enterprises, and local communities.
Key Features	
• Park Size: Industrial parks ranging from 100 to 1000 acres will be developed. • Financial Support: Up to ₹1 crore per acre for core, value-added, social infrastructure.	

- **External Infrastructure Support:** Up to 25% of project cost for external infrastructure to ensure seamless connectivity and integration.
- Expected to generate substantial direct and indirect employment
- Promotes cluster-based development and co-location of industries
- Contributes to building a resilient, inclusive, and globally competitive economy.
- Emphasises deregulation, streamlined approvals, effective single-window systems
- Provides Plug-and-Play Infrastructure
- Reduces Entry Barriers
- Focus on high-quality, reform-oriented, and investment-ready proposals.
- Aligned with PM GatiShakti principles
- Designed as futuristic and sustainable ecosystems incorporating green energy systems.

About National Industrial Corridor Development Corporation Limited (NICDC)

- Under the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry
- It is spearheading the development of world-class greenfield industrial smart cities to enhance manufacturing competitiveness, attract investments, and generate employment.
- NICDC is currently implementing 20 projects across 13 states.

AROGYA VAN

Context: Recently, the **National Highways Authority of India (NHAI)** announced a new initiative called 'Arogya Van'.

About Arogya Van Initiative

- It is an Ministry of Road Transport & Highways initiative, aiming **to develop thematic medicinal tree plantations on vacant land parcels along National Highways.**
- The initiative seeks **to enhance biodiversity by introducing medicinal species that support pollinators, birds, and microfauna, thereby improving ecosystem resilience.**
- In the first phase, an action plan covers 17 land parcels across states such as Madhya Pradesh, Haryana, Delhi-NCR, Andhra Pradesh, Gujarat, Karnataka, Odisha, Tamil Nadu, Rajasthan, Maharashtra, and Chhattisgarh.
- Suitable medicinal plant species will be selected based on agro-climatic conditions of each region. **Priority areas include land near toll plazas, wayside amenities, interchanges, cloverleaf junctions, and other prominent highway stretches.**

National Highways Authority of India (NHAI) (HQ: Delhi)

- NHAI is an **autonomous agency** of the Government of India, set up in 1995 (**NHAI Act 1988**) and is responsible for management of a road network of over 50,000 km of National highways out of 1,32,499 km in India.
- It is a nodal agency of the Ministry of Road Transport and Highways (MoRTH).

TREDS PLATFORM

Context: Recently, the Reserve Bank of India (RBI) proposed removing due diligence requirements for MSMEs to onboard TReDS platforms, aiming to improve ease of doing business.

About Trade Receivables Discounting System (TReDS)

- It is an **electronic platform** that enables **financing/discounting of trade receivables of Micro, Small, and Medium Enterprises (MSMEs)** through **multiple financiers**.
- Receivables may arise from corporates, government departments, and public sector undertakings (PSUs).
- **Purpose:** Allows MSMEs to discount invoices raised on buyers. This helps in faster payments and better working capital management.
- **As per RBI, TReDS registration is not mandatory for sellers, buyers, or financiers.** However, the government has mandated that all CPSEs and companies with an annual turnover exceeding ₹250 crore must register on a TReDS platform.

Participants	
• Sellers:	Only MSMEs
• Buyers:	Corporates, government departments, PSUs, and other entities
• Financiers:	Banks, NBFC-Factors, and other RBI-permitted financial institutions

NATIONAL SHIPPING BOARD (NSB)

Context: The government held a high-level interaction with the National Shipping Board (NSB) to address emerging challenges in India's shipping sector.

About National Shipping Board (NSB)

- The NSB is a **permanent statutory body** established in **1959** under the **Merchant Shipping Act, 1958**.
- It **functions under the Ministry of Ports, Shipping and Waterways** to advise the government on matters related to the shipping and maritime sector.
- The Board's recommendations have contributed to the evolution of a sound National Maritime Policy over the years.
- It comprises representatives from the government, ship owners, seafarers, port authorities, and maritime training institutions.

NATIONAL HIGHWAYS GREEN COVER INDEX

Context: The National Highways Authority of India (NHAI) has released the first-of-its-kind Annual Report on the National Highways Green Cover Index (NH-GCI) 2025–26.

About National Highways Green Cover Index (NH-GCI)

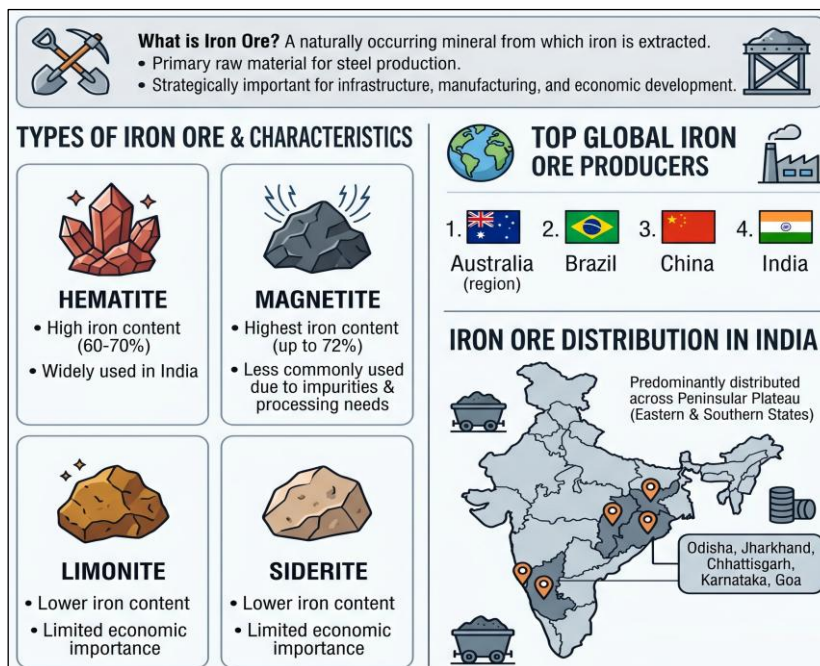
- It aims to **provide a scientific and quantitative assessment of green cover** within the Right of Way (RoW) along the National Highways network by utilising advanced space-based technologies.
- The report has been prepared in **coordination with the National Remote Sensing Centre (NRSC) of the Indian Space Research Organisation (ISRO)**.
- The assessment is derived from chlorophyll content detected through high-resolution satellite sensors, enabling an objective and technology-driven measurement of vegetation presence along highways.
- In this first assessment cycle, approximately 30,000 km of National Highways spanning 24 States have been covered for the period July–December 2024.
- The NH-GCI is expressed as a percentage value representing the proportion of land covered by green vegetation within the RoW of National Highways, measured at a granularity of one kilometre.

NMDC'S RECORD IRON ORE PRODUCTION

Context: NMDC Limited has become the first mining company in the country to produce 50 million tonnes (MT) of iron ore in a single financial year (FY 2025–26).

National Mineral Development Corporation (NMDC) Limited

- Incorporated in 1958, NMDC is a **Navratna Public Sector Enterprise** under the Ministry of Steel and is the **largest producer of iron ore in India**.
- The NMDC is involved in the **exploration of a wide range of minerals, including copper, rock phosphate, limestone, magnesite, diamond, tungsten, and beach sands**.
- With highly mechanised operations across the mineral-rich regions of Chhattisgarh and Karnataka, NMDC remains central to ensuring the country's iron ore security.
- It also operates the only mechanized diamond mine in India at Panna.



PRISM-SG PORTAL

Context: The Ministry of Road Transport and Highways has launched the PRISM-SG Portal.

About PRISM-SG (Portal for Rail-Road Inspection & Stages Management – Steel Girders)

- The portal has been developed to digitise key approval and inspection processes related to the construction of **Road Over Bridges (ROBs)** and railway bridges.
- PRISM-SG aims to enhance efficiency, transparency, and inter-agency coordination in infrastructure development.
- At present, the construction of ROBs requires multiple approvals from Indian Railways, such as structural drawings, Quality Assurance Plans (QAP), Welding Procedure Specification Sheets (WPSS), and fabrication-stage inspections of steel girders.
- It is expected to reduce the approval and inspection timeline from **approximately 12 months to about 3–4 months**.

SMALL HYDRO POWER DEVELOPMENT SCHEME

Context: The Union Cabinet has approved the Small Hydro Power Development Scheme for the period FY 2026–27 to FY 2030–31, with an outlay of ₹2,584.60 crore.

About Small Hydro Power Development Scheme

- The scheme supports the **installation of Small Hydro Power (SHP) projects with a total capacity of about 1,500 MW**. The scheme aims to tap small hydro potential in remote and difficult-to-reach areas.
- The scheme will support the development of **small hydro projects with capacities ranging from 1 MW to 25 MW across various states**, with a special focus on hilly and North Eastern states.
- **Central Financial Assistance (CFA)**
 - **For North Eastern states and border districts:** ₹3.6 crore per MW or 30% of the project cost (whichever is lower), subject to a maximum of ₹30 crore per project.
 - **For other states:** ₹2.4 crore per MW or 20% of the project cost (whichever is lower), with a cap of ₹20 crore per project.
- **Domestic Manufacturing:** The scheme will rely entirely on indigenous plant and machinery, supporting the Atmanirbhar Bharat initiative.

- **Future Project Pipeline:** Encourages states to prepare Detailed Project Reports (DPRs) for nearly 200 potential projects. A dedicated allocation of ₹30 crore has been provided to support DPR preparation by state and central agencies.

DIGITAL TWIN FOR VOC PORT

Context: The V.O. Chidambaranar Port Authority (VOCPA) has become the first major port in India to implement a Digital Twin initiative for port management.

About the Digital Twin for VOC Port

- The Digital Twin platform creates a **real-time virtual replica of the port's infrastructure, operational assets, and maritime ecosystem.**
- It enables improved operational visibility, predictive analytics, and data-driven decision-making across the port.

Key Features

- Integration of AI, IoT sensors, GPS tracking, LiDAR, drone imaging, and CCTV networks.
- Real-Time Monitoring to reduce vessel turnaround time by up to 25%.
- Uses AI-based monitoring to predict maintenance needs of cargo-handling equipment.
- Berth and traffic optimisation through intelligent scheduling of vessels and cargo operations.
- Enables tracking of energy use and emissions for better sustainability management.

About V.O. Chidambaranar Port (VOC)

- V.O. Chidambaranar Port, formerly known as **Tuticorin Port**, is an **artificial, all-weather major port** located on the **southeast (Coromandel) coast of Tamil Nadu.**
- The port is named after V. O. Chidambaram Pillai, a freedom fighter and pioneer of Indian shipping.

MODIFIED UDAN

Context: The Union Cabinet has approved the launch of Regional Connectivity Scheme – Modified UDAN for FY 2026-27 to FY 2035-36 with a total outlay of Rs.28,840 crore.

About Regional Connectivity Scheme – Modified UDAN

- **Funded entirely by the Central Government**, the scheme aims to expand air connectivity to small cities and remote regions that remain underserved or unconnected.
- The original **UDAN (Ude Desh ka Aam Nagrik) Scheme** was launched in 2016 to make air travel affordable and improve connectivity to Tier-2 and Tier-3 cities, by the Ministry of Civil Aviation.
- The revamped scheme goes beyond airport redevelopment **to include sustained support for operations and maintenance.**

Components of Scheme:

- **Development of Aerodromes (CAPEX):** Develop 100 airports from unserved airstrips to boost regional connectivity, in line with the Viksit Bharat 2047 vision.
- **Operation & Maintenance (O&M):** Financial support for 3 years to 441 RCS-only aerodromes, capped at ₹3.06 crore per airport and ₹0.90 crore per heliport/water aerodrome.
- **Modern Helipads:** Development of 200 helipads in remote, hilly, and aspirational areas to enhance last-mile connectivity and emergency services.
- **Atmanirbhar Aircraft Acquisition:** Procurement of two HAL Dhruv helicopters and two Dornier aircrafts to strengthen aviation capacity in remote and difficult terrains.
- **Viability Gap Funding (VGF):** ₹10,043 crore support over 10 years for airline operators to sustain regional routes.

MUTUAL CREDIT GUARANTEE SCHEME

Context: Government has modified Mutual Credit Guarantee Scheme for MSMEs (MCGS-MSME).

About Mutual Credit Guarantee Scheme

- Under the scheme, the **National Credit Guarantee Trustee Company Limited** provides **60% guarantee coverage to Member Lending Institutions for credit facilities** of up to ₹100 crore sanctioned to eligible MSMEs for the purchase of machinery and equipment.
- The eligibility criteria have been expanded to include service sector MSMEs. The guaranteed tenure has been fixed at 10 years.
- The modifications aim to improve credit access, expand coverage, reduce compliance requirements, and provide targeted incentives to MSMEs.

PM E-DRIVE REVISED

Context: The government has revised the PM E-DRIVE Scheme by introducing new deadlines and unit caps for electric two-wheelers and electric three-wheelers.

About PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE)

- PM E-DRIVE was launched in **October 2024 to promote electric mobility in India for a period of two years by Ministry of Heavy Industries (MHI)**.
- Its primary objective is **to accelerate EV adoption** by providing upfront purchase incentives and supporting the development of charging infrastructure.
- It is a **fund-limited, Central Sector Scheme**.

Key Components

- **Subsidies:** Demand incentives are provided for electric vehicles such as e-two-wheelers (e-2W), e-three-wheelers (e-3W), e-ambulances, e-trucks, and other emerging EVs.
- **Grants for Creation of Capital Assets:** Funding is provided for the procurement of e-buses, the establishment of a comprehensive charging network, and the upgradation of testing facilities under the Ministry of Heavy Industries.
- **Scheme Administration:** Includes Information, Education and Communication (IEC) activities and payment of fees to the Project Management Agency (PMA).

Eligible Categories

- **Two-Wheelers (e-2Ws):** Targets ~24.79 lakh electric two-wheelers.
- **Three-Wheelers (e-3Ws):** Covers ~3.2 lakh vehicles (e-rickshaws/e-carts, L5 category).
- **e-Ambulances:** ₹500 crore allocated to promote electric ambulances.
- **e-Trucks:** ₹500 crore allocated to promote adoption and reduce CO₂ emissions.
- **e-Buses:** ₹4,391 crore allocated for 14,028 buses by public transport agencies.
- **Charging Infrastructure:** ₹2,000 crore allocated for public charging stations.
- **Testing Infrastructure:** ₹780 crore to modernise testing agencies under MoHeavy Industries.

Key Changes

- **Electric two-wheelers** will be eligible for subsidies only if their vehicles are **registered on or before July 31, 2026**.
- For **electric three-wheelers**, including e-rickshaws, the cut-off date has been extended to **March 31, 2028**.
- **Price ceilings have been fixed for eligibility:** Electric two-wheelers: up to ₹1.5 lakh (ex-factory price); Electric three-wheelers: up to ₹2.5 lakh
- As a **fund-limited scheme**, it will operate within a **total outlay of ₹10,900 crore**. If funds are exhausted before March 31, 2028, the scheme or its components may be closed earlier.

KHANIJ BIDESH INDIA LIMITED (KABIL)

Context: KABIL recently received environmental clearance from the government of Argentina for deep exploration of five brine lithium blocks in the country.

About Khanij Bidesh India Limited (KABIL) (HQ: New Delhi)

- It is a **joint venture company of three Central Public Sector Enterprises:** National Aluminium Company Limited (NALCO), Hindustan Copper Limited (HCL), and Mineral Exploration and Consultancy Limited (MECL), in the ratio of 40:30:30.

- NALCO is one of the largest integrated primary aluminium producers in Asia; HCL is India's only vertically integrated copper producer; and MECL is one of the largest mineral exploration agencies in India.
- It was incorporated in 2019 under the Companies Act, 2013, with the **objective of identifying, exploring, and acquiring overseas mineral deposits, and bringing strategic minerals into India.**
- It functions under the aegis of the **Ministry of Mines, Government of India.**
- The company is currently focused on two key critical and strategic minerals (lithium and cobalt) and has ongoing projects in Argentina, Australia, and Chile.

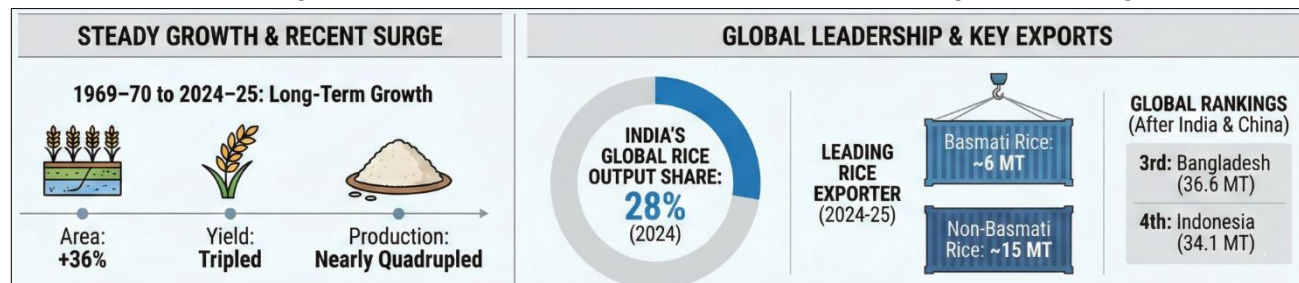
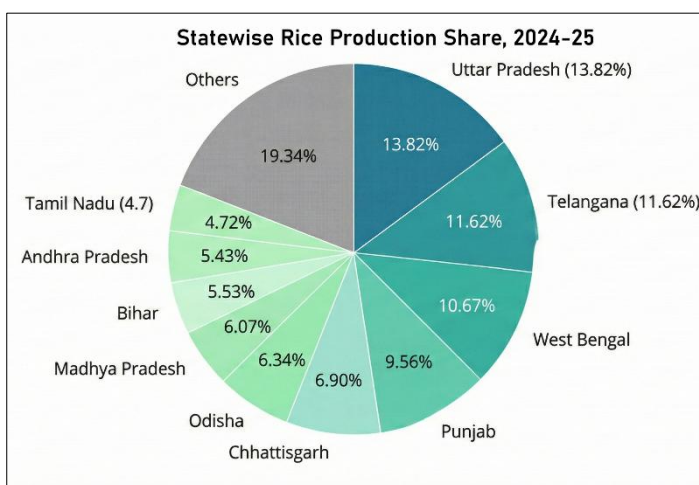
AGRICULTURE AND ALLIED SECTORS

INDIA BECOMES LARGEST PRODUCER OF RICE

Context: India has become the world's largest producer of rice, surpassing China. India's rice production has reached 150.18 million tonnes (MT), compared to China's 145.28 MT.

About Paddy (Rice)

- Paddy refers to the crop from which rice is obtained after removing the husk. It is one of the most important staple crops in India and a primary food source for a large part of the population.
- The crop is mainly grown during the **Kharif season** (sown with the monsoon rains and harvested in autumn), although in some regions it is grown multiple times a year.
- Paddy is a tropical crop that requires warm conditions throughout its growth cycle. Ideal rainfall is around 100–200 cm annually.
- Paddy grows best in soils that can retain water such as Clayey soil, Alluvial soil, Loamy soil.
- Paddy is India's most widely grown crop. It is cultivated in 614 of India's approximately 800 districts and **covers an area of 514.23 lakh hectares (as of 2024–25)**. For comparison, the second most widely grown crop, wheat, covered an area of **328 lakh hectares**.
- In 2024–25, yield per hectare was 4,428 kg in Punjab, 3,928 kg in Andhra Pradesh, 2,561 kg in Bihar, and 2,824 kg in Uttar Pradesh, compared to the national average of 2,929 kg per hectare.



POLAVARAM IRRIGATION PROJECT

Context: The Supreme Court dismissed Telangana's writ petition on the Polavaram–Banakacherla Link Project as not maintainable.

Polavaram Irrigation Project

- The Polavaram Irrigation Project is a **major multi-purpose project** on the **Godavari River** in **Andhra Pradesh** aimed at irrigation, hydropower generation, and water supply.
- It plans to create **irrigation potential for about 4.37 lakh hectares** across East Godavari, Visakhapatnam, West Godavari, and Krishna districts and stabilise the Godavari delta.
- The project includes **960 MW hydropower**, **drinking water** for about 28.5 lakh people in 611 villages (23.44 TMC), and **diversion of 80 TMC to the Krishna basin** as per the Godavari Water Disputes Tribunal award.

Key Components:

- The **dam and reservoir** are located in **Eluru and East Godavari districts** with backwaters extending up to 150 km upstream
- It is a **National Project** under Section 90 of the AP Reorganisation Act, 2014.
- Supports navigation, fisheries, industrial water supply to the Visakhapatnam Steel Plant, and an estimated agricultural output increase of about 109 lakh MT annually.

OPEN-SEA MARINE FISH FARMING PROJECT

Context: India's first open-sea marine fish farming project was recently launched in the **Andaman Sea at North Bay, Sri Vijaya Puram**, marking a major step forward in **offshore aquaculture**.

About Open-Sea Marine Fish Farming Project

- The project is being implemented through **collaboration between the Ministry of Earth Sciences**, its technical arm the **National Institute of Ocean Technology (NIOT)**, and the UT Administration of the Andaman and Nicobar Islands.
- The project represents a move toward realizing the Blue Economy by unlocking the economic potential of India's oceans.
- The pilot initiative focuses on **open-sea cultivation of marine finfish and seaweed under natural ocean conditions**, which differs from traditional coastal or inland aquaculture. The project uses specially designed **floating cage systems capable of operating in open-ocean conditions**.

Components of the Project

- **Marine finfish cultivation:** Finfish seeds such as seabass and cobia (commercially valuable species) are being provided to local fishing communities for cage-based farming.
- **Marine Flora (Seaweed cultivation):** Distribution of seaweed seeds to local fishers to promote deep-water seaweed cultivation, supporting both food and industrial uses.

AGARWOOD

Context: The Ministry of Development of North Eastern Region (MDoNER) launched the Agarwood Value Chain Development Scheme, which will strengthen the entire agarwood value chain, from trees in farmers' fields to perfume bottles in international markets.

About Agarwood

- Agarwood, also known as **Gaharu**, is a **fragrant and resinous wood** formed in ***Aquilaria species*** when the **tree undergoes fungal infection and secretes resin** as a natural defence mechanism. All *Aquilaria* species have been listed under CITES Appendix II.
- This resin is among the most valuable natural products globally. It is used as **incense** in the Middle East, distilled for **luxury perfumery and wellness products** in Western markets, and valued for traditional medicinal applications.
- It is mainly found in **tropical areas with high rainfall in South Asia and Southeast Asia**.
- In India, the **North Eastern Region (NER)** accounts for over **96% of the country's agarwood trees**, with **Assam (81%) and Tripura (11%)** accounting for the predominant share.

LAND STACK

Context: The Ministry of Rural Development (MoRD) has launched the Land Stack under the Digital India Land Records Modernisation Programme (DILRMP) in the pilot locations of Chandigarh and Tamil Nadu. The Ministry has also launched the Glossary of Revenue Terms (GoRT).

About Land Stack

- **Land Stack is envisaged as an integrated, GIS-based digital platform**, drawing from international best practices in countries such as Singapore, the U.K., and Finland.
- Currently, citizens often face fragmented information across various departments. The Land Stack addresses this by **providing single-window access** to land and property information for both citizens and government agencies.
- It marks a **transition towards modern, transparent, and citizen-centric land governance**, aligning India's historical land record systems with the demands of contemporary digital governance.

About Glossary of Revenue Terms (GoRT)

- India's land administration reflects diverse historical influences, from Todar Mal's reforms to British settlement systems (Ryotwari, Mahalwari), leading to varied meanings of terms across states.
- To address this, the **Department of Land Resources, with the Centre of Excellence in Land Administration and Management (CoE-LAM) at YASHADA, Pune**, prepared GoRT.
- It provides **meanings of land-related revenue terms in vernacular languages, Hindi, English, and Roman scripts**.
- The objective is to harmonise terminology to make land data comparable and interoperable nationally without replacing state-specific terms. It serves as an authoritative reference for revenue officials, policymakers, judicial authorities, and citizens.

CATTLE BREEDS- KARAN FRIES AND VRINDAVANI

Context: The government has registered two high-yielding synthetic cattle breeds — Karan Fries and Vrindavani. In addition, new indigenous breeds of cattle and buffalo have also been recognised, including Medini (Jharkhand), Rohilkhandi (Uttar Pradesh), and Melghati (Maharashtra).

Significance of Synthetic Cattle Breeds

- Synthetic breeds combine the advantages of different breeds to achieve higher milk productivity while maintaining climate adaptability and disease resistance.
- These breeds can produce over 3,000 kg of milk during a 10-month lactation period, which is significantly higher than the 1,000–2,000 kg yield typical of many indigenous breeds.

Characteristic	Karan Fries	Vrindavani
Developed by	National Dairy Research Institute (NDRI), Karnal, Haryana	ICAR–Indian Veterinary Research Institute (IVRI), Bareilly, Uttar Pradesh
Breed Composition	Cross between indigenous Tharparkar cows and Holstein-Friesian bulls	Composite breed developed from Holstein-Friesian, Brown Swiss, Jersey, and indigenous Haryana cattle
Key Feature	High milk yield with adaptation to Indian conditions	Known for resilience and improved milk productivity

GRAIN ATMS

Context: The Bihar government has approved the installation of grain ATMs in Patna as a pilot project to improve food distribution efficiency.

What is a grain ATM?

- Also called “**Annapurti**” (*meaning provider of grain*), it is an **automated machine that dispenses food grains such as wheat or rice, similar to a banking ATM**.
- The machine can **dispense up to 50 kg of grain within five minutes**, reducing waiting time for Public Distribution System (PDS) beneficiaries by nearly 70%.

- It simplifies the distribution process by **automating authentication, weighing, and grain dispensing**, thereby reducing delays and errors.

Technology and Operation

- The technology was developed by the World Food Programme in collaboration with the Food Corporation of India and state governments.
- Machines can operate 24×7, similar to bank ATMs, and may be powered by solar energy.
- They require internet connectivity to access the PDS database and the beneficiary's profile.

How Beneficiaries Receive Grain

- Beneficiaries swipe a grain ATM or beneficiary card on a PoS machine linked to their ration card under the National Food Security Act or their Aadhaar.
- After authentication, the machine dispenses grain, updates the beneficiary's PDS record, and provides a printed receipt as confirmation.

Implementation

- So far, **six states have installed grain ATMs on a pilot basis, mostly in urban areas**. The Central Government plans to expand the system to Panchayat levels in the future.
- States must provide space for installation, while the Centre and states share the costs of maintenance and security.

BEE CORRIDORS

Context: The National Highways Authority of India has announced a first-of-its-kind initiative to create **pollinator or “Bee Corridors”** along national highways.

About Bee Corridors

- The project marks a **shift from ornamental roadside plantations to ecological vegetation**, with **continuous stretches of bee-friendly plants and flowering trees**.
- These corridors will include **nectar- and pollen-rich species**, allow flowering weeds to bloom, and retain natural elements such as dead wood and hollow trunks that support pollinators. Species selected for plantation: **neem, karanj, mahua, palash, bottle brush, jamun, and siris**.
- Based on **agro-climatic suitability**, corridors will be developed along selected highway stretches and vacant NHAI land parcels.
- The plantation design will ensure **staggered flowering across seasons to maintain a near-continuous blooming cycle**.
- NHAI plans to develop at least three pollinator corridors during 2026–27 and plant around 40 lakh trees along national highways, with about 60% under the Bee Corridor initiative.

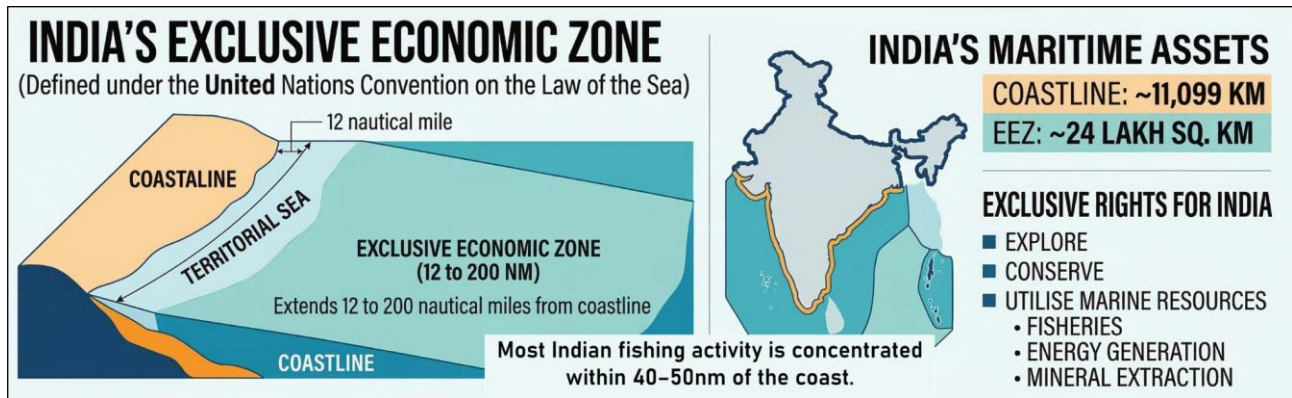
ACCESS PASS FOR FISHING IN EEZS

Context: The Ministry of Fisheries, Animal Husbandry and Dairying has launched the Access Pass for Fishing in India's Exclusive Economic Zone (EEZ) for all 13 coastal States and Union Territories.

About the Access Pass

- The Access Pass aims to **simplify and regulate offshore fishing in India's EEZ**. It is **required only for mechanised fishing vessels and large motorised vessels above 24 metres**.
- Traditional non-motorised fishing crafts are exempt, ensuring protection of small and artisanal fishers' livelihoods.
- The pass will be issued free of cost through the ReALCRaft portal within a time-bound process.

- Once approved, it is delivered digitally to the fisher's registered mobile number or email, ensuring transparency and easy access.



About ReALCRaft Portal

- The portal provides web-based, citizen-centric services for marine fishers and coastal States/UTs.
- It facilitates registration and licensing of fishing vessels, ownership transfer, and related procedures, improving ease of doing business in the fisheries sector.
- The portal has been developed by the **National Informatics Centre and the Department of Fisheries**.
- It is integrated with the **Marine Products Export Development Authority** and the **Export Inspection Council** for issuing Fish Catch and Health Certificates, which are essential for exporting seafood to premium international markets.

SUJVIKA PORTAL

Context: The Ministry of Science and Technology has launched SUJVIKA, an **AI-driven biotechnology product data portal**.

About SUJVIKA Portal

- SUJVIKA functions as a **trade statistics digital intelligence platform**, presenting **authenticated biotechnology product import data in a structured format**.
- It is developed in collaboration with the Association of Biotechnology Led Enterprises (ABLE).
- It provides sector-wise insights into biochemical products, industrial enzymes, and other biotech imports, enabling researchers, startups, and industry to: Identify high-value imports; Assess import dependence; Prioritise indigenisation and research & development (R&D) efforts.
- The portal also aims **to support evidence-based policy planning** and strengthen public-private partnerships in biomanufacturing.

AGRISTACK

Context: Bharat-VISTAAR (Virtually Integrated System to Access Agricultural Resources) was recently announced as a new tool under the AgriStack ecosystem.

About Bharat-VISTAAR

- It is a multilingual AI platform designed to integrate AgriStack portals with the ICAR package of agricultural practices and AI systems.
- The platform will:
 - Provide real-time, validated advisory services to farmers.
 - Enable two-way communication, allowing farmers to give feedback.
 - Support Centre-State convergence in agricultural services.
 - Use AI chatbots and voice bots with local-language support.
 - The initiative does not require a separate budget allocation.

About Agristack

- AgriStack is a **Digital Public Infrastructure (DPI)** for the agricultural sector developed under the **Digital Agriculture Mission (DAM)**.
- **Launched in 2024**, it aims to **integrate agricultural data on a single digital platform**.
- The system is intended to improve farm productivity, reduce risks, and support better decision-making by providing customised advisory services to farmers.
- AgriStack is built on three foundational registries, created and maintained by State Governments and Union Territories: Farmer Registry, Geo-referenced Village Maps, Crop Sown Registry

Farmer Registry	• A digital identity (Farmer ID) similar to Aadhaar. The ID is linked dynamically to: Land records, Livestock ownership, Crops sown, Demographic and family details, Government schemes and benefits availed • Plan to create digital identities for 11 crore farmers, of which 8.62 crore have already been generated. • Financial support has been provided to states through the Special Assistance to States for Capital Investment (2024-25) to develop these registries. • The registry will enable farmers to access benefits and services digitally, reducing paperwork and physical visits to offices. • The target is to complete the Farmer Registry with dynamic Records of Rights (ROR) synchronisation by March 2027, and by March 2028 for North-Eastern states.
Crop Sown Registry (CSR)	• Records details of crops planted by farmers each season. • Data is collected through mobile-based Digital Crop Surveys conducted on the ground. • A pilot Digital Crop Survey was conducted in 11 states during 2023-24. • The government aims to cover 30 crore farm plots across 604 districts by the Kharif season of 2026. • More than 70% of plots in targeted villages have already been included in the registry.
Geo-referenced Village Maps	• Geographic information of land records linked to precise locations (latitude and longitude). • So far, 5.4 lakh village maps have been geo-referenced out of 6.75 lakh villages. The target is to cover all villages by March 2027.

PURPLE POTATOES IN PUNJAB

Context: Farmers in Faridkot, Punjab are cultivating a new potato variety - Purple potato.

- India officially launched its own purple potato variety Kufri Jamunia in 2024, developed by the Central Potato Research Institute.
- Farmers in Punjab have been cultivating purple potatoes since 2022 using seeds imported from Bolivia.

About Purple potatoes

- Purple potatoes are colourful varieties of regular potatoes (*Solanum tuberosum*), native to the **Andes Mountains of Peru and Bolivia**, known for their vibrant purple skin and often purple flesh.
- They contain **higher antioxidant levels** than white potatoes due to **anthocyanins**—the pigments responsible for their colour (also found in blueberries).
- Unlike conventional potatoes, they have **lower Glycemic Index and are rich in Vitamin C**.
- High anthocyanin intake is linked to **improved cholesterol levels**, better eye health, and a reduced risk of heart disease, certain cancers, and diabetes, making them suitable for individuals managing conditions such as diabetes or joint pain.
- The crop **adapts well to the climatic conditions of Punjab**, which are relatively fungus-free and ideal for producing disease-free seed potatoes.
- It has a crop duration of 90–100 days, is sown in October–November, and harvested in February–March.
- Purple potatoes have nearly double the shelf life of conventional varieties due to their thicker peel, while maintaining similar tuber size without cracks.
- Average production can reach around 20,000 kg per acre, with potential earnings ranging from ₹6 lakh to ₹20 lakh per acre depending on quality and marketing.

JOHA RICE

Context: India has exported its first consignment of Assam's GI-tagged Joha Rice to the United Kingdom and Italy. It has previously been exported to Vietnam and five West Asian countries, Kuwait, Bahrain, Qatar, Oman, and Saudi Arabia.

About Joha Rice

- Joha rice is an **aromatic indigenous variety cultivated in Assam** and received the **Geographical Indication (GI) tag in 2017**.
- It is highly valued for its **distinct fragrance, fine grain texture, and rich taste**.
- It is grown in the Sali/ **Kharif season** (winter rice). Major Joha varieties included in this are Kola Joha, Keteki Joha, Bokul Joha and Kunkuni Joha.
- This rice variety has **two unsaturated fatty acids** viz., linoleic acid (omega-6) and linolenic (omega-3) acid. Joha rice is also rich in several antioxidants, flavonoids, and phenolics
- It is effective in lowering the blood glucose and preventing diabetes onset.

RICE FORTIFICATION SUSPENDED

Context: The decision to discontinue rice fortification was taken following a study conducted by IIT Kharagpur to assess the shelf life of Fortified Rice Kernels (FRK) and Fortified Rice (FR) under actual storage conditions across diverse agro-climatic zones in the country.

About Rice Fortification

- Fortification refers to the **deliberate addition of essential micronutrients to food** in order to improve its nutritional quality and provide public health benefits with minimal health risks.
- It is a **cost-effective, scientifically proven, and globally recognised approach** to addressing micronutrient deficiencies. **Fortified rice is produced by blending fortified rice kernels with regular rice.**
- The government-initiated rice fortification in 2021 with the **objective of distributing fortified rice** in a phased manner through all central government schemes by 2024.
- It is prepared in accordance with the standards set by the Food Safety and Standards Authority of India (FSSAI), which prescribes the addition of three key micronutrients: **iron, folic acid, and vitamin B12.**

INTERNATIONAL YEAR OF THE WOMAN FARMER

Context: The United Nations has declared 2026 as the International Year of the Woman Farmer (IYWF 2026).

About International Year of the Woman Farmer (IYWF 2026)

- The UN General Assembly adopted a resolution in May 2024 declaring 2026 the International Year of the Woman Farmer, with strong backing from over 120 countries, including the United States as lead sponsor.
- The year is **coordinated by the Food and Agriculture Organization of the UN (FAO)**, with support from **International Fund for Agricultural Development (IFAD), World Food Programme (WFP), and member states**, as part of the broader 2030 Agenda for Sustainable Development.

COTTON CORPORATION OF INDIA (CCI)

Context: The Cabinet Committee on Economic Affairs (CCEA) has approved funding of ₹1,718.56 crore to the Cotton Corporation of India (CCI) to meet Minimum Support Price (MSP) requirements.

About Cotton Corporation of India (CCI)

- Established in 1970, CCI is a Central Public Sector Undertaking (PSU) under the **Ministry of Textiles**.

- Headquartered in **Navi Mumbai**, it undertakes price support operations when market prices fall below MSP.
- It also carries out commercial purchases to meet the raw material needs of the domestic textile industry.
- CCI has introduced technology-driven and farmer-centric initiatives to improve efficiency and transparency, including:
 - Dissemination of MSP-related information
 - Bale Identification and Traceability System (BITS)
 - Cott-Ally mobile application for better outreach and service delivery to farmers.

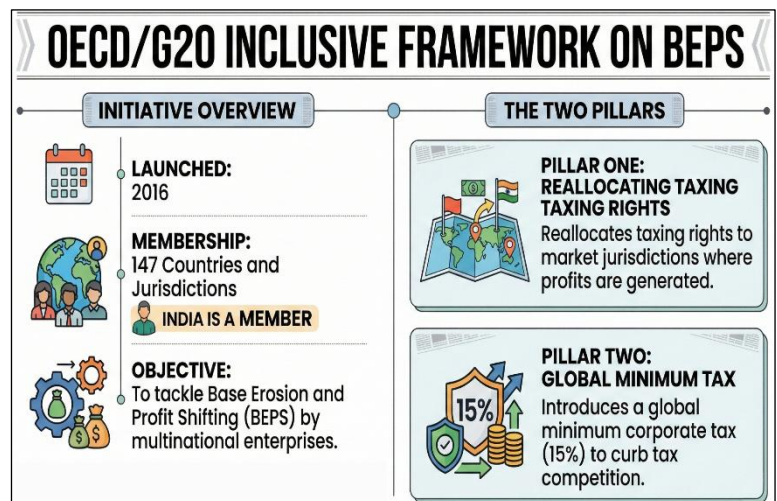
TAXATION

GLOBAL MINIMUM TAX

Context: The **OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (BEPS)** has reached an agreement on a side-by-side arrangement package for the coordinated implementation of **global minimum tax rules**.

What is the Global Minimum Tax?

- The Global Minimum Tax is based on the **Global Anti-Base Erosion (GloBE) Model Rules**.
- Its objective is **to ensure that large multinational enterprises (MNEs) pay a minimum level of tax (15%) on their income in every jurisdiction where they operate**.
- This framework aims to reduce incentives for profit shifting and establish a minimum floor for corporate tax competition, thereby limiting the global “race to the bottom” in tax rates.
- **BEPS** refers to **tax planning practices used by multinational companies to exploit gaps or mismatches in tax rules, allowing them to shift profits artificially to jurisdictions with low or zero taxation** in order to avoid paying taxes.



KAR SAATHI

Context: Recently, the Income Tax Department launched a new website featuring an AI chatbot called 'Kar Saathi'. ("kar" means taxation)

About Kar Saathi

- Kar Saathi is an **AI-powered chatbot** that acts as a **virtual tax assistant**, available **24×7** on the official income tax website. It aims to **simplify compliance under the Income Tax Act, 2025**.
- Integrated into the website, it provides real-time responses, step-by-step guidance, and helps users with processes like filing returns.
- **Features**
 - Explains return filing, updated provisions, and form navigation.
 - Functions as a one-stop solution for understanding tax rules and resolving taxpayer queries on direct tax compliance.

WINDFALL TAX

Context: The government recently hiked export duty, or windfall tax, on diesel to Rs 55.5 per litre and on aviation fuel ATF to Rs 42 a litre.

About Windfall Tax

- A windfall tax is a **higher tax imposed by the government on specific industries when they earn unexpected and above-average profits** due to global or geopolitical events beyond their control.
- As the name suggests, “**windfall**” refers to a **sudden and unanticipated increase in profits**, while “tax” implies a levy imposed on this extraordinary income.
- Such profit increases are not due to expansion or investment strategies by the business, but arise from favourable external conditions for which the business is not responsible.

FINANCIAL MARKETS

CORPORATE BOND MARKET

Context: NITI Aayog CEO B.V.R. Subrahmanyam released the report "Deepening the Corporate Bond Market in India".

What is the Corporate Bond?

- Corporate bonds are **debt securities issued by companies to raise funds** for purposes such as expansion, equipment purchase, or new projects.
- When an investor buys a corporate bond, they lend money to the issuing company, which promises to repay the principal on a fixed maturity date. Until then, the company usually pays interest, typically on a semi-annual basis.
- Unlike equity shares, corporate bonds represent a loan obligation (IOU) and **do not provide ownership in the company**.

What is the Corporate Bond Market?

- It is a **financial marketplace where public and private sector companies raise long-term capital** by issuing **debt securities (bonds)**, instead of borrowing from banks or diluting ownership through equity.
- India's corporate bond market is 16% of GDP and is modest compared to other economies.

OPINION TRADING

Context: An anonymous gambler reportedly sparked controversy after making about \$436,000 from a bet on Opinion Trading Platform, related to the capture of Venezuelan President Nicolás Maduro.

About Opinion Trading

- Opinion trading, or **prediction markets**, is a system where **users stake money on the outcome of future events**, such as whether the Indian cricket team will win the T20 World Cup.
- These platforms **allow users to enter arrangements where payouts depend on whether a specified event occurs**. If predictions are correct, participants earn money; if not, they incur losses.
- Events can include political outcomes, sports results, weather events, financial markets, or cryptocurrencies.
- Globally, regulation varies:
 - In the United States, certain event contracts and prediction markets fall under the oversight of the Commodity Futures Trading Commission (CFTC).
 - In the United Kingdom, many such platforms are treated as gambling services and regulated accordingly.

Regulatory Stance in India

- The Securities and Exchange Board of India (SEBI) has cautioned investors that **opinion trading platforms fall outside its regulatory purview** and that **no investor protection mechanisms apply**.
- Since these platforms are **not recognised stock exchanges** and are **not registered with SEBI**, any trading in securities on them (if applicable) is considered **illegal**.
- In August 2025, Parliament passed the **Promotion and Regulation of Online Gaming Act, 2025**, which provides a framework to **regulate online gaming** and **includes provisions to prohibit online money games**.
- The government also prohibits banks and financial institutions from facilitating financial transactions on such platforms

AT-1 BONDS (ADDITIONAL TIER-1 BONDS)

Context: HDFC Bank has reportedly taken action against 15 executives for alleged mis-selling of Credit Suisse AT-1 bonds.

About AT-1 Bonds (Additional Tier-1 Bonds)

- AT-1 bonds are special debt instruments issued by banks to strengthen their Tier-1 capital, which is the core financial base of a bank.
- They form part of Additional Tier-1 capital, which is slightly riskier than Common Equity Tier-1 (CET-1).
- Mainly suitable for High Net Worth Individuals (HNIs) and institutions due to high minimum investment.
- **Key Features**
 - **Perpetual:** No fixed maturity date.
 - **Convertible/Write-off:** Can be converted into equity or written off during financial stress.
 - **High Return, High Risk:** Offer higher interest rates due to greater risk.

MISCELLANEOUS

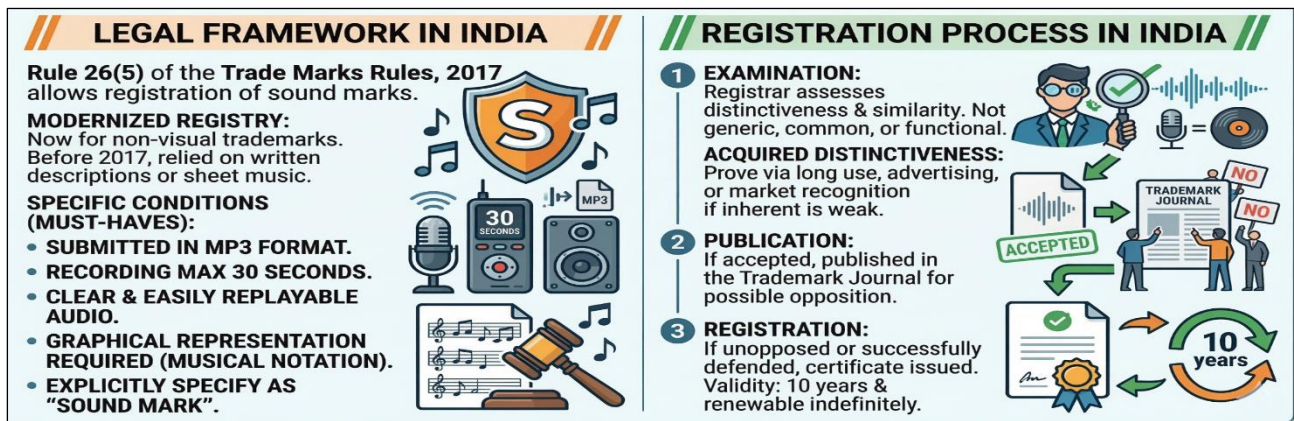
SOUND-MARK

Context: A jingle “Oo la la le o” recently secured sound mark registration.

What is a Sound Mark?

- A sound mark is a non-conventional trademark where a specific sound identifies the source of goods or services. Instead of a logo or word, consumers recognise the brand through an audio cue.
- Examples include Yahoo! “Yodel” (India’s first registered sound mark in 2008), Netflix “Ta-dum”, and the Nokia start-up tune.

- The key principle is distinctiveness—if consumers associate a sound exclusively with one commercial source, it can qualify for trademark protection.



MOU BETWEEN FCI AND WFP

Context: The Food Corporation of India (FCI) and the World Food Programme (WFP) have signed a Memorandum of Understanding (MoU) to supply rice for global humanitarian operations aimed at combating hunger.

- Under the agreement, FCI will supply 2 lakh metric tonnes of rice to WFP at ₹2,800 per quintal.

Food Corporation of India (FCI)

- The FCI was **established in 1965** under the **Food Corporations Act, 1964**, during a period of severe food grain shortages, particularly of wheat.
- **Headquartered in New Delhi**, it functions as a **statutory body under the Ministry of Consumer Affairs, Food and Public Distribution**.
- Since its establishment, FCI has played a crucial role in transforming India's crisis-driven food management system into a stable and structured national food security framework.

SILVER

Context: The Global Trade Research Initiative (GTRI) has urged India to boost domestic silver processing to reduce reliance on imported, finished silver. In 2024, India became the world's largest consumer of refined silver, accounting for 21.4% of global trade.

About Silver (Ag | Atomic Number: 47)

- Silver is a soft, lustrous metal known for its high reflectivity and conductivity. Silver is commonly found in ores such as argentite and chlorargyrite (horn silver).
- **Sources:** Most silver comes as a byproduct of copper, gold, lead, and zinc mining, with **top producers including Mexico, Peru, China, and Bolivia**.
- **Applications:**
 - Silver has the highest electrical and thermal conductivity among metals, it is essential for **electronics, circuit boards, connectors, batteries, and automotive systems**.
 - Due to its antibacterial properties, silver is widely used in **wound dressings, coatings for medical devices**, catheters, surgical instruments, water purification systems, and pharmaceutical compounds.

KALADI

Context: The Ministry of Science and Technology has initiated the process of upscaling Kaladi, the GI-tagged traditional dairy product of Udhampur, Jammu and Kashmir.

About Kaladi

- Kaladi, also spelled Kalari, is a **dense, ripened cheese originating from the Dogra region of Jammu, Udhampur district**.

- It is traditionally **prepared from raw full-fat milk** (from cow, buffalo, or goat) using whey water as a coagulant without boiling.
- Often referred to as the “**mozzarella of Jammu**,” it is regarded as one of the world’s most unique cheeses, with a dried exterior and a moist interior.
- It differs from paneer or mozzarella because it is **made only from raw milk without boiling** and develops a distinctive fermented flavour that strengthens over time.
- Its **shelf life is limited** to a few days under non-refrigerated conditions and around 12–15 days when refrigerated.

SAMPANN-UMANG INTEGRATION

Context: The SAMPANN (System for Accounting and Management of Pension) system has been integrated with the UMANG (Unified Mobile Application for New-age Governance) platform.

- This initiative enables pensioners to retrieve their Pension Payment Order (PPO) number and Life Certificate (LC) validity status through the UMANG web portal or mobile application.

SAMPANN	• A digital platform for pension administration and related financial management functions. It is developed, owned, and operated by the Office of the Controller General of Communication Accounts • Shift from system-centric administration to pensioner-centric governance • Digitized the entire pension lifecycle—from initiation and processing of cases to the issuance of e-PPO, disbursement, accounting, reconciliation, financial reporting, audit facilitation, and grievance redressal.
UMANG	• Launched in 2017, it is a Unified Mobile Application for New-age Governance that provides access to government services offered by Central, State, and Local bodies anytime and anywhere. • developed by the Ministry of Electronics and Information Technology (MeitY) and National e-Governance Division (NeGD).

PROJECT VAULT

Context: President Trump has launched Project Vault, an independently governed public–private partnership aimed at creating a strategic domestic reserve of critical minerals.

About Project Vault

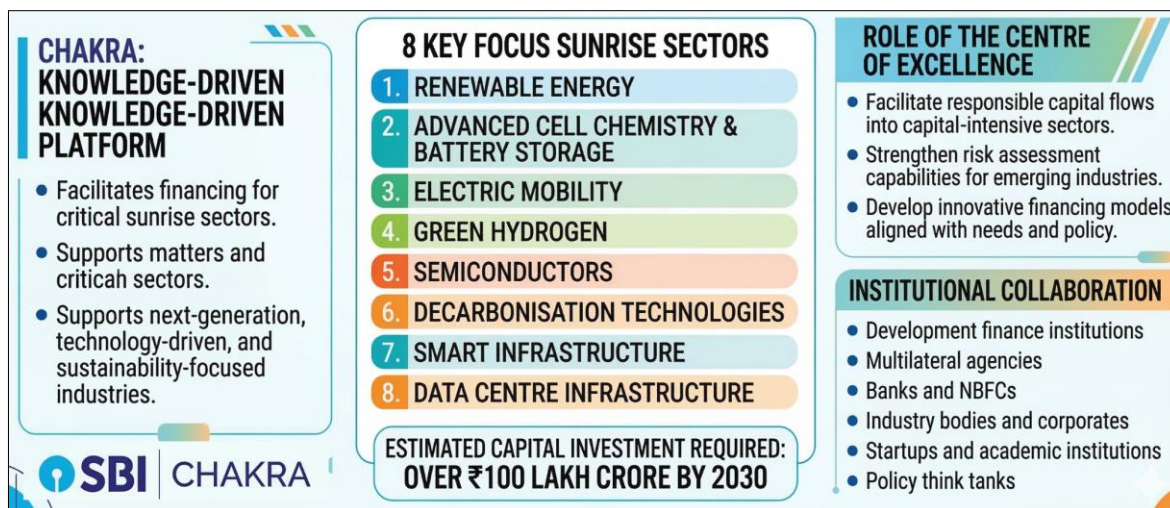
- Project Vault is a **US initiative to create a strategic reserve of critical minerals and rare earth elements**.
- It involves a \$12 billion public-private partnership, with \$10 billion from the US Export-Import Bank and about \$1.67-2 billion in private seed funding.
- The program stockpiles over **60 essential minerals** (like lithium, cobalt, copper, and rare earths) used in EVs, batteries, smartphones, jet engines, and defense tech, mirroring the Strategic Petroleum Reserve but for minerals.

CHAKRA

Context: State Bank of India (SBI) has launched “CHAKRA” – a Centre of Excellence (CoE) to facilitate financing for sunrise sectors that are critical to India’s future economic growth.

What are Sunrise Sectors?

- Sunrise sectors are **rapidly emerging, high-growth industries** characterized by **intense innovation, significant investment, and strong future growth potential**.
- These, such as Renewable Energy, AI, Semiconductors, Green Hydrogen, and Electric Vehicles, are often supported by government policies and are expected to drive future economic prosperity, often **replacing declining "sunset" industries**.



FIRST STATE INNOVATION MISSION IN TRIPURA

Context: The Atal Innovation Mission (AIM), under NITI Aayog, recently launched the country's first State Innovation Mission (SIM) in Tripura.

About State Innovation Mission (SIM)

- SIM is part of the approved **AIM 2.0 programme under the aegis of NITI Aayog's State Support Mission (SSM)**.
- It is designed as a long-term institutional mechanism to help States and Union Territories build inclusive, context-specific innovation ecosystems aligned with national priorities and local strengths.
- Through SIM, **AIM will work with the Government of Tripura** to design and implement a long-term innovation and entrepreneurship strategy.

The SIM framework for Tripura includes:

- Institutionalization of SIM under the **Tripura Institution for Transformation (TIFT)**.
- Launch of TNEST** (Tripura – Nurturing Entrepreneurship and Startups) as a dedicated incubation and innovation facility to support startups and promote "Make from Tripura" solutions.
- Innovation Centres in all eight districts**, linked to T-NEST, to encourage innovation among women and tribal communities.

(For Explanation of Atal Innovation Mission, Refer to Prelims Knockout Part 1; Page 222)

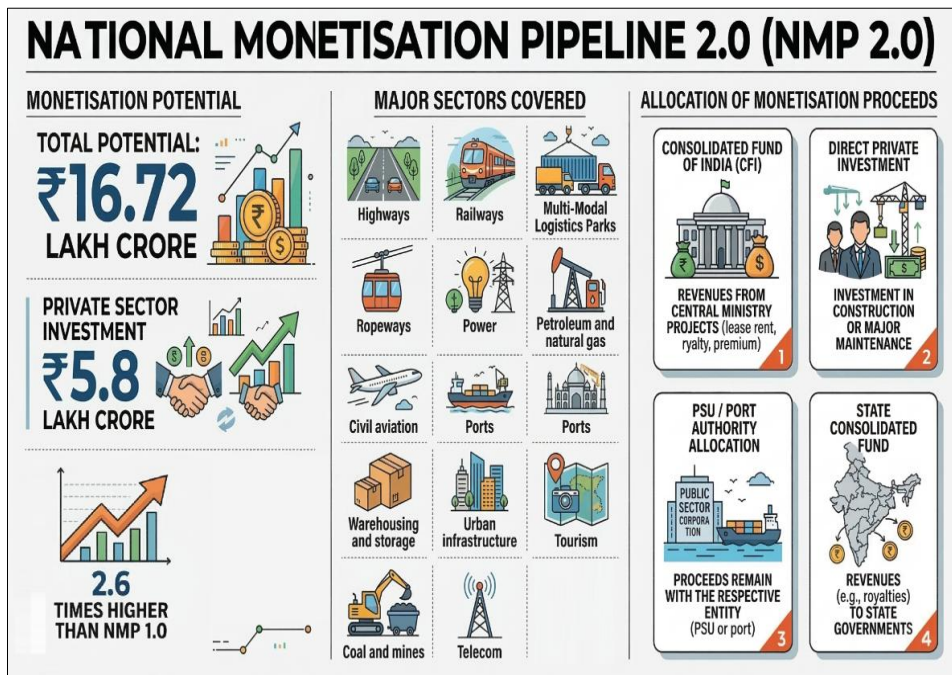
NATIONAL MONETISATION PIPELINE 2.0

Context: The Ministry of Finance launched the National Monetisation Pipeline 2.0 (NMP 2.0), the second phase of the government's asset monetisation programme covering 2025–2030.

About National Monetisation Pipeline 2.0

- Developed by **NITI Aayog**, it aims to **unlock value from existing public infrastructure assets** by allowing private players to operate them for a limited period.
- Ownership of the assets remains with the government, while private entities operate, maintain, and earn revenue from them under defined agreements.
- NMP 2.0 broadly follows the asset monetisation approach used in NMP 1.0.
- Monetisation will occur through:
 - Long-term lease or transfer of operating rights
 - Divestment of shares in listed entities
 - Securitisation of revenue streams
 - Strategic commercial auctions

- The programme mainly focuses on **core infrastructure assets**. Monetisation of non-core assets such as land and buildings is allowed only when the project involves further development of those assets.
- Pure commercial sale of land where proceeds are not used for developing equivalent assets is excluded from NMP 2.0.



• Institutional Framework

- An Empowered Core Group of Secretaries on Asset Monetisation (CGAM), chaired by the **Cabinet Secretary**, will monitor implementation.
- The National Land Monetisation Corporation (NLMC) supports monetisation of land assets across government departments and PSUs.

AGREEMENTS ON RECIPROCAL TRADE

Context: The evolving nature of trade agreements has gained attention after the United States signed several “Agreements on Reciprocal Trade” (ARTs), including a proposed deal with India.

About Agreements on Reciprocal Trade

- ARTs are a **series of bilateral trade pacts negotiated by the United States with partner countries**.
- They emphasize **mutual market access, tariff reductions or preferential treatment**, and the **removal of non-tariff barriers to achieve "reciprocity"**.
- These **differ from traditional comprehensive Free Trade Agreements (FTAs)**.
- They often address supply chain resilience, national security, digital trade, intellectual property (IP), labor standards, environmental protections, and issues like subsidies or forced labor.
- ARTs are **deliberately structured not to qualify as regional trade agreements (RTAs) under GATT Article XXIV**. As a result, they are **not notified to the WTO** and function entirely outside the multilateral review and oversight mechanisms that apply to traditional FTAs or customs unions.

ENTREPRENEURIAL STATE

Context: The Economic Survey 2025–26 has emphasized the need for India to move towards an “Entrepreneurial State” model. The concept is inspired by economist Mariana Mazzucato.

- An Entrepreneurial State is a **government that does more than just regulate or support the economy**.
- It actively drives innovation, takes risks, and creates new opportunities, much like an entrepreneur (a business innovator).

LAKHPATI DIDI

Context: The government has achieved the milestone of 3 crore Lakhpati Didis one year ahead of the March 2027 target. A new target has been set to create 6 crore Lakhpati Didis by March 2029.

About Lakhpati Didi	
Launch and Ministry	- Launched in 2023 under the Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM). - Implemented by the Ministry of Rural Development.
Objective	To enable women associated with Self-Help Groups (SHGs) to earn a sustainable annual household income of more than ₹1 lakh.
Who is a Lakhpati Didi?	- A woman member of an SHG who earns more than ₹1,00,000 annually. - The income must be sustainable, with: - At least ₹10,000 per month, and - Maintained over four agricultural seasons or business cycles.
Eligibility Criteria	- Must be an SHG member for at least two years. - Should have received support from the Community Investment Fund (CIF). - Must be engaged in at least two livelihood activities under the mission.

LAKHPATI DIDI: FINANCIAL ASSISTANCE & SUPPORT MECHANISMS

CREDIT & FINANCIAL SUPPORT

REVOLVING FUND (RF)

PURPOSE: Promote internal lending & meet immediate credit needs.

SUPPORT: ₹20,000–₹30,000 per eligible SHG.

COMMUNITY INVESTMENT FUND (CIF)

PURPOSE: Improve financial management & creditworthiness.

SUPPORT: Up to ₹2.5 lakh per SHG.

CAPITALIZATION SUPPORT

PURPOSE: Provide collateral-free loans & financial flexibility.

SUPPORT: Up to ₹20 lakh per SHG.

INCLUDES:

- Interest subvention on loans up to ₹3 lakh at 7% interest.
- ₹5,000 overdraft facility for SHG members with Jan-Dhan accounts.

WOMEN ENTERPRISE ACCELERATION FUND

PURPOSE: Provide credit guarantee, collateral support, & incentives.

SUPPORT:

- Up to ₹5 lakh (individual),
- Up to ₹2 crore (collective),
- Up to ₹25 lakh (incentives).

ENTERPRISE DEVELOPMENT & LIVELIHOOD PROMOTION

COMMUNITY ENTERPRISE FUND (CEF)

- Supports individual & group enterprises.
- Includes SVEP, OSF, clusters, & incubators.

START-UP VILLAGE ENTREPRENEURSHIP PROGRAMME (SVEP)

- Promotes rural enterprises through training & financial assistance.

ONE STOP FACILITY (OSF)

- Provides block-level incubation & business development services.

MICRO ENTERPRISE DEVELOPMENT (MED)

- Supports non-farm enterprises via training, mentoring, & financial assistance.

INCUBATION & CLUSTER PROMOTION

- Enhances productivity & market linkages for women-led enterprises.

ADDITIONAL SUPPORT MECHANISMS

VIABILITY GAP FUND (VGF)

- Covers operational expenses until enterprises become sustainable.

BANK LINKAGE

- Connects SHG members with formal banking systems.

AAJEEVIKA GRAMEEN EXPRESS YOJANA (AGEY)

Provides subsidised loans for rural transport services.

ESSENTIAL COMMODITIES ACT, 1955

Context: The Union government has invoked the Essential Commodities Act, 1955 to regulate the supply of natural gas amid concerns over shortages triggered by the Iran–US–Israel conflict.

Essential Commodities Act (ECA), 1955

- The Act was **introduced to prevent hoarding and black marketing of food** and to protect consumers from irrational spikes in the prices of essential commodities.

Defining Essential Commodity

- The Act does not provide a specific definition of “essential commodities.” It states that an essential commodity is one listed in the **Schedule of the Essential Commodity Act**.
- The **Central Government** has the power to add or remove commodities from this Schedule.
- By declaring a commodity as essential, the government can regulate its production, supply, and distribution, and impose stock limits.
- The Schedule currently includes the following seven categories:** (1) Drugs, (2) Fertilisers (organic, inorganic, mixed), (3) Foodstuffs, including edible oils and oilseeds, (4) Hank yarn made wholly from cotton, (5) Petroleum and petroleum products (includes Natural gas and LNG) (6) Raw jute and jute textiles (7) Seeds of food crops, fruits and vegetables, cattle fodder, jute seeds, and cotton seeds

RELIEF SCHEME

Context: The government has launched a ₹497 crore Resilience & Logistics Intervention for Export Facilitation (RELIEF) scheme under the Export Promotion Mission (EPM).

About Resilience & Logistics Intervention for Export Facilitation (RELIEF) Scheme

- The RELIEF scheme supports Indian exporters facing disruptions from geopolitical tensions in West Asia, including Gulf maritime corridor issues.
- Approved in March 2026 under the Export Promotion Mission (EPM), RELIEF addresses **escalated freight costs, higher insurance premiums, and war-related export risks.**
- It covers both past shipments during disruptions and future exports to affected regions, with a total outlay of ₹497 crore.
- **Region Covered:** United Arab Emirates, Saudi Arabia, Kuwait, Israel, Qatar, Oman, Bahrain, Iraq, Iran, Yemen.

INITIATIVES LAUNCHED FOR ORANGE ECONOMY

Context: The Ministry of Information and Broadcasting has launched three initiatives to strengthen India's media, broadcasting, and digital sectors and promote the orange (creative) economy.

About Orange Economy

- The creative economy refers to industries where value is generated from creativity, culture, technology, and intellectual property.
- It includes sectors such as music, film, design, fashion, publishing, arts, and software development.

Key Initiatives

1. National AI Skilling Initiative

- Launched in partnership with Google and YouTube, and implemented by the **Indian Institute of Creative Technologies (IICT).**
- **Aims to enhance AI capabilities in animation, visual effects, gaming, comics (AVGC), and media technology.** Will train around 15,000 participants in two phases.
- Targets creators, students, developers, and media professionals to build future-ready skills and position India as a global hub for digital content and innovation.

2. MyWaves Platform

- A new feature within the **WAVES OTT platform** enabling users to create, upload, and share content. Designed as a **structured user-generated content (UGC) platform** supporting initiatives like the **Create in India Challenge.**
- **Encourages a shift from passive viewing to active content creation.**
- Supports formats such as short videos, vertical videos, and episodic content, with a multilingual interface.

3. New Technology Upgrades

- **Introduction of television sets with built-in satellite tuners:** Enables users to access DD Free Dish channels without a separate set-top box, reducing costs and simplifying viewing.
- **Launch of an advanced Electronic Programme Guide (EPG):** Allows easy browsing of channels and schedules through a simple interface, enhancing user convenience across households.

DEFENCE AND SECURITY

IMPORTANT ACTS AND AGENCIES

PRAHAAR STRATEGY

Context: The Ministry of Home Affairs (MHA) has released PRAHAAR, India's first publicly articulated National Counter-Terror (CT) Strategy.

Core Framework of PRAHAAR

- **Multi-Dimensional Threat Perception:** Recognises threats from cross-border terrorism, global jihadist networks (Al-Qaeda, ISIS), and emerging technologies such as drones, encrypted platforms, dark web tools, crypto-financing, cyberattacks, and CBRN (chemical, biological, radiological, nuclear) risks.
- The strategy avoids linking terrorism with any religion or identity.

Seven-Pillar Strategy

- Prevention of terror attacks to protect Indian citizens and interests
- Responses, which are swift and proportionate to the threat posed
- Aggregating internal capacities for achieving synergy in a whole-of-government approach
- Human rights and 'Rule of Law' based processes for mitigation of threats
- Attenuating the conditions enabling terrorism, including radicalization
- Aligning and shaping the international efforts to counter terrorism
- Recovery and resilience through a whole-of-society approach

INDIA-MYANMAR BORDER AND FREE MOVEMENT REGIME

Context: The arrest of seven foreign nationals who allegedly crossed into Myanmar via Mizoram to train ethnic armed groups in weapons has drawn attention to India's porous border with Myanmar.

About India Myanmar Border

- India and Myanmar share a **1,643 km** largely unfenced border across four states: Arunachal Pradesh (520 km), Nagaland (215 km), Manipur (398 km), Mizoram (510 km)
- The Cabinet Committee on Security approved the fencing project in March 2024 with an outlay of ₹31,000 crore. **So far, only 43 km (less than 3%) of the border has been fenced.**
- The **Assam Rifles** is the **primary border-guarding force**, operating under the Army's control and administratively under the Ministry of Home Affairs.

About Free Movement Regime (FMR)

- FMR was a mutually agreed arrangement between India and Myanmar. It allowed **tribes living along the Indo-Myanmar border to travel up to 16 km inside either country without a visa.**
- Travelers required a border pass (usually valid for one year). It allowed individuals to stay for up to two weeks per visit.
- FMR was officially formalized in 2018 as part of India's Act East Policy. The new rules further restrict movements of people to **10 km now, on either side.**

PROJECT CHETAK

Context: The 47th Raising Day of Project Chetak was recently celebrated at Bikaner, Rajasthan by the Border Roads Organisation (BRO).

About Project Chetak (Motto: "Chetak ka Prayas, Desh ka Vikas")

- It is an **infrastructure-development project of the Border Roads Organisation (BRO), set up to strengthen India's western frontier** by building and maintaining strategic roads and related infrastructure.

- Plays a key role in developing and maintaining infrastructure in Rajasthan, Punjab, and northern Gujarat.
- One of the largest BRO projects, covering over 4,000 km of roads and 214 km of ditch-cum-bund.
- Maintains key feeder roads to the International Border, with upgrades to National Highway Double Lane standards.

Border Roads Organisation (BRO)

- BRO is a **road-construction and maintenance force** under the Ministry of Defence, primarily responsible for building and maintaining strategic roads, bridges, and related infrastructure in India's border areas and neighbouring countries.
- Established on 7 May 1960 to secure borders and develop infrastructure in remote areas. It was brought fully under the Ministry of Defence in 2015.
- It works in high-altitude, remote, and often hostile terrains to support both military operations and socio-economic development.
- **Motto:** "Shramena Sarvam Sadhyam" (everything is achievable through hard work).

DEFENCE TECHNOLOGY

PINAKA WEAPON SYSTEM

Context: The maiden flight test of the **Pinaka Long Range Guided Rocket (LRGR-120)** was successfully conducted at the Integrated Test Range (ITR) in Chandipur, Odisha.

About Pinaka Multi Barrel Rocket Launcher

- Pinaka is a battle-proven, **all-weather, indirect-fire artillery system**. Its role is to deliver a **high volume of fire in a very short time** against critical and time-sensitive area targets.
- Developed by DRDO's Armament Research and Development Establishment (ARDE), it can launch a rapid series of 12 rockets in just 44 seconds, covering an area of 700x500 meters.
- **Originally built with a 37.5 km range, the Pinaka has been upgraded over time**
- **Pinaka Mk-I:** The basic version has a range of 38 km and offers various warhead options.
- **Pinaka Mk-II:** An enhanced model that extends the range to 60 km.
- **Extended Range Pinaka:** The latest version reaches targets up to 75 km.
- **Pinaka Long Range Guided Rocket:** 120-km-range rocket is in trial.

HERON MARK-II

Context: India plans to procure additional Heron Mark-II drones from Israel, with discussions underway for local manufacturing.

About Heron MK II

- The Heron MK II is a **Medium Altitude Long Endurance (MALE) UAV**, an enhanced version of the Heron UAV, manufactured by **Israel Aerospace Industries (IAI)**.
- It is primarily used for Intelligence, Surveillance, and Reconnaissance (ISR) missions.
- Can reach an altitude of 35,000 feet, speed of 150 knots and remain in the air for 45 consecutive hours.
- It is capable of carrying close to half a tonne of payload and sustaining more than 24 hours of continuous flight.

DRDO'S HYPERSONIC GLIDE MISSILE

Context: At the 77th Republic Day Parade, the Defence Research and Development Organisation (DRDO) unveiled the Long Range Anti-Ship Hypersonic Missile (LR-AShM) for the first time.

About Long Range Anti-Ship Hypersonic Missile (LR-AShM)

- LR-AShM is an **advanced hypersonic glide vehicle designed for the Navy** to neutralize warships and coastal targets at extended ranges.

- It is **powered by a two-stage solid rocket motor** that achieves peak speeds of Mach 10 and sustains Mach 5+ during glide.
- The delta-wing design enables **quasi-ballistic flight** with mid-air skips, low-altitude maneuvers. It is **launched like a ballistic missile** but flying at lower altitudes with mid-course manoeuvres.
- A 50 km **X-band radar seeker for terminal homing on moving targets up to 1,500 km away**.
- Thermal shielding withstands over 2,000°C, with cruciform surfaces for stability and lift.
- Variants for the Army and Air Force, as well as ship-launched versions, are under consideration—placing India among a select group of hypersonic-capable nations.

‘GOLDEN DOME’ MISSILE DEFENCE

Context: The Trump administration is widening its search for partners to build the ambitious Golden Dome missile defence system.

About Golden Dome

- Initially announced as the “**Iron Dome for America**” in January 2025 through an executive order, the project was soon renamed Golden Dome to reflect its far broader, global-scale ambition, similar to Ronald Reagan’s 1980s Strategic Defense Initiative.
- Designed as a **multi-layered “system-of-systems” shield** to protect the continental United States (and potentially allies) from ballistic missiles, hypersonic missiles, cruise missiles, drones, and other emerging threats.
- Trump has described it as a near-100% effective shield aimed at deterrence through strength against adversaries such as China, Russia, North Korea, and Iran.

SUCCESSFUL FLIGHT TEST OF INDIGENOUS MPATGM

Context: India successfully flight-tested the third-generation fire-and-forget Man Portable Anti-Tank Guided Missile (MPATGM) with top-attack capability.

About 3rd Gen Man Portable Anti-Tank Guided Missile (MPATGM)

- It is an **indigenous Indian fire-and-forget weapon system** developed by **DRDO** for the **Indian Army’s infantry and special forces**.
- It employs a miniaturized **imaging infrared (IIR) seeker** for day/night operations, enabling top-attack and direct-attack modes against armored targets like main battle tanks.
- The tandem warhead defeats modern reactive armor, with dual-thrust propulsion for a soft launch from a tripod or vehicle.

BHAIRAV BATTALIONS TO DEBUT AT ARMY DAY PARADE

Context: The Indian Army’s newly raised Bhairav Battalions, a modern warfare force, debuted for the first time at the Army Day Parade on January 15 in Jaipur.

About Bhairav Battalions

- Bhairav Battalions are **specialized light combat units** recently introduced by the **Indian Army to bridge the gap between conventional infantry and elite Para Special Forces**.
- Conceived by Army Headquarters based on lessons from global conflicts and India’s operational experience, including Operation Sindoor.
- Designed as high-speed, offensive units capable of performing Special Forces–type tasks across tactical and operational depth.
- Each Bhairav Battalion comprises around 250 highly trained personnel drawn from different arms of the Army.
- They are complemented by the creation of **Rudra Brigades**—integrated all-arms formations combining infantry, armour, artillery, special forces, drones, and logistics.

ORESHNIK MISSILE

Context: Russia confirmed firing its hypersonic Oreshnik missile at western Ukraine amid intensified strikes on Ukrainian energy infrastructure and defence-related sites.

About Oreshnik Hypersonic Missile

- It is a **Russian intermediate-range ballistic missile (IRBM)** known for its hypersonic capabilities, derived from the RS-26 Rubezh design.
- **Speed:** Hypersonic, travels at Mach 5+ (over five times the speed of sound), reportedly exceeding Mach 10.
- **Range:** Estimated at 1,000–1,600 km, placing much of Europe within reach if launched from western Russia or Belarus.
- **Capability:** Nuclear-capable, though it can also carry conventional warheads.
- **Manoeuvrability:** Can adjust its trajectory mid-flight, making interception extremely difficult.

NATIONAL IED DATA MANAGEMENT SYSTEM

Context: The Union Home Minister inaugurated the National Improvised Explosive Device (IED) Data Management System (NIDMS).

About National IED Data Management System (NIDMS)

- It is a first-of-its-kind **national platform that compiles details of all bomb blasts in India since 1999.**
- It is a secure national digital database for recording and analysing IED and bomb explosion incidents.
- Headquartered at the **National Security Guard (NSG) garrison in Manesar, Haryana.**
- Accessible to State police, Central Armed Police Forces, and investigating agencies.
- The NSG remains the nodal force for post-blast analysis.

Key Objectives	Key Features
• Break data silos by integrating explosion-related information across agencies. • Enable pattern recognition, trend analysis, and predictive insights. • Support faster, evidence-based investigations of terrorist incidents. • Strengthen national counter-terrorism preparedness.	• Comprehensive Database: Covers all bomb blasts in India from 1999 onwards. • Signature Linking: Identifies commonalities across incidents (location, explosives used, circuit types). • Modus Operandi Analysis: Helps establish interlinkages between past and current cases. • AI-enabled Analytics (Planned): For advanced trend and predictive analysis. • Single-Window Access: “One-click” availability of data scattered across multiple case files.

DISCOMBOBULATOR WEAPON

Context: Donald Trump claimed that American forces used a secret weapon called the “discombobulator” during a US military strike on Venezuela.

About Discombobulator Weapon

- Experts suggest it may not be a single weapon but a combination of systems used together.
- Its purpose appears to be disabling military defences and disorienting personnel in heavily defended areas.
- It may combine directed-energy, acoustic, visual, electronic warfare, and cyber capabilities.

Systems Used to Disorient People

- **Active Denial System (Heat Ray):** A directed-energy weapon that penetrates the skin to create an intense burning sensation, forcing people to flee and triggering panic and confusion.
- **Vortex Ring Generator:** Uses high-pressure air pulses to strike targets or deliver irritants such as stink bombs, causing disorientation and nausea.
- **Acoustic Hailing Devices (Sonic Cannons):** Emit highly directional, piercing sound waves that can induce nausea, vertigo, confusion, and temporary incapacitation.

- **Visual Dazzlers:** High-intensity pulsing laser systems that temporarily blind and disorient personnel on the battlefield.

SURYASTRA

Context: The Indian Army has signed a ₹293-crore emergency procurement contract with NIBE Ltd., in collaboration with Elbit Systems, for the induction of the Suryastra rocket system.

What is Suryastra?

- Suryastra is India's **first indigenous universal multi-calibre long-range rocket launcher system**. It can conduct precision surface-to-surface strikes at ranges of 150 km and 300 km.
- The system is designed to **integrate multiple rocket and missile types on a single launch platform**.
- **Key Features**
 - **Universal launcher:** Can integrate multiple rocket calibres (122 mm, 160 mm, 306 mm) and compatible missiles.
 - **High precision:** Achieved Circular Error Probable (CEP) of less than 5 metres during trials.
 - **Multi-target engagement:** Capable of hitting several targets at different distances simultaneously.
 - **Loitering munitions:** The launcher can also deploy loitering munitions up to 100 km range, enhancing battlefield flexibility.
 - **Mobility:** Adaptable to 4×4, 6×6, and 8×8 wheeled platforms.

C-295 AIRCRAFT

Context: According to EAM Dr. Jaishankar, first 'Made in India' C-295 military aircraft is expected to roll out of a factory by September 2026.

About C-295 Aircraft (Airbus C295)

- The C-295 is a **medium-range, twin-turboprop tactical transport aircraft** developed originally by the Spanish firm CASA and now produced by **Airbus Defence & Space**.
- It is widely used by air forces for tactical airlift, logistics, and special-mission roles, including in India.
- India has ordered 56 aircraft; the 16 are being delivered from Spain, and the remaining 40 are being **manufactured in India by Tata-Airbus at Vadodara, Gujarat**.

DIRECT FIRING SIGHT NAVIGATION SYSTEM

Context: India and France signed an agreement to jointly produce the Direct Firing Sight Navigation System in India.

About Direct Firing Sight Navigation System (DFSNS)

- DFSNS is a combined artillery navigation and targeting package built around **Safran's SIGMA 30N** inertial navigation system and **CM3-MR direct firing sight**.
- **SIGMA 30N Navigation System:** Enables autonomous artillery operations without GPS, allowing accurate positioning and firing even when satellite signals are denied.
- **CM3-MR Direct Firing Sight:** Enhances artillery and anti-drone accuracy through advanced sighting for direct engagement.
- It integrates with a wide range of platforms, including heavy artillery, radars, and mobile air defence systems.
- It has **Direct-Fire Capability** since it uses thermal and optical sights for rapid engagement of visible targets, including drones.

DRDO SUCCESSFULLY DEMONSTRATES SFDR TECHNOLOGY

Context: The DRDO successfully conducted a flight demonstration of Solid Fuel Ducted Ramjet (SFDR) technology placing India among an elite group of nations with this capability to develop long-range air-to-air missiles to give a tactical edge over the adversaries.

About Solid Fuel Ducted Ramjet (SFDR)

- SFDR is an **advanced air-breathing missile propulsion technology**. It uses atmospheric oxygen to burn solid fuel, enabling sustained supersonic speeds and longer engagement ranges.
- Unlike conventional rockets that carry both fuel and oxidiser, **SFDR uses oxygen from the atmosphere for combustion**.
- This reduces the weight of the missile, allowing space for a larger and more effective warhead.

Core Components of SFDR

- **Solid-Fuel Booster:** Accelerates the missile to the required supersonic speed during the initial phase.
- **Ramjet Engine:** Maintains high-speed flight using air-breathing propulsion.
- **Nozzle-less Booster and Flow Controller:** Uses a thrust-modulated ducted rocket system, allowing controlled thrust during flight for improved performance and targeting accuracy.

MISSILE INTERCEPTORS IN THE U.S.–IRAN WAR

Context: Fresh hostilities have emerged between a U.S.-led coalition (including Israel and United Arab Emirates) and Iran, activating a newly upgraded regional air defence network.

About Missile Defence System

- A missile defence system uses satellites and ground-based radars to detect threats. **Command centres** analyse the data and decide responses. **Interceptors (counter-missiles)** are then launched to destroy incoming missiles mid-air.

Iran's Missile Defence	Alliance Side Missile Defence Systems (US- Israel)
• Bavar-373 (Sayyad-4B missile): Iran's most advanced system, claiming interception beyond 300 km. Its effectiveness against stealth aircraft is being questioned after recent strikes on Tehran. • Arman System: Newly introduced system designed for medium-range ballistic missiles. Features 360° radar coverage. • Sevom-e-Khordad: Designed to counter cruise missiles and advanced fighter jets like F-35 and F-15. Highly mobile; uses Sayyad-3 missiles to protect nuclear sites at Natanz and Isfahan. • Tor-M1 (Russia-made): Short-range system used against missiles, drones,	• Arrow 3 (Israel): Designed to intercept long-range ballistic missiles in space before they re-enter the atmosphere. Forms the outermost defence layer, neutralising threats at the earliest stage. • SM-3 (U.S. Navy): A naval interceptor used to destroy short to intermediate range ballistic missiles outside the atmosphere. It carries no explosive warhead and relies on precision tracking and kinetic impact. • THAAD (U.S.): Intercepts short- to intermediate-range ballistic missiles at high altitudes during their terminal phase. It is the only U.S. system designed to intercept targets outside and inside the atmosphere. • Arrow 2 (Israel): Designed to intercept long-range ballistic missiles within the atmosphere. Acts as a mid-layer defence if outer-layer interception fails. • David's Sling / Stunner (Israel): Targets medium-range ballistic missiles, cruise missiles, and drones. Bridges the gap between long-range and short-range defence systems. • Patriot PAC-3 MSE (U.S.): This kinetic hit-to-kill interceptor, intercepts ballistic missiles in their terminal phase of flight. Highly accurate but expensive interceptor used to protect critical assets. • Iron Dome (Israel): A short-range defence system designed to intercept rockets, artillery, and drones. Highly effective in

and precision-guided bombs. Deployed near key government and leadership locations in Tehran.

- protecting urban areas from frequent low-range attacks.
- **Iron Beam (Israel):** 100-kilowatt high-energy laser weapon system, used to counter drones and short-range threats. It has unlimited magazine, with ~zero cost per interception, and causes minimal collateral damage..

New Systems in the Current Conflict

- The UAE has deployed the **South Korean Cheongung II**, which provides full 360° coverage, unlike older Patriot systems with limited radar range.
- The United States has introduced the **Indirect Fire Protection Capability (IFPC)**, using lower-cost AIM-9X Sidewinder missiles to protect bases in the UAE and Kuwait, reducing reliance on expensive interceptors.
- The **US Navy's SM-6** is being used in a dual role, intercepting ballistic missiles and targeting Iranian fast-attack boats at sea.

GRAVITY BOMBS

Context: The United States military used precision gravity bombs on Iran, marking a significant tactical shift in the ongoing conflict.

About Gravity Bombs (also known as a "dumb bomb" or unguided bomb)

- A gravity bomb is a conventional bomb dropped from an aircraft that **does not have a guidance system**.
- **Unlike missiles or rockets, it lacks an internal engine or propulsion system.** It follows a trajectory dictated by ballistics: the aircraft's speed, the angle of release, altitude, and gravity.
- **Mechanism:** They rely entirely on the pilot's skill and the aircraft's onboard computerized aiming systems to hit a target.
- **Cost:** Significantly cheaper
- **Design:** Usually features a streamlined casing with fins at the tail to stabilize flight and prevent tumbling.

JDAM (Joint Direct Attack Munition) Kit: From "Dumb" to "Smart" Weapons

- Traditional gravity bombs relied heavily on the pilot's skill and release timing, making them prone to collateral damage.
- Modern gravity bombs are equipped with JDAM tail kits, transforming them into precision-guided munitions (PGMs).
- The **JDAM adds GPS navigation and steerable tail fins** to the bomb, allowing it to autonomously adjust its glide path toward precise target coordinates, drastically improving accuracy.

MALWAN ASW SWC

Context: Recently, Malwan, an Anti-Submarine Warfare Shallow Water Craft (ASW SWC), was delivered to the Indian Navy.

About Malwan ASW SWC

- It is the **second of eight ASW SWCs built and indigenously designed by Cochin Shipyard Limited (CSL), Kochi**. It has over 80% indigenous content, supporting the vision of Aatmanirbhar Bharat.
- It draws its name from the coastal town of Malwan in Maharashtra, a region intrinsically linked to the maritime heritage of Chhatrapati Shivaji Maharaj. It carries the legacy of the former INS Malwan (decommissioned in 2003).
- **Key Features**
 - **Capacity:** Displacement of about 1,100 tonnes.
 - **Propulsion:** Waterjet propulsion system for better manoeuvrability in shallow waters.

- **Armament & Systems:** Equipped with torpedoes, anti-submarine rockets, advanced radars, and sonar systems.
- **Operations:** Designed for underwater surveillance, anti-submarine warfare (ASW), coastal security, low-intensity maritime operations (LIMO), and mine warfare.

INS ARIDHAMAN

Context: India recently inducted its third nuclear-powered ballistic missile submarine (SSBN), INS Aridhaman, into the Navy.

About INS Aridhaman (S4)

- It is the third indigenously built nuclear-powered SSBN, It is developed under the Advanced Technology Vessel (ATV) project at the Ship Building Centre (SBC), Visakhapatnam.
- The first SSBN (INS Arihant) was launched in 2009 and commissioned in 2016; INS Arighaat was commissioned in August 2024. The next submarine (S4*, likely named Arisudan) is currently undergoing sea trials.
- **Displacement:** 7,000 tonnes; **Reactor:** 83 MW pressurized water reactor by BARC.
- **Armament & Capabilities**
 - Equipped with eight vertical launch tubes, it is designed to carry more long-range nuclear-tipped missiles than INS Arihant and INS Arighaat.
 - Can carry K-15 (750 km range) and K-4 missiles (up to 3,500 km range).
 - Features anechoic tiles and advanced sonar for stealth and survivability.

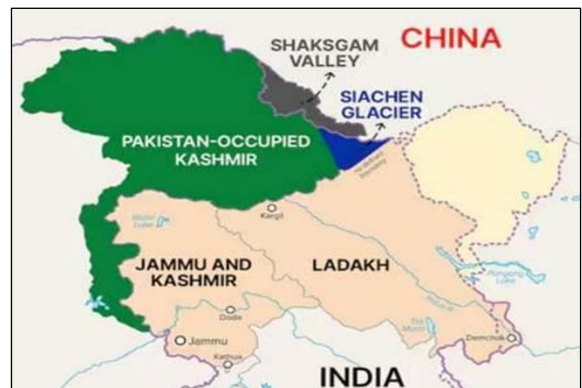
IMPORTANT NEWS

SHAKSGAM VALLEY

Context: A renewed diplomatic and strategic friction between India and China has emerged over the Shaksgam Valley in Jammu and Kashmir.

About Shaksgam Valley

- Also known as the **Trans Karakoram Tract**, it lies in the **Hunza–Gilgit region** under Pakistan's occupation (currently controlled and administered by China)
- It is located **north of the Siachen Glacier**, bordering China's Xinjiang to the north and Pakistan-occupied Kashmir (PoK) to the south and west.
- Although **legally claimed by India**, the area has remained outside Indian control since the 1960s due to Pakistan–China arrangements.
- India maintains that Shaksgam Valley is an integral part of Jammu and Kashmir under Pakistan's illegal occupation.



The 1963 Boundary Agreement

- After the accession of Jammu and Kashmir to India in 1947, Shaksgam Valley legally became Indian territory. Pakistan, which never had sovereign rights over the area, nevertheless controlled adjacent regions.
- In 1963, Pakistan signed a boundary agreement with China, ceding about 5,180 sq km of the Shaksgam Valley. India has consistently rejected this agreement, calling it illegal and void, as Pakistan had no authority to transfer Indian territory.
- China has built around 75 km of all-weather roads, including a route over the **Aghil Pass** (in Shaksgam Valley), bringing Chinese presence close to Indian positions near Siachen.

- The infrastructure is linked to the China–Pakistan Economic Corridor (CPEC).

SRI LANKA'S KANKESANTHURAI PORT

Context: The Sri Lankan Cabinet has approved the long-pending renovation of Kankesanthurai Port in the Northern Province, with India agreeing to provide a full grant covering the entire project cost.

- Also known as KKS Port, is a small seaport on Sri Lanka's northern coast in the **Jaffna district**. Managed by the Sri Lanka Ports Authority.
- **Located about 104 km (56 nautical miles) from India's Karaikal Port**, the port plays a key role in regional connectivity.
- Originally approved by the Sri Lankan Cabinet in May 2017, the project faced delays due to higher-than-expected cost estimates.

END OF NEW START TREATY

Context: The expiry of the New START Treaty, on February 5, ends five decades of legally binding nuclear limits between the US and Russia.

About New START Treaty

- The *Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms* is a **bilateral nuclear arms control agreement between the United States and Russia**. It was signed on April 8, 2010 and entered into force on February 5, 2011.
- **New START capped each side at:**
 - **1,550 deployed strategic nuclear warheads**
 - 700 deployed strategic delivery systems (ICBMs, SLBMs, and bombers).
 - 800 total deployed and non-deployed strategic launchers.
- It included robust verification measures: biannual data exchanges, notifications of changes, telemetry on missile tests, and on-site inspections (up to 18 per year).
- The **original 10-year term was extended once** by five years in February 2021, keeping it in force until February 5, 2026.
- **Russia suspended its participation in 2023** (citing U.S. actions related to Ukraine), halting inspections and data exchanges.

TREATY NAME	SIGNED / IN FORCE DATES	DURATION / STATUS	KEY ARMS LIMITS
SALT I (Strategic Arms Limitation Talks)	1972 / 1972–1977	Expired 1977	No increase in ICBM/SLBM launchers (U.S. ~1,054 ICBM silos + 656 SLBM tubes; USSR ~1,607 ICBM + 740 SLBM)
SALT II	1979 (signed)	Never entered into force	Max 2,400 ICBM/SLBM launchers + bombers (with sub-limits on MIRVs)
START I (Bush/Gorbachev)	1991 / 1994–2009	Expired Dec. 2009	1,600 strategic launchers (ICBMs/SLBMs/bombers); 6,000 "attributed" warheads
START II	1993 (signed)	Never entered into force (Russia withdrew 2002 after U.S. ABM Treaty exit)	Same launchers as START I + ban on MIRV'd ICBMs; 3,000–3,500 warheads
SORT (Strategic Offensive Reductions Treaty / Moscow Treaty)	2002	2003–2012 (superseded by New START)	1,700–2,200 deployed strategic warheads
New START	2010 / 2011–2026	Expired Feb. 5, 2026	1,550 deployed warheads; 700 deployed delivery systems; 800 launchers (with full verification)

INDIA ASSUMES COMMAND OF CTF 154

Context: For the first time, the Indian Navy has assumed command of Combined Task Force (CTF) 154, a multinational training task force under the Combined Maritime Forces (CMF).

About Combined Maritime Forces (CMF)

- CMF, headquartered in Bahrain, is the world's largest multinational naval partnership, comprising 47 nations.
- It oversees about 3.2 million square miles of international waters, covering major global shipping routes.

Other CMF Task Forces

- **CTF 150:** Maritime security operations
- **CTF 151:** Counter-piracy operations
- **CTF 152:** Security in the Arabian Gulf
- **CTF 153:** Security in the Red Sea

About CTF 154

- CTF 154, established in May 2023, focuses on training and capacity building among CMF member states.
- It carries out exercises such as **Compass Rose** and **Northern and Southern Readiness**.
- It conducts multinational training exercises across the Middle East and surrounding waters.
- **Key Areas of Work:** Maritime Domain Awareness (MDA); Law of the Sea; Maritime Interdiction Operations; Maritime Rescue and Assistance; Leadership Development
- The task force organises Maritime Security Enhancement Training (MSET) programmes and exercises such as Compass Rose and Northern/Southern Readiness.

INDIAN ARMY SHOWCASES INDIGENOUS AI SOLUTIONS

Context: Indian Army unveiled indigenous AI solutions at the India AI Summit at Bharat Mandapam.

1. AI Systems

- **AI Examiner:** An automated assessment and feedback platform designed to modernise training and education frameworks within the armed forces.
- **SAM-UN:** A geospatial and AI-enabled situational awareness system for mission planning, disaster response, and integration with smart command centres.
- **EKAM (AI-as-a-Service):** A secure, air-gapped indigenous AI cloud platform that ensures data sovereignty and enables secure processing of sensitive information.
- **PRAKSHEPAN:** An AI-driven climatology and disaster prediction system capable of issuing early alerts for landslides, floods, and avalanches.

2. Security and Cyber Defence Innovations

- **XFace:** An AI-powered facial recognition system used for identity verification.
- **Deepfake Detection System:** Designed to detect and counter synthetic media manipulation.
- **AI Cyber Security Systems:** Protect critical infrastructure from malware and evolving cyber threats.

3. Operational and Logistical AI Tools

- **Nabh Drishti:** A mobile telemetry-based platform for real-time reporting and visualisation.
- **Driver Fatigue Detection Device:** Provides real-time drowsiness alerts to improve operational safety.
- **AI-in-a-Box:** A portable AI solution designed for use in remote or disconnected environments.
- **AI-Powered Vehicle Tracking System:** Enhances fleet monitoring and logistics optimisation.

EXERCISES IN NEWS

Exercise	Participants	Details
Vayu Shakti 2026	Indian Air Force	• A large-scale day–dusk–night firepower demonstration under Exercise ‘Vayu Shakti’ at Pokharan Field, Rajasthan held in Feb 2026
MILAN 2026	Indian Air Force	• Indian Navy’s premier multilateral maritime exercise held in Feb 2026 theme “Camaraderie, Cooperation, Collaboration”

International Fleet Review (IFR) 2026	74 countries including India	• 3rd IFR hosted by India, following earlier editions in Mumbai (2001) and Visakhapatnam (2016), held in Feb 2026 • Theme: “United Through Oceans.”
Vajra Ghaat	Indian Army	• Conducted at the Pokhran Field Firing Range, Jaisalmer • To evaluate the performance of the K9 Vajra self-propelled artillery system in the harsh desert conditions of the Thar Desert.
Trilateral Naval Exercise	Indian Navy, Japan Maritime Self- Defense Force, and Indonesian Navy	• Held in Feb 2026 • Multilateral drill to boost interoperability, maritime security, and counter-piracy in the Indo-Pacific amid rising regional tensions.
IAF–RTAF InSitu Exercise in IOR	Indian Air Force (IAF) and Royal Thai Air Force (RTAF)	• Collaborate in the Indian Ocean Region for air combat training, enhancing joint operations, surveillance, and rapid response capabilities against shared maritime threats. It was held in Feb 2026
LAMITIYE-2026	India and Seychelles	• 11th edition of Joint Military Exercise held in Seychelles in March 2026 • Marks the first tri-services edition, bringing together the Indian Army, Navy, and Air Force alongside the Seychelles Defence Forces (SDF).
Exercise Dustlik	India and Uzbekistan	• 7th edition of Joint Military Exercise held in Uzbekistan in April 2026 • It is an annual event, held alternately in India and Uzbekistan.
Exercise Cyclone 2026	India – Egypt	• It is the fourth edition of this joint special force exercise. • Annual event conducted alternatively in India and Egypt.

ENVIRONMENT AND GEOGRAPHY

CLIMATE

NATIONAL ENVIRONMENTAL STANDARD LABORATORY (NESL)

Context: India is now only the second country in the world (after the UK) to have a dedicated national-level laboratory for environmental standards.

- Alongside NESL, the **National Primary Standard Facility for Solar Cell Calibration (NPF-SCC)** was also inaugurated, making India the fifth country in the world with advanced solar metrology capability.

About National Environmental Standard Laboratory (NESL)

- The laboratory serves as the **apex body for the testing, calibration, and certification of air pollution** monitoring equipment tailored to Indian conditions.
- **Nodal Agency:** Council of Scientific and Industrial Research – National Physical Laboratory (CSIR–NPL Delhi).
- Tests particulate matter (PM2.5, PM10), gases (NOx, SOx, O3), and sensors for accuracy.
- This enhances the reliability of the National Clean Air Programme (NCAP) by ensuring that sensors in the 131+ non-attainment cities provide high-fidelity data.
- India can now become a hub for testing equipment for other tropical and developing nations with similar climatic profiles, strengthening Global South leadership.

DIGITAL CLIMATE ATLAS AND NICRA

Context: The government launched a digital climate atlas at 15 years completion of National Innovations in Climate Resilient Agriculture (NICRA).

About Atlas of Climate Adaptation in Indian Agriculture (ACASA-India)

- It is a digital platform launched to support farmers in planning for climate-related risks.
- The platform has been developed by the **Indian Council of Agricultural Research (ICAR)-led National Agricultural Research and Extension System (NARES)** in collaboration with the Borlaug Institute for South Asia (BISA) and International Maize and Wheat Improvement Center (CIMMYT).
- It provides location-specific, data-driven information to support climate-resilient agricultural planning.

About National Innovations in Climate Resilient Agriculture (NICRA)

- NICRA is a flagship project launched by the **Indian Council of Agricultural Research (ICAR)** in February **2011** to build **climate resilience in agriculture**.
- It aims to enhance **resilience across crops, livestock, fisheries, and natural resources** against climate variability and change.
- Key goals include capacity building for scientists and stakeholders, plus policy guidelines for scaling resilient practices.
- **NICRA focuses on three major areas:**
 - **Strategic research** on climate change adaptation and mitigation in agriculture.
 - **Demonstration of climate-resilient technologies** on farmers' fields.
 - **Awareness and capacity building** among farmers and other stakeholders to improve climate resilience.

INDIA'S NEXT-GENERATION TSUNAMI WARNING SYSTEM (TWS)

Context: The Ministry of Earth Sciences (MoES) will establish a Regional Service Centre (RSC) in the Andaman and Nicobar Islands to strengthen India's tsunami monitoring and warning system.

- **Nodal Agency:** INCOIS (Indian National Centre for Ocean Information Services), Hyderabad
- **International Alignment:** Complies with UNESCO–IOC (Intergovernmental Oceanographic Commission) standards.

Key Components of the Next-Generation System

- **Regional Service Centre (RSC):** A first-of-its-kind tsunami coordination centre is being established at Vijaynagar (Swaraj Dweep) in the Andaman and Nicobar Islands.

- **Sub-sea Cable Network:**

A 270-km-long sub-sea cable will be laid along the Andaman–Sumatra

subduction zone. This will overcome the limitations of surface buoys, which are often vulnerable to theft, vandalism, and satellite data gaps.

- **Non-Seismic Detection:**

The system will expand monitoring beyond earthquakes to include:

- **Submarine Landslides:** Underwater collapses that displace large volumes of water.
- **Volcanic Activity:** Monitoring sites such as Barren Island, India's only active volcano.
- **Acoustic Signals:** Detection using underwater sound waves, which travel faster and allow earlier warnings than conventional seismic sensors

FEATURE	TRADITIONAL EARLY WARNING SYSTEM (EWS - 2007)	NEXT-GENERATION TSUNAMI WARNING SYSTEM (NGTWS)
Primary Trigger	Seismic-dependent; mainly detects undersea earthquakes	Source-agnostic; detects earthquakes, submarine landslides, volcanic eruptions, and glacial collapses
Transmission Media	Satellite and buoy-based system using Bottom Pressure Recorders (BPRs)	Sub-sea fibre-optic cables connecting sensors directly to island and mainland stations
System Resilience	Vulnerable; buoys can be damaged by fishing trawlers, weather, or vandalism	Highly durable; permanent sub-sea infrastructure reduces monitoring gaps
Lead Time	Limited; warnings for Andaman & Nicobar often only 10–20 minutes	Faster detection using acoustic wave monitoring, enabling near-instant alerts
Data Processing	Centralised processing at INCOIS, Hyderabad	Regionalised processing through Regional Service Centres (e.g., Swaraj Dweep)

Why the Andaman & Nicobar Islands?

- **Proximity to Fault Lines:** The islands lie near the highly active Andaman–Sumatra subduction zone.
- **Short Warning Window:** Being closest to potential epicentres means warning times are very short (often under 30 minutes), making local monitoring essential.
- **Barren Island Monitoring:** Enables close observation of India's only active volcano, which could trigger tsunamigenic eruptions.

INCOIS & IT'S NEW APPS

Context: The Indian National Centre for Ocean Information Services (INCOIS) has launched three innovative services—JellyAIIP, SAMUDRA 2.0 Mobile App, and SIVAS.



INDIAN NATIONAL CENTRE FOR OCEAN INFORMATION SERVICES (INCOIS)

CATEGORY	INFORMATION / DETAILS
OVERVIEW & FOUNDING	- Established: 1999 - Parent Organization: Ministry of Earth Sciences - Role: India's leading agency for ocean information and early warning services.
HEADQUARTERS	Hyderabad, Telangana.
GLOBAL ROLE	Regional Tsunami Service Provider for the Indian Ocean region.
MEMBERSHIP	Permanent member of UNESCO's Intergovernmental Oceanographic Commission.
RECENT PARTNERSHIP	Signed MoU with ISRO's Space Applications Centre (SAC) in February 2026 to enhance satellite-based ocean services.

JellyAIIP (Jellyfish Aggregation Information Interactive Portal)	• Function: Reports and visualises jellyfish aggregation, swarming, and stranding events along the Indian coast. • Geospatial Analysis: Uses AI and hotspot analysis to predict jellyfish blooms. • Public Health: Provides multilingual first-aid guidance for jellyfish stings, helping tourists and fishermen.
SAMUDRA 2.0 Mobile App	• An upgraded multilingual app (12+ languages) for ocean information services. • Features: Map-based visualisation of Potential Fishing Zones (PFZ) and tuna advisories.

	• Disaster Alerts: Real-time warnings for tsunamis, high waves, and Harmful Algal Blooms (HABs).
SIVAS (Swell-Surge Inundation Vulnerability Advisory System)	• Function: AI-based early warning system for coastal flooding that issues multilingual advisories. • Target Phenomenon: Focuses on swell surges (locally called Kallakkadal in Kerala), which are long-period waves causing sudden flooding even during calm weather. • Status: Currently operational along the Kerala coast.

GLOBAL "BEAT THE HEAT" PROGRAM

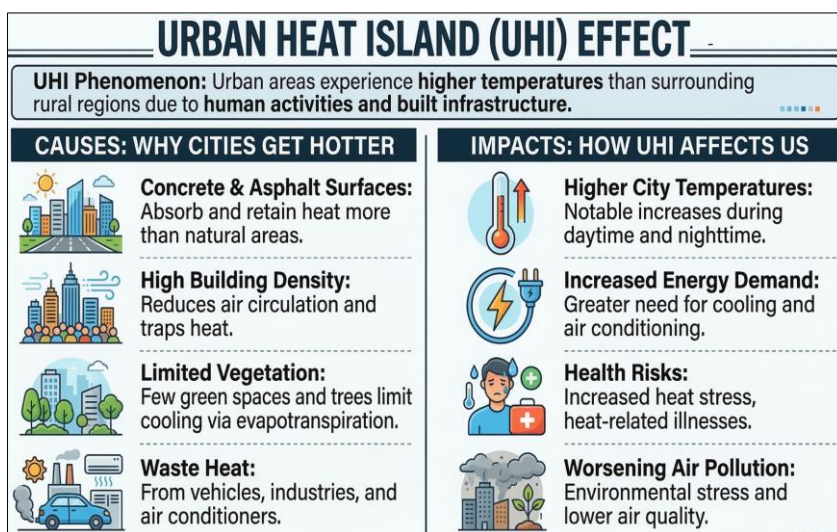
Context: Thirty cities in Maharashtra have joined the global “Beat the Heat” programme, marking an important step toward subnational climate diplomacy.

About “Beat the Heat”

- “Beat the Heat” is a **flagship initiative** aimed at **translating global climate commitments into measurable local actions**.
- **Leadership:** Led by the **United Nations Environment Programme (UNEP)** and the **Cool Coalition**.
- **Political Anchor:** It is a key initiative under the **COP30 Presidency (Brazil)**.
- **Scale in India:** Of the 44 Indian cities participating globally, 30 are from Maharashtra.

Multidimensional Objectives

- **Mitigation:** Reduce cooling-related greenhouse gas emissions by 68% by 2050 through energy-efficient appliances and low-GWP (Global Warming Potential) refrigerants.
- **Adaptation:** Implement Nature-Based Solutions (NbS) such as green corridors, urban forests (e.g., Miyawaki forests), and cool roofs to protect vulnerable populations.
- **Transformation:** Integrate heat resilience into urban master plans, building codes, and procurement policies, moving beyond treating heat as a seasonal emergency.



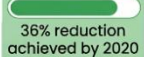
INDIA'S NEW NATIONALLY DETERMINED CONTRIBUTIONS

Context: The Union Cabinet has approved India's updated NDCs under the UN Framework Convention on Climate Change and the Paris Agreement, enhancing its climate ambition.

About Nationally Determined Contributions (NDCs)

- NDCs are **national climate action plans submitted by countries under the Paris Agreement**.
 - The Paris Agreement is a **legally binding** international treaty adopted by 195 parties at **COP21 to UNFCCC** in Paris in 2015, aimed at **limiting global warming to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels**.
- They outline each nation's targets and strategies for reducing greenhouse gas emissions and adapting to climate change impacts.

- An **NDC is a non-binding plan** to reduce emissions and adapt to climate change. It reflects a country's policies and decisions towards achieving net-zero emissions.
- These are **short- to medium-term plans, updated every five years** with progressively higher ambition based on each country's capabilities.
- NDC targets are **voluntary**, and there are **no legal penalties for non-compliance**. However, countries are required to monitor progress and report outcomes under the Paris Agreement.
- India remains on track to meet its 2030 targets while enhancing ambition for the 2035 period.

INDIA'S NDC COMMITMENTS				
COMMITMENT AREA	FIRST NDC TARGETS FOR 2030 (SUBMITTED 2015)	UPDATED NDC TARGETS FOR 2030 (SUBMITTED 2022)	NEW NDC TARGETS (2031-2035)	CURRENT STATUS
 REDUCTION IN EMISSIONS INTENSITY	33-35%	45%	47%	 36% reduction achieved by 2020
 SHARE OF NON-FOSSIL FUEL BASED ELECTRIC POWER INSTALLED CAPACITY	40%	50%	60%	 52.57% achieved by February 2026
 ADDITIONAL CARBON SINK THROUGH FOREST AND TREE COVER (FROM 2005 LEVELS)	2.5-3 billion tonnes of CO ₂ equivalent	2.5-3 billion tonnes of CO ₂ equivalent	3.5-4 billion tonnes of CO ₂ equivalent	 2.29 billion tonnes equivalent by 2021

RADIATIVE FORCING-BASED ACCOUNTING FOR GLOBAL WARMING

Context: A study published in the UK-based journal Environmental Research Letters proposes a new framework called Radiative Forcing-based Accounting (RFA).

What is Radiative Forcing-based Accounting (RFA)?

- RFA is a **climate accounting method** that **measures emissions based on their actual heat-trapping effect** (radiative forcing) and atmospheric lifetime. It provides a dynamic, time-sensitive estimate of warming, unlike fixed CO₂-equivalent metrics.

Current Method for Measuring Global Warming

- The existing method uses CO₂-equivalent (CO₂e) based on GWP100 (Global Warming Potential over 100 years). This approach compares gases over a **fixed 100-year period**; for example, 1 tonne of methane is approximately 28 times more potent than CO₂.
- It applies a **static multiplier**, averaging the warming impact over time and ignoring when the warming actually occurs.

Need for RFA

- **GWP100 ignores the timing of emissions.**
- It **undervalues short-lived gases** (such as methane, which causes rapid but intense warming).
- It leads to under-crediting (around 36-40%) of methane mitigation projects.

BIODIVERSITY

INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES (ITPGRFA)

Context: The 11th session of the governing body of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) was concluded in November 2025 at Lima, Peru.

About International Treaty on Plant Genetic Resources for Food and Agriculture

- Often called the Plant Treaty or Seed Treaty, it promotes conservation and sustainable use of crop genetic diversity.
- **Adopted in 2001 under FAO** auspices and **entering force in 2004**, it ensures food security amid climate challenges and population growth.
- **Parties:** As of 2014, there are now 131 organizations that are party to the ITPGRFA (130 countries and 1 intergovernmental organization, the European Union). India signed and ratified ITPGRFA in 2002.

- **Objectives:**
 - **Conservation and sustainable use of all plant genetic resources** for food and agriculture
 - **Fair and equitable sharing of the benefits**, in harmony with the Convention on Biological Diversity, for **sustainable agriculture and food security**.
- The Treaty makes it possible to share plant genetic resources across borders through a unique **Multilateral System (MLS)** of Access and Benefit-sharing. MLS applies to 64 major crops and forages over which recipients cannot claim Intellectual Property Rights (IPR) or any other rights.
- Access occurs via a **Standard Material Transfer Agreement (SMTA)**, with benefits funding conservation through the **Benefit-Sharing Fund**.
- **Farmers Rights:** It recognizes farmers' roles by protecting traditional knowledge, ensuring benefit participation, and involving them in national decisions on PGRFA.

OPERATION THUNDER 2025

- Operation Thunder 2025 was a large-scale global law enforcement operation targeting the illegal trafficking of wildlife and forest products held during 15 September – 15 October 2025.
- **Participation:** Law enforcement agencies from **134 countries (including India)**, including police, customs, border security, forestry, and wildlife authorities.
- **Coordination:** Led by **INTERPOL** and the **World Customs Organization**, with support from the **International Consortium on Combating Wildlife Crime (ICWC)**.

COCONUT ROOT WILT DISEASE

Context: Recently, Coconut Root Wilt Disease has gained renewed attention due to its rapid spread across traditional coconut belts in Kerala, Tamil Nadu, and Karnataka, exacerbated by climate-induced stress.

About Coconut Root Wilt Disease

Origin	• It is classified as a non-fatal disease of the coconut palm and was first identified more than a century and a half ago in Erattupetta, Kerala.
Causal Agent	• Phytoplasmas (formerly known as mycoplasma-like organisms or MLOs) are wall-less, prokaryotic organisms restricted to phloem tissue. • Because they lack a cell wall, they are pleomorphic (capable of changing shape) and cannot be easily grown in laboratory cultures.
Variety of Symptoms	• Foliar yellowing (starting from the tips); reproductive impact and yield loss (reduction in nut size and poor quality of copra and oil).
Management Strategies	• Eradication: Removing and burning severely infected, unproductive palms to reduce the “inoculum” (source of infection). • Nutrition: Applying magnesium sulphate (to address yellowing) and organic manures such as neem cake.

RATANMAHAL WILDLIFE SANCTUARY

Context: Gujarat regained its status as a ‘Tiger State’ after 33 years following the natural presence of a tiger in Ratanmahal Wildlife Sanctuary. With this, Gujarat has become the only Indian state to host lion, tiger, and leopard simultaneously.

About Ratanmahal Wildlife Sanctuary (Ratanmahal Sloth Bear Sanctuary)

- It was declared a wildlife sanctuary in 1982. It is known for hosting the largest population of sloth bears in Gujarat.
- **Location:** Situated in Dahod district of Gujarat, along the Gujarat–Madhya Pradesh border, near **river Panam**. Panam is a major river of Central Gujarat.
- **Flora:** The sanctuary lies in the Kathiawar–Gir **dry deciduous forest region**, dominated by dry teak forests in foothills and mixed deciduous woodland with bamboo along the edges.

- **Fauna:** Major mammals include sloth bear, Indian leopard, striped hyena, golden jackal, four-horned antelope, mongoose, civet, jungle cat, and hanuman langur.

KUMBHALGARH WILDLIFE SANCTUARY

Context: The Ministry of Environment, Forest and Climate Change (MoEFCC) has notified the area around Kumbhalgarh Wildlife Sanctuary in Rajasthan as an Eco-Sensitive Zone (ESZ).

Location	Located in the Aravalli Hills across Rajsamand, Udaipur, and Pali districts of Rajasthan, surrounding the Kumbhalgarh Fort (a UNESCO World Heritage Site)
Established	1971
Geography	Includes four hill ranges: Kumbhalgarh, Desuri, Sadri, and Bokhada ranges
Vegetation	Predominantly dry deciduous and thorn forests, dominated by Dhok, Salar, Khair, and Churel trees.
Wildlife	Species include leopard, sloth bear, striped hyena, Indian pangolin, jungle cat, wolf, nilgai, sambar, chinkara, and four-horned antelope (chousingha).

HOPE ISLAND AND CORINGA WILDLIFE SANCTUARY (WS)

Context: The Andhra Pradesh Government plans to develop a satellite launching facility under the Space City project on Hope Island, which lies within Coringa Wildlife Sanctuary.

Location	Kakinada in the East Godavari district, nestles at the deltaic branches of the Gouthami and Godavari Rivers
Established	1978
Vegetation	24 mangrove species alongside dry deciduous tropical forests and tidal swamps spanning 335.7 sq km of marshy areas.
Wildlife	Home to over 120 bird species, including critically endangered white-backed and long-billed vultures, it supports diverse fauna amid its mangroves.
About Hope Island	• A relatively young island formed as a 16-km-long sand spit created by sediments deposited by the Godavari River delta. • Acts as a natural breakwater, protecting Kakinada city from storm surges and making Kakinada Port one of the safest natural ports for ships.

PROJECT DOLPHIN

Context: The second **nationwide range-wide survey of riverine and estuarine dolphins** has been launched under Project Dolphin. The previous survey (2021–23) recorded about 6,327 river dolphins in India. The ongoing survey will also include the **Irrawaddy dolphin** in the Sundarbans and Odisha, in addition to the **Ganges river dolphin and Indus river dolphin**.

About Project Dolphin

- It is an initiative launched by PM Modi in 2020, **to conserve the Ganges River dolphin and Indus River dolphin**, along with their riverine and oceanic habitats.
- Modeled after Project Tiger, it focuses on both river and marine dolphins as **key indicators of ecosystem health**.
- Managed by the **Ministry of Environment, Forest and Climate Change** and the Wildlife Institute of India
- Dolphins serve as **umbrella species**, benefiting entire aquatic ecosystems and human communities dependent on rivers.

River Dolphins (Superfamily: Platanistoidea)	
Key Characteristics	• Functionally blind; rely on echolocation for navigation and hunting. • Have a long, slender snout, rounded belly, stocky body, and large flippers. • Serve as apex predators and indicator species, reflecting river ecosystem health.

Types of River Dolphins

Species	Distribution	Key Features	Protection Status
Ganges River Dolphin (<i>Platanista gangetica</i>)	Found in the Ganges, Brahmaputra, Meghna, and Karnaphuli–Sangu river systems in India and Bangladesh; smaller populations in Nepal.	Locally called “ <i>Susu</i> ”, declared India’s National Aquatic Animal. Adapted to freshwater with strong echolocation ability.	Endangered (IUCN) Schedule I – Wildlife (Protection) Act, 1972
Indus River Dolphin (<i>Platanista minor</i>)	Found mainly in the Indus River system (Pakistan); small population in the Beas River (Punjab, India).	Locally called “ <i>Bhulan</i> ”, recognised as Punjab’s State Aquatic Animal. Lives in fragmented river stretches due to barrages.	Endangered (IUCN) Schedule I – WPA, 1972
Irrawaddy Dolphin (<i>Orcaella brevirostris</i>)	Found in marine, brackish, and freshwater habitats across Southeast Asia.	Known for slow swimming and unique water-spitting behaviour; more flexible habitat compared to other river dolphins.	Endangered (IUCN)

Conservation Initiatives

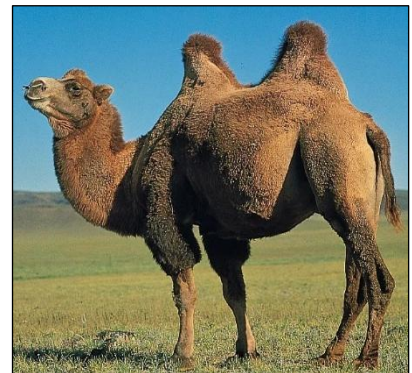
- Vikramshila Gangetic Dolphin Wildlife Sanctuary, Bihar
- Chambal River designated as a Dolphin Conservation Zone
- Reconstitution of the Project Dolphin Steering Committee
- Appointment of Dolphin and Whaling Commissioners
- Satellite tagging of the Ganges river dolphin

BACTRIAN CAMEL

Context: Two Bactrian camels named ‘Galwan’ and ‘Nubra’, walked down Kartavya Path in the Republic Day Parade 2026.

About Bactrian Camel (*Camelus bactrianus*)

- The Bactrian camel is a **double-humped camel species** adapted to the cold deserts and mountainous regions of Central Asia. **In India, it is mainly found in Ladakh, particularly the Nubra Valley.**
- The species was **domesticated about 5,000–6,000 years ago**, likely in areas around modern Uzbekistan and western Kazakhstan. Its name comes from Bactria, an ancient region between Afghanistan, Iran, and Central Asia, corresponding to present-day Balkh in northern Afghanistan.
- Bactrian camels played a **major role in the Silk Road**, the historic trade network linking China, India, Central Asia, Persia, and Europe.
- The domesticated Bactrian camel (*Camelus bactrianus*) is not considered threatened, whereas the wild Bactrian camel (*Camelus ferus*), a separate species, is classified as **Critically Endangered** on the IUCN Red List.
- **Adaptations and Characteristics**
 - Two humps that store fat as an energy reserve.
 - Highly adapted to extreme climates, tolerating severe cold, heat, hunger, and thirst.
 - Feeds on bitter, thorny, and saline plants.
 - Can carry loads of about 180 kg and travel long distances across harsh terrain.



STINGLESS BEES

Context: Stingless bees in the Amazon region in Peru have become the first insect group to be granted legal rights.

About Stingless bees (meliponines)

- They are a diverse group of **social bees from the tribe Meliponini that produce honey but lack functional stingers.**
- They thrive in tropical and subtropical regions worldwide, particularly in Central and South America, Africa, Asia, and Australia.
- These **bees represent one of the oldest bee lineages**, existing for nearly 80 million years.
- Although they possess stingers, these are highly reduced and non-functional for defence.
- Around 500 species occur globally, with over 170 species recorded in Peru.
- Their honey, often called “**liquid gold**,” is valued for its antibacterial and anti-inflammatory properties.
- Ecologically, **stingless bees** are crucial pollinators, sustaining nearly 80% of Amazonian plant species, including important crops such as cacao and coffee.

FRESHWATER PUFFERFISH

Context: In a first, India has scientifically confirmed a case of freshwater pufferfish poisoning.

About Freshwater Pufferfish

- Freshwater pufferfish are a group of about 30–35 species belonging to the family Tetraodontidae, which spend their entire life cycle in freshwater habitats.
- **Common names:** Toadfish, patkafish, balloonfish, and fugu.
- **Distribution:** They are primarily found in tropical and subtropical basins across South America (Amazon, Orinoco), Africa (Congo, Nile), and Southeast Asia (Mekong, Ganges). In India, they are found in the **Western Ghats** and major river basins such as the **Ganga, Brahmaputra, and Mahanadi.**
- **Habitat and diet:** They are benthic and omnivorous, feeding mainly near the bottom of water bodies.
- **Unique feature:** Many species contain tetrodotoxin (TTX), one of the most powerful natural neurotoxins, making them potentially dangerous if consumed improperly.

MYCORRHIZAL NETWORKS

Context: Toby Kiers, an American biologist was awarded the **Tyler Prize for Environmental Achievement** for her work on mycorrhizal networks. The Prize is also called the “**Nobel Prize for the environment**”.

About Mycorrhizal Networks

- These are **underground fungal networks in which mycorrhizal fungi connect the roots of multiple plants through hyphae (fungal threads).**
- These inter-plant connections are sometimes called **common mycorrhizal networks (CMNs)** and can span large areas in forests, grasslands, and other ecosystems.
- Mycorrhizal fungi form a **symbiotic association** in which plants provide carbohydrates to the fungi, while the fungi enhance the plant’s access to water and essential nutrients.
- The underground fungal network in forest ecosystems is commonly known as the “**Wood Wide Web.**” These networks help draw down about 13 billion tons of CO₂ into soil systems each year.

NAGOYA PROTOCOL

Context: The Ministry of Environment Forest and Climate Change (MoEF&CC) has submitted India’s first National Report on the implementation of the Nagoya Protocol to the Secretariat of the Convention on Biological Diversity (CBD).

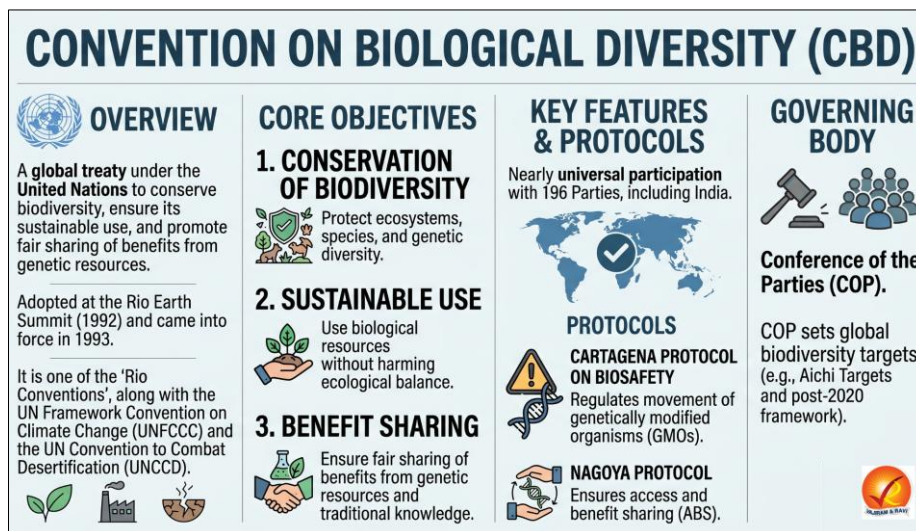
About Nagoya Protocol (often called the ABS Protocol)

- It aims to implement the third objective of the Convention on Biological Diversity (CBD): fair and equitable sharing of benefits from the use of genetic resources, thereby supporting conservation and sustainable use of biodiversity.
- It applies to:** (i) Genetic resources covered by the CBD; (ii) Traditional knowledge associated with those genetic resources; (iii) Benefits arising from the utilization of both (e.g., commercial profits, research collaborations, technology transfer).

- It was adopted in 2010 in Nagoya, Japan but entered into force in October 2014.**

- India implements it through the Biological Diversity Act, 2002, supported by BD Rules 2004 and ABS Regulations 2005, through a three-tier system:**

- National Biodiversity Authority (NBA) at the national level
- State Biodiversity Boards (SBBs) and Union Territory Biodiversity Councils (UTBs) at the state level
- Biodiversity Management Committees (BMCs) at the local/village level



About the National Report on the implementation of the Nagoya Protocol

- The report is India's first national assessment of Nagoya Protocol implementation.
- It explains **how biological resources are accessed and how benefits are shared with communities.**
- Covers the period 2017–2025** and evaluates progress in preventing biopiracy and ensuring fair compensation.

CMS STATE OF THE WORLD'S MIGRATORY SPECIES REPORT

Context: An interim update of the State of the World's Migratory Species Report has been released. The original 2024 report was the **first global assessment of migratory species**, published by the **Convention on the Conservation of Migratory Species of Wild Animals** at COP14 in Samarkand.

Key Highlights

- Sharp Decline:** 49% of CMS-listed migratory species are declining (up from 44%).
- Rising Extinction Risk:** 24% of species are threatened (up from 22%).
- Worsening Trends:** Stable or increasing species declined from 43% to 38%.
- Disease Threat:** Bird flu (Highly Pathogenic Avian Influenza H5N1) is causing mass deaths among birds and marine mammals.
- Status Shifts:** 26 species have moved to higher threat categories, with many now classified as Critically Endangered, Endangered, or Vulnerable.

About Convention on the Conservation of Migratory Species of Wild Animals (CMS)

- The CMS (Bonn Convention) is a legally binding treaty, signed in 1979 in Bonn, Germany, and entered into force in 1983.
- It operates under the **UN Environment Programme (UNEP)** as the **only global treaty dedicated to migratory species** like birds, mammals, and marine life.
- As of recent counts, it has around **133-member** parties, including **India** since 1983.

- The **Conference of the Parties (COP)** serves as the principal decision-making body, meeting every three years to review implementation, set budgets, and amend appendices.
- The COP15 was held in March 2026 at Campo Grande, Brazil, with the theme “*Connecting Nature to Sustain Life.*”
- CMS Secretariat is **administered by UNEP and hosted in Bonn, Germany.**

Appendices

- **Appendix I:** (188 species) Critically Endangered/Endangered; strict protection and habitat conservation.
- **Appendix II:** Species with unfavourable status requiring international cooperation (species may be listed in both).

India and CMS

- India hosted CMS COP13 in 2020 and assumed the CMS Presidency for three years.
- **Theme:** “Migratory species connect the planet, and together we welcome them home!”

NATIONAL CHAMBAL SANCTUARY

Context: The Supreme Court of India has taken suo motu cognizance of media reports on illegal sand mining affecting the ecology of the National Chambal Sanctuary.

About National Chambal Sanctuary (Gharial Wildlife Sanctuary)

- It is located along the Chambal **River across Rajasthan, Madhya Pradesh, and Uttar Pradesh.** Around **600 km of the river** and 5,400 sq. km is notified as a sanctuary.
- It is **India’s only tri-state riverine protected area.** It was first notified as a Protected Area by Madhya Pradesh 1978.
- **Ecological Significance:** It represents a relatively pristine river ecosystem with low pollution levels. Serves as a critical habitat for endangered riverine species.
- **Key Species:** Important breeding ground for the **Gharial**. It also supports mugger crocodile, freshwater turtles (including the red-crowned roof turtle), smooth-coated otter, and the Ganges river dolphin.

BHAVASAGARA REFERRAL CENTRE

Context: The MoEFCC has officially designated CMLRE’s Bhavasagara Referral Centre (BRC) as a **National Repository for Deep-Sea Fauna** under the Biological Diversity Act, 2002.

About Bhavasagara Referral Centre (BRC)

- **BRC** serves as a **central hub for deep-sea biodiversity preservation and research.**
- It houses over 3,500 geo-referenced specimens, ranging from invertebrates to fishes.
- **Functions (Under the Biological Diversity Act)**
 - Preserves biological specimens along with their DNA data
 - Acts as the custodian of newly discovered species (type specimens)
 - Contributes to building expertise in taxonomy

About Centre for Marine Living Resources & Ecology (CMLRE)

- It is a premier institute under the **Ministry of Earth Sciences**, located in **Kochi**, established in 1998.
- It is dedicated to the **exploration, management, and conservation of marine living resources** in the Indian **Exclusive Economic Zone (EEZ)** and adjacent deep seas.

INDIA SUBMITS 7TH NATIONAL REPORT TO CBD

Context: The Ministry of Environment, Forest and Climate Change has recently submitted the Seventh National Report (NR-7) to the **Convention on Biological Diversity (CBD).**

What is the NR-7 Report?

- It is a **comprehensive, indicator-based national assessment of India's biodiversity status** and progress. It is **aligned with the National Biodiversity Strategy and Action Plan (2024–2030)** and the **Kunming-Montreal Global Biodiversity Framework**.
- The report uses 142 indicators mapped to 23 National Biodiversity Targets and is based on inputs from multiple ministries, states, and stakeholders.

NR-7 Highlights

- Forests and Wetlands:** Forest and tree cover stands at 25.17%; notified Ramsar sites have increased from 26 to 98.
- Conservation Network:** 58 Tiger Reserves, 33 Elephant Reserves, 106 National Parks, and 574 Wildlife Sanctuaries.
- Flagship Species:** Tigers – 3,682; Elephants – 22,446; Rhinos – 4,014; Asiatic Lions – 891; Dolphins – 6,327.
- Agrobiodiversity:** 22 biodiversity hotspots identified.
- Worrying Trend:** Only two of 23 National Biodiversity Targets are clearly on track.
- Strong Legal and Technological Framework:** Presence of robust laws supported by technologies such as Remote Sensing (RS), Geographic Information Systems (GIS), Unmanned Aerial Vehicles (UAVs), and DNA-based tools.

KUGTI WILDLIFE SANCTUARY

Context: A rare white female albino Himalayan Tahr was recently recorded in the sanctuary.

Location	Second largest sanctuary in Himachal Pradesh , located in Bharmour (Chamba district) .
Geography	High-altitude sanctuary situated between Ravi and Chenab rivers . Surrounded by Dhauladhar Wildlife Sanctuary (South-East) and Tundah Wildlife Sanctuary (North-West) .
Altitude Range	Ranges from 2,195 m to 5,040 m above sea level.
Religious Significance	It houses the famous Manimahesh Temple , attracting pilgrims despite harsh terrain and climate.
Vegetation	Includes Alpine pastures, Western mixed coniferous forests, and moist deodar forests .
Flora	Deodar (<i>Cedrus deodara</i>), Kail (<i>Pinus wallichiana</i>), Spruce (<i>Picea smithiana</i>), Silver fir (<i>Abies pindrow</i>), Oak (<i>Quercus semicarpifolia</i>), Rhododendron.
Fauna	Home to species like ibex, Musk deer, Himalayan Tahr, Monal, Snow cock, Pheasants, Bulbuls , etc.

SUKHNA WILDLIFE SANCTUARY

Context: It was recognised as a successful example of ecological revival in the fragile Shivalik Hills.

Location	Located in Chandigarh , near Sukhna Lake , at the foothills of the Shivalik range .
Origin of Lake	Sukhna Lake was created in 1958 by Le Corbusier by diverting the Sukhna Choe (seasonal stream). Declared a wildlife sanctuary in 1998.
Formation	Developed through afforestation for soil conservation around Sukhna Lake.
Geographical Features	The area has fragile Shivalik terrain , prone to soil erosion due to rainfall runoff; soil is sandy with clay pockets.
Water Bodies	Includes Sukhna Lake and ~150 small and large water bodies , forming its catchment area.
Vegetation	Mix of forests, grasslands, and wetlands , forming a diverse ecosystem.

Flora	Species include Khair, Phulai, Kikar, Shisham, Moonj, Amaltas, Jhingan, Amla, Vasaka , etc.
Fauna	Mammals include Squirrel, Common Mongoose, Indian Hare, Porcupine, Jungle Cat, Jackal, Wild Boar , etc.

BARNAWAPARA WILDLIFE SANCTUARY

Context: Blackbucks were reintroduced into their natural habitat at Rampur grassland in the sanctuary.

Location	Situated in Mahasamund district, Chhattisgarh . It is named after the Bar and Nawapara forest villages located within the sanctuary. It is spread over 245 sq. km.
Geography	Fed by tributaries of the Mahanadi River ; Balamdehi River forms the western boundary and Jonk River the northeastern boundary.
Vegetation	Dominated by tropical dry deciduous forests .
Flora	Major species include Teak, Sal, Bamboo, Terminalia, Semal, Mahua, Ber, and Tendu .
Fauna	Home to tiger, leopard, Indian bison, neelgai, wild boar, sambhar, cheetal, porcupine, python, antelope , and ~150 bird species including parrots, herons, egrets, peafowl, and blackbuck.

MUDUMALAI TIGER RESERVE

Context: Recently, Nilgiris Collector inspected Thengumarahada, a remote village inside the core area of Mudumalai Tiger Reserve, to ensure basic amenities for voters.

Location	Located in Nilgiris district, Tamil Nadu , at the tri-junction of Karnataka, Kerala, and Tamil Nadu .
Protected Network	Part of the Nilgiris Biosphere Reserve ; shares boundaries with Wayanad Wildlife Sanctuary (Kerala) and Bandipur Tiger Reserve (Karnataka) .
Geography	Undulating landscape with elevation ranging from 960 m to 1266 m . The Moyar River flows through the reserve.
Vegetation	Includes tropical evergreen, moist & dry deciduous, teak forests, grasslands, and swamps .
Flora	Features elephant grass, giant bamboo, teak, rosewood , and wild relatives of crops like rice, ginger, turmeric, cinnamon .
Fauna	It hosts elephants, gaur, sambar, spotted deer, barking deer, blackbuck, wild pig , and predators like tiger, leopard, and wild dog .

UDANTI-SITANADI TIGER RESERVE

Context: A rare Indian giant flying squirrel was recently recorded in the reserve.

Location	Situated in Chhattisgarh.
Formation	Created by merging Udanti and Sitanadi Wildlife Sanctuaries.
Connectivity	Forms a forest corridor linking Kanker & North Kondagaon divisions to Indravati Tiger Reserve.
Rivers	Mahanadi is the main river; tributaries include Udanti, Sitanadi, Indravan, and Pairi.
Terrain	Includes 19 hills; highest point is Deo Dongri, with Atanga Dongar as a prominent peak.
Vegetation	Dominated by tropical dry and moist deciduous forests.
Flora	Major species: Sal, Teak, Bamboo, Tendu, Mahua, Bija, Harra.

SENTINEL SPECIES

Context: Recently, the International Union for Conservation of Nature (IUCN) declared the emperor penguin to be an endangered sentinel species.

About Sentinel Species

- A sentinel species is **one whose health indicates the condition of the ecosystem in which it lives**. These species are among the first to respond to environmental stressors such as pollution and disease.
- They also possess physiological traits that amplify the effects of environmental change. As a result, when disturbances occur in their habitat, they are the first to show clear signs.
- **Examples:** Frogs, Canaries in coal mines, Honeybees

POLLUTION

CENTRAL GROUND WATER BOARD (CGWB)

Context: The Central Ground Water Board (CGWB), in collaboration with States and Union Territories, published the National Compilation on Dynamic Groundwater Resources of India, 2025.

About Central Ground Water Board (CGWB)

- CGWB functions as Central Ground Water Authority (CGWA) to regulate and control the development and management of ground water in the country since 1997.
- CGWB is a **subordinate office** functioning under the **Ministry of Jal Shakti**. It provides scientific inputs for groundwater management, exploration, monitoring, assessment, augmentation, and regulation across the country.
- **Origin:** Established in 1970 by renaming the Exploratory Tube Wells Organisation.
- **Headquarters:** Faridabad, Haryana
- **Key Functions:** Assessment and management of groundwater resources; Groundwater exploration and monitoring; Regulation and sustainable use of groundwater
- **Regulatory Role:** Also performs the functions of the Central Ground Water Authority (CGWA), constituted under the **Environment (Protection) Act, 1986**.

SOLID WASTE MANAGEMENT (SWM) RULES, 2026

Context: The MoEFCC has notified the SWM Rules, 2026, superseding the SWM Rules, 2016 under the Environment (Protection) Act, 1986 and will come into full effect from April 1, 2026.

Key Highlights of SWM Rules 2026

- **Core Segregation Mandate: Four-stream segregation** at source is mandatory for all waste generators, replacing the earlier three-stream system. Waste must be separated into **Wet Waste** (for composting/biomethanation), **Dry Waste** (for recycling via Material Recovery Facilities (MRFs)), **Sanitary Waste**, and **Special Care Waste**.
- **Redefining Bulk Waste Generators (BWGs):** BWGs (based on area, water use, or waste volume) must process wet waste on-site where feasible or obtain **Extended Bulk Waste Generator Responsibility (EBWGR) certification**. This shifts responsibility upstream, requiring proof of compliant disposal.
- **Duties of Local Bodies and MRFs:** Local bodies are responsible for collection, segregation, and transportation of waste in coordination with MRFs. MRFs may act as deposition points for e-waste, sanitary waste, special care waste, and other streams. They are formally recognised as facilities for sorting solid waste.

- **Digital Compliance System:** A centralised online portal manages registration, reporting, audits, and lifecycle tracking, replacing paper-based systems. Facilities and landfills are subject to mandatory audits.
- **Enforcement Mechanisms**
 - **Polluter Pays Principle:** Environmental compensation for violations like non-segregation or false reporting, imposed by State Pollution Control Boards.
 - **RDF Mandate:** Industries (e.g., cement plants) must replace part of solid fuel with RDF—starting at 5% and increasing to 15% over six years.
 - **Carbon Credits:** Local bodies are encouraged to generate and trade carbon credits through sustainable waste practices.
 - **Landfill Penalties:** Higher fees for unsegregated waste discourage dumping and promote segregation.

Basis	SWM Rules, 2016	SWM Rules, 2026
Applicability	Applicable to Urban Local Bodies and notified areas	Applicable to both Urban and Rural Local Bodies; covers all waste generators
Waste Segregation	Three categories: Biodegradable, Non-biodegradable, and Domestic hazardous waste	Four categories: Wet waste, Dry waste, Sanitary waste, and Special-care waste
Waste Hierarchy	Not explicitly specified	Clearly defined: Prevention → Reduction → Reuse → Recycling → Recovery → Disposal
Polluter Pays Principle	Not explicitly mentioned	Environmental compensation imposed for non-compliance
Monitoring System	No centralised online system	Centralised online portal for registration, reporting, and tracking
Landfill Use	Sanitary landfill standards prescribed (Schedule I)	Landfills restricted only to non-recyclable and non-recoverable waste

GREENHOUSE GAS EMISSION INTENSITY TARGET (AMENDMENT) RULES, 2025

Context: The MoEFCC has notified the Greenhouse Gas Emission Intensity Target (Amendment) Rules, 2025 under the Environment (Protection) Act, 1986.

Key Highlights

- **Expansion of sectors:** Four new sectors—Petroleum Refinery, Petrochemicals, Textiles, and Secondary Aluminium—have been added to the list of obligated sectors. **Earlier sectors** included Aluminium, Cement, Chlor-alkali, and Pulp & Paper.
- **Targets and timeline:** 208 industrial units must reduce their GHG emission intensity (emissions per unit of product) starting from 2025–26.
- **Reduction goals:** Overall emission intensity reduction targets range from 3% to 7% by 2026–27, with 2023–24 as the baseline year.
- **Compliance mechanism:** Units that fail to meet the targets must purchase **Carbon Credit Certificates (CCCs)** to offset the shortfall. Non-compliance will attract an environmental compensation penalty equal to twice the average trading price of CCCs.

ENVIRONMENTAL PROTECTION FUND

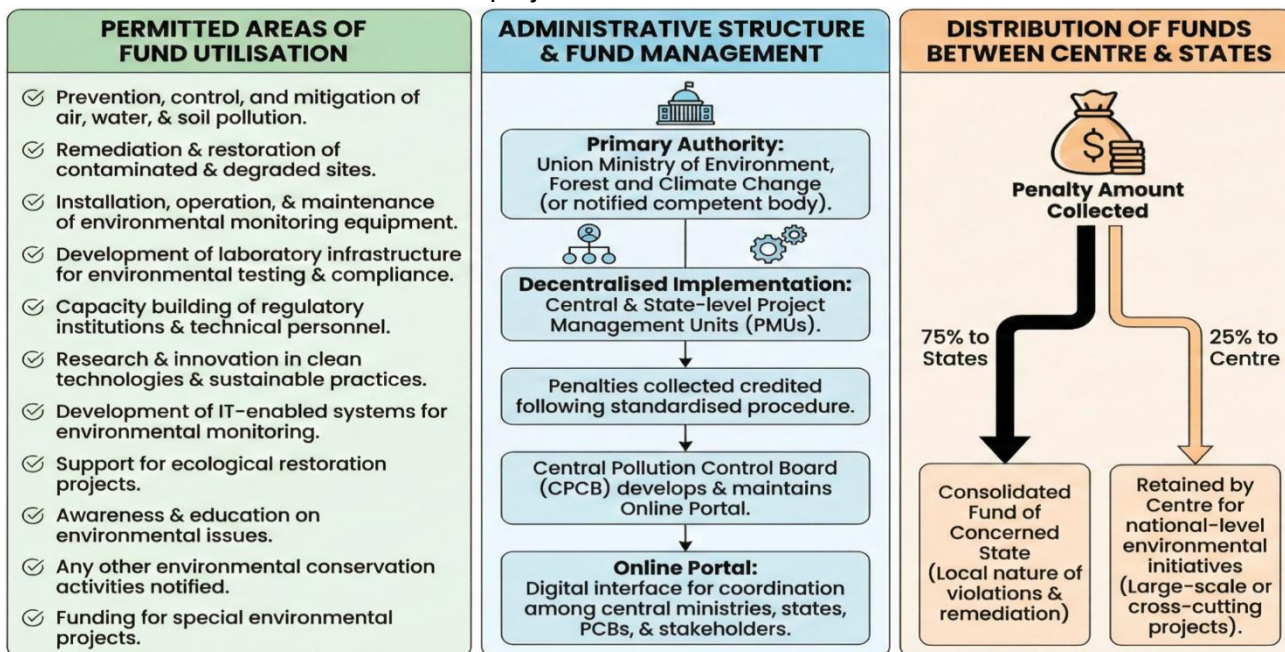
Context: The Union government has notified detailed rules governing the utilisation of the Environmental (Protection) Fund, created from penalties imposed under key environmental laws.

About Environmental (Protection) Fund (EPF)

- EPF was **established under the Jan Vishwas Act, 2023**, and governed by 2026 rules, **centralizes penalties** collected from environmental violations under the **Air Act (1981), Water Act (1974), and Environment Protection Act (1986)**.
- It supports 11 specific, audited activities, including environmental restoration, monitoring, research, and strengthening regulatory bodies.
- **Objectives:** To convert regulatory penalties into tangible environmental outcomes; Aligns with the broader principle of “polluter pays.”

Accountability and Audit Mechanisms

- The Comptroller and Auditor General (CAG) will audit the Environmental (Protection) Fund periodically.
- The online portal managed by the CPCB will act as a monitoring tool, enabling real-time tracking of fund allocation, utilisation, and project outcomes.



SECONDARY POLLUTANTS

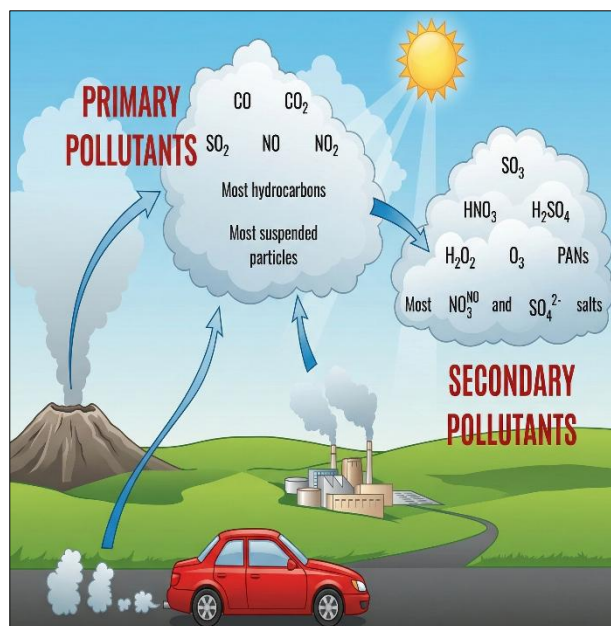
Context: In an analysis by the Centre for Research on Energy and Clean Air (CREA) found that **about one-third of Delhi's annual PM_{2.5} pollution** is linked to secondary pollutants, particularly ammonium sulphate.

About Secondary Pollutants

- Secondary pollutants are **not directly emitted from sources such as vehicles or power plants**. They form in the atmosphere through chemical reactions involving pollutants released from these sources. In contrast, primary pollutants are those directly emitted into the environment from sources.
- Examples include ammonium sulphate, ozone, Peroxyacetyl nitrate (PAN).

Formation of Ammonium Sulphate

- Sulphur dioxide (SO₂) released into the atmosphere gets oxidised to form sulphate



particles. These sulphates react with ammonia (NH₃) present in the air to produce ammonium sulphate, a major contributor to fine particulate matter (PM_{2.5}).

ICGS SAMUDRA PRATAP

Context: ICGS Samudra Pratap, India's first indigenously designed **Pollution Control Vessel (PCV)**, was recently commissioned in Goa.

- It is the first of two Pollution Control Vessels being constructed by Goa Shipyard Limited (GSL) for the Indian Coast Guard (ICG), another being *ICGS Samudra Prachet*.
- **The vessel is the largest ship in the Indian Coast Guard fleet.**
- The ship is powered by two 7,500 kW diesel engines driving indigenously developed Controllable Pitch Propellers and gearboxes, offering superior manoeuvrability, flexibility and endurance of 6,000 nautical miles.
- The vessel is equipped with state-of-the-art systems including side-sweeping arms, floating booms, high-capacity skimmers, portable barges, and a pollution control laboratory.
- Its armament includes a 30 mm CRN-91 gun and two 12.7 mm Stabilised Remote-Controlled Guns, supported by modern fire-control systems

20 CITIES TOWARDS ZERO WASTE INITIATIVE

Context: A UN advisory board has identified 20 cities as global leaders in zero waste, including Varkala (India) on International Day of Zero Waste: 30 March.

About 20 Cities Towards Zero Waste

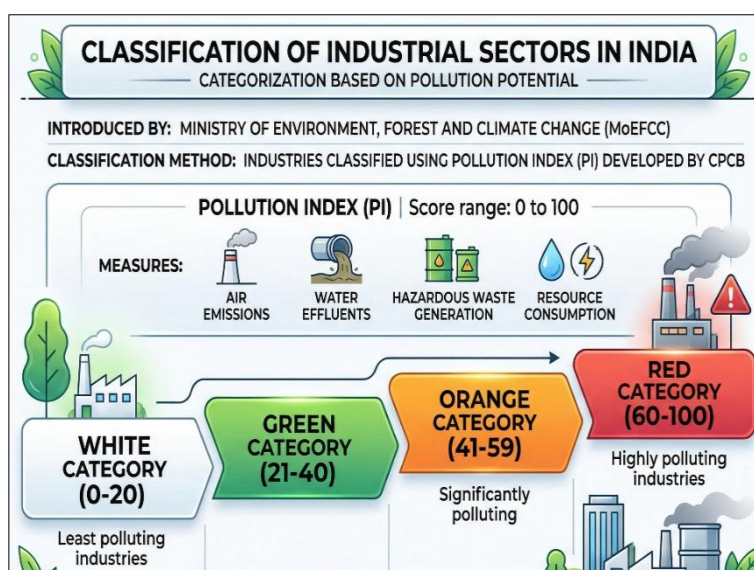
- **It is led by the UN Secretary-General's Advisory Board** on Zero Waste, with support from UN-Habitat and the UN Environment Programme.
- **Aims:** Recognize city leadership and innovation; Promote exchange of good practices and lessons learned; Inspire other cities to accelerate their transition toward zero waste; Support implementation of circular economy approaches at the local level

BLUE CATEGORY OF INDUSTRIES

Context: Recently, the Central Pollution Control Board (CPCB) has created a new category of called the 'blue category' industries based on the Essential Environmental Services (EES) for managing the pollution due to anthropogenic activities.

About Essential Environmental Services (EES)

- Essential Environmental Services are facilities that help prevent, control, and mitigate pollution from domestic and industrial sources.
- **Examples:** Sewage Treatment Plants (STPs), Composting units, Biogas plants, Material Recovery Facilities (MRFs), Biomining projects, Waste-to-Energy (WTE) plants, Common Effluent Treatment Plants (CETPs)
- With the introduction of the Blue Category, industries under this group receive two additional years of validity for their Consent to Operate (CTO).



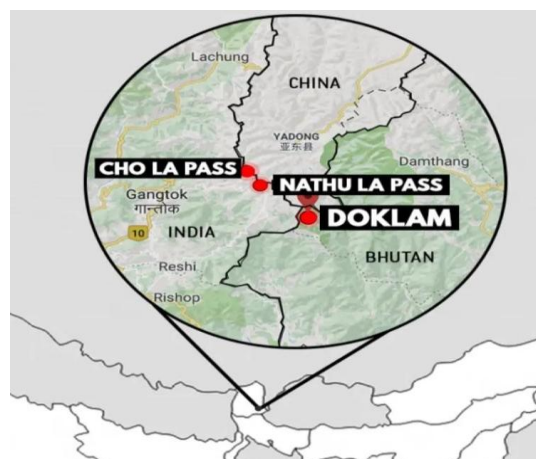
GEOGRAPHY

CHO LA AND DOK LA PASSES

Context: Sikkim has opened the strategic Cho La and Dok La passes for regulated battlefield tourism under the **Bharat Ranbhoomi Darshan** initiative.

About Bharat Ranbhoomi Darshan

- It is a flagship initiative by the Ministry of Defence & Ministry of Tourism. It helps in promoting connectivity, tourism, and socio-economic development in border regions.
- Aim:** To promote border tourism while simultaneously strengthening infrastructure and improving the livelihoods of people living in remote border villages.
- 77 Shaurya Gantavya sites** (*destination of valour*) have been shortlisted by the Ministry of Defence, where major military events have taken place.



Cho La Pass

- Located in the **Cho La range of the Eastern Himalayas** at ~17,782 feet above sea level. The Nathu La and Jelep La passes are also part of this range.
- Serves as a link between Sikkim and the Chumbi Valley.
- Known for the **1967 India–China military clashes**.

Doka La (Doklam) Pass

- Situated in **East Sikkim**, along the Doklam Plateau, **close to the India–Bhutan–China tri-junction**. Gained prominence as the location of the 2017 India–China border standoff.

TWO NEW RAMSAR SITES

Context: Patna Bird Sanctuary in Etah (Uttar Pradesh) and Chhari-Dhand in Kutch (Gujarat) have been recognised as Ramsar sites ahead of World Wetlands Day (February 2), taking the total to 98.

Patna Bird Sanctuary (Uttar Pradesh)	Chhari-Dhand Wetland (Gujarat)
- It is the smallest bird sanctuary in Etah district, Uttar Pradesh, with a wetland area of only 1 sq km. Significance: It is a critical refuge on the Central Asian Flyway. Vegetation: Over 250 plant species; the wetland becomes a “Sarus kem” (congregation area) during winter.	- Situated in the Kutch district, Chhari-Dhand is a seasonal, salt-affected shallow wetland. (“Chhari” means salt-affected and “Dhand” means shallow wetland.) Status: It is the only Conservation Reserve in Gujarat and the state’s fifth Ramsar site. Significance: It serves as the primary stopover for migratory birds entering India via the western route.

GLACIAL LAKE OUTBURST FLOODS (GLOFS)

Context: A January 2026 study by IIT Roorkee revealed that over 31,000 growing glacial lakes across High Mountain Asia (HMA) are inadequately assessed for risks. With a 5.5% increase in total lake area, the study warns of mounting GLOF risks for nearly one million people downstream.

About Glacial Lakes and GLOFs

- Glacial Lakes are bodies of water formed from the melting of glacial ice, typically in depressions or basins created by glaciers. They can be classified into four types based on their formation process: Moraine-dammed, Ice-dammed, Erosion and Others

- Glacial Lake Outburst Floods (GLOFs) occur when a moraine or ice dam holding back a glacial lake fails, releasing large volumes of meltwater.
- **Key Features of GLOFs:** Sudden and sometimes cyclic releases of water, Rapid events, lasting from hours to days, Result in large downstream river discharges.
- **Major Causes of GLOFs**
 - **Glacial Surging:** Sudden, rapid glacier movement over a short period (e.g., Gilkey Glacier, Alaska).
 - **Moraine Dam Instability:** Collapse of loose, unstable moraines (e.g., South Lhonak GLOF, Sikkim).
 - **Ice Dam Failure:** Weakened ice structures due to thermal stress, water pressure, or melting.
 - **Seismic Activity:** Tectonic movements destabilize glacial dams, triggering GLOFs.
 - **Human Activity:** Urbanization, mining, deforestation, hydropower projects, and greenhouse gas emissions disrupt natural drainage and slopes, raising GLOF risks.



Key Examples

- **2023 Sikkim GLOF:** Originated from **South Lhonak Lake**, destroying the Teesta III Dam at Chungthang. Triggered by heavy rainfall and possible seismic activity.
- **2013 Kedarnath (Uttarakhand):** Outburst of **Chorabari Lake** contributed to catastrophic floods during cloudbursts and heavy rains.

PEATLANDS

Context: A study shows Lakes Mai Ndombe and Tumba in the Democratic Republic of Congo (DRC) are releasing ancient, millennial-aged carbon from surrounding peatlands.

What are Peatlands?

- Peatlands are a type of **terrestrial wetland** where **waterlogged conditions** prevent complete decomposition of plant material. This leads to the **gradual accumulation of peat, often forming layers more than a foot thick.**
- They cover approximately 3–4% of the Earth's land surface (around 3–4 million km²) and are found across the globe, ranging from cool northern bogs to tropical swamp regions.
- Peatlands are the world's largest natural terrestrial carbon sink, storing over 550 billion tonnes of carbon, which is twice as much as all global forests combined.
- **The main types of peatlands include:**
 - **Bogs:** Rain-fed and typically acidic in nature.
 - **Fens:** Fed by groundwater and relatively richer in nutrients.
- **Vegetation varies with climate:**
 - In cooler regions, Sphagnum moss plays a dominant role in peat formation.
 - In warmer regions, peat formation is associated with grasses and trees.



CONTINENTAL MANTLE EARTHQUAKES

Context: A groundbreaking study led by Stanford University has produced the first-ever global map of rare continental mantle earthquakes.

What are Continental Mantle Earthquakes?

- Continental mantle earthquakes are **earthquakes that occur in the upper mantle beneath stable continental regions**, rather than within the Earth's crust or along active plate boundaries.

Type / Concept	Description	Depth Range / Location	Key Characteristics / Significance
CRUSTAL EARTHQUAKES (COMMON) 	Earthquakes that occur in the Earth's crust, where rocks are brittle and break when stress accumulates along faults.	0–35 km depth within the Earth's crust	- Most frequent type of earthquake. - Caused by fracturing of brittle rocks. - Responsible for major surface damage because they occur close to the surface.
DEEP-FOCUS EARTHQUAKES (COMMON IN SUBDUCTION ZONES) 	Earthquakes that occur deep within the Earth's mantle, typically linked to subduction, where one tectonic plate sinks beneath another.	70–700 km depth in the mantle	- Common in subduction zones (e.g., the Pacific Ring of Fire). - Caused by oceanic plates subducting beneath continental plates. - Generally cause less surface damage but are important for understanding plate tectonics.
CONTINENTAL MANTLE EARTHQUAKES (RARE PHENOMENON) 	Earthquakes occurring in the upper mantle beneath stable continental crust, rather than at plate boundaries.	Upper mantle beneath continental interiors	- Historically considered unlikely because the mantle was thought to be too hot and ductile (plastic) to fracture. - It was expected to flow rather than break. - Their occurrence challenges traditional views about mantle rheology and earthquake mechanics.

EARTHQUAKE LIGHTS

Context: Recent minor earthquakes in the Aegean Sea (Turkey–Greece region) were followed by unusual glowing lights in the sky, known as earthquake lights.

About Earthquake Lights

- These are flashes, streaks, glowing balls, or pillars of light seen before, during, or just after earthquakes.
- Formation**
 - Tectonic plates create stress that squeezes rocks, especially those with quartz.
 - This generates electric charges that move upward through cracks and faults.
 - On reaching the surface, they ionise air molecules, producing glowing plasma (light without heat or fire).
- Key Observation:** More common in regions with straight, vertical faults (e.g., rift zones), which allow easier flow of electric charges.

LADAKH MAGMATIC ARC (LMA)

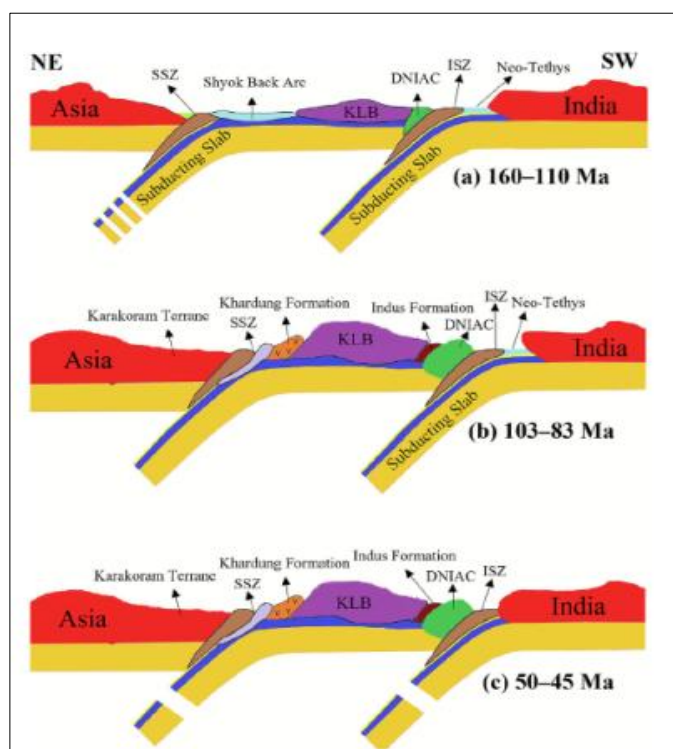
Context: Scientists have traced evolution of the Ladakh Magmatic Arc in the north-western Himalaya.

About Ladakh Magmatic Arc (LMA)

- The LMA is a **belt of igneous rocks located in the Trans-Himalaya (Ladakh)**. It was **formed due to the subduction of the Neo-Tethys oceanic plate beneath the Eurasian plate**.
- It developed from the **Jurassic to Eocene period** (~201 to ~34 million years ago), representing about 130 million years of geological history.

Formation Process

- Stage 1 – Subduction:** The Neo-Tethys oceanic plate subducted beneath the Eurasian plate. This generated magma and



formed the Dras–Nidar Island Arc Complex (DNIAC).

- **Stage 2 – Arc Maturation:** Continued convergence led to magma evolution with increasing crustal and sediment input. This resulted in the formation of granitic bodies known as the Ladakh Batholith.
- **Stage 3 – Collision:** The Indian Plate collided with the Eurasian plate, closing the Neo-Tethys Ocean. This marked the beginning of Himalayan uplift.
- **Stage 4 – Post-Collision:** Residual mantle-derived magma intruded as mafic dykes through fractures in older rocks.

Significance

- Provides direct evidence of the subduction-to-collision cycle.
- Helps explain the formation of the Himalayas (orogeny).
- Demonstrates magmatic evolution from mantle to increasing crustal influence.
- Important for understanding plate tectonics and geodynamic processes.

ATLANTIC MERIDIONAL OVERTURNING CIRCULATION (AMOC)

Context: A new study suggests that a complete collapse of the AMOC could release large amounts of carbon into the atmosphere, especially from the Southern Ocean.

Atlantic Meridional Overturning Circulation (AMOC)

- It is the **Atlantic branch of the global ocean conveyor belt** or Thermohaline circulation (THC-water temperature and salinity (density) differences).
- It moves water northwards near the surface and southwards at deeper levels, forming a continuous loop.
- The AMOC operates very slowly. A single unit of water may take around 1,000 years to complete one full cycle.

Mechanism of AMOC

- **Warm Surface Flow:** Warm water moves from the tropics toward the North Atlantic (e.g., via the Gulf Stream).
- **Cooling and Sinking:** In colder regions, water cools and forms ice. Salt remains in the water, making it denser, so it sinks to deep ocean layers.
- **Deep Ocean Movement:** This cold, dense water flows southward along the ocean floor.
- **Upwelling:** Eventually, deep water rises back to the surface (upwelling), warms, and the cycle repeats.

Importance of AMOC

- **Climate Regulation:** Transfers heat, helping keep regions like Europe relatively warm.
- **Marine Life Support:** Circulates nutrients essential for ocean ecosystems.
- **Sea Level Influence:** Affects coastal sea levels and weather patterns.

Consequences of AMOC Collapse

- **Europe's Climate:** Colder winters due to reduced heat transport.
- **Sea Level Rise:** Increased sea levels along the U.S. east coast.
- **Monsoon Disruption:** Weakened monsoons can affect agriculture and water.
- **Ecosystem Impact:** Disruption to the Amazon and marine biodiversity.
- **Arctic Ice Loss:** Accelerated ice melting in the Arctic.

MISCELLANEOUS

2026: INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS

Context: The United Nations has declared 2026 the International Year of Rangelands and Pastoralists (IYRP).

About International Year of Rangelands and Pastoralists (IYRP)

- IYRP is a **global initiative** led by the **Food and Agriculture Organization (FAO)** to highlight the **crucial role of grassland ecosystems (rangelands)** and **pastoral communities** in supporting biodiversity and livelihoods.

What are Rangelands?

- Rangelands are vast **natural ecosystems dominated by grasses**, shrubs, and forbs, primarily used for grazing by livestock and wildlife. They cover about 40-50% of Earth's land surface.
- Components:** Grasslands, shrublands, savannas, steppes, deserts, tundras, and alpine meadows.
- Associated Ecosystems:** Temperate and tropical forests used for grazing as well as timber production can also be classified as rangelands.
- Not Farmland:** Generally unsuitable for intensive crop farming due to arid climate, low rainfall, or poor soil quality; hence ideal for livestock grazing.
- Economic & Social Importance:** Support nearly 60% of global food production, particularly meat, milk, and wool, and provide livelihoods to around 500 million pastoralists and ranchers worldwide.

Classification of Grasslands

Tropical Grasslands (Savannas)

- Climate:** Warm year-round with distinct wet and dry seasons.
- Vegetation:** Tall, coarse grasses (3–4 metres) such as Elephant Grass; scattered drought-resistant trees like Acacia and Baobab.
- Key Examples:** Savanna (Africa); Llanos (Venezuela/Colombia); Campos (Brazil).

Temperate Grasslands

- Climate:** High temperature variation with very hot summers and freezing winters; rainfall mainly as snow or spring rain.
- Vegetation:** Short, highly nutritious grasses; largely treeless due to low moisture.
- Key Examples:** Prairies (North America); Steppes (Eurasia); Pampas Argentina/Uruguay); Veld (South Africa); Downs (Australia).

GRASSLANDS IN INDIA: A UNIQUE MOSAIC

Occupying 20–24% of land area; diverse specialized ecosystems rather than vast continuous stretches.

BANNI GRASSLANDS (Gujarat)



- One of Asia's largest natural grasslands; saline and arid ecosystem.
- Home to Maldhari pastoralists; known for Banni buffalo and rich bird diversity.

SHOLA GRASSLANDS (Western Ghats)



- High-altitude montane grasslands interspersed with stunted evergreen forest patches.
- Important for water regulation, endemic biodiversity, and ecosystem stability.

MONTANE ALPINE BUGYALS (Uttarakhand)



- High-altitude meadows above the tree line used as seasonal pastures.
- Support transhumant grazing, alpine flora, and hydrological regulation.

TERAI-DUAR SAVANNA (Himalayan Foothills)



- Dominated by tall elephant grass in moist alluvial plains.
- Key habitat for the one-horned rhinoceros and tigers.

TERAI WET GRASSLANDS / PHUMDIS (Manipur – Loktak region)



- Floating grasslands made of vegetation, soil, and organic matter.
- Support Keibul Lamjao National Park and the endangered Sangai deer.

MARGINAL / SEMI-ARID GRASSLANDS (Deccan Plateau & Rajasthan)



- Low rainfall ecosystems with sparse vegetation adapted to aridity.
- Critical habitat for the critically endangered Great Indian Bustard.

DISASTER VICTIMS IDENTIFICATION GUIDELINES

Context: The National Disaster Management Authority (NDMA) released the country's first-ever SOP & Guidelines on Disaster Victim Identification (DVI) and Management.

Guidelines on Disaster Victim Identification (DVI)

- These guidelines provide a structured, principles-based framework for modern DVI practices.
- They incorporate scientific methods such as **forensic odontology, DNA analysis and profiling, post-mortem fingerprinting, forensic nursing, humanitarian forensics, and virtual autopsy.**

- These are in line with international standards followed by INTERPOL and other global forensic organisations.
- Secondary identifiers, such as tattoos, scars, and ornaments, may assist identification but are not considered fully reliable as primary evidence.
- The guidelines apply to **all mass fatality incidents**, including:
 - **Natural disasters:** earthquakes, floods, cyclones, and landslides.
 - **Human-induced or technological disasters:** air and rail accidents, industrial fires, explosions, and terrorist attacks.

FOREST FIRES IN NORTH-EAST OF INDIA

Context: Massive forest fires have continued for over a week in the Lohit Valley (Arunachal Pradesh) and Dzukou Valley (Nagaland–Manipur border). Under Operation Walong, the Indian Air Force deployed Mi-17 V5 helicopters equipped with Bambi Buckets to quell the fires.

Multidimensional Causes of Forest Fires in North-East India

Natural & Climatic Factors	Anthropogenic Factors
• Moisture Deficit: A severe pre-monsoon rainfall deficit in 2026 turned forest undergrowth into a “tinderbox.” • Fuel Load: Accumulation of dry bamboo, pine needles (highly inflammable due to resin), and organic litter. • Topographic Winds: Strong winds near peaks such as Japfu Peak spread sparks rapidly across steep ridges.	• Shifting Cultivation (Jhum): Traditional slash-and-burn farming sometimes spreads into nearby forests during dry periods. • Human Negligence: Unattended campfires, discarded cigarette butts, and sparks from electric transmission lines. • Forest Friction: Dry bamboo rubbing against each other in strong winds can naturally ignite fires.

Initiatives to Address Forest Fires

Policy Frameworks	Technological Interventions
• National Action Plan on Forest Fires (NAPFF), 2018: Focuses on informing, enabling, and empowering forest-fringe communities. • Forest Fire Prevention and Management Scheme (FPM), 2017: A Centrally Sponsored Scheme with a 90:10 funding ratio for North-Eastern states.	• FSI Monitoring System: The Forest Survey of India (FSI) uses MODIS and VIIRS satellite sensors to send near real-time SMS alerts to over 1.6 lakh registered forest officials. • Early Warning System: Development of the National Fire Danger Rating System (NFDRS) to predict and assess fire risk.

BIO-MATERIALS

Context: Biomaterials in India are emerging as a sustainable alternative to fossil-based materials, supporting environmentally friendly manufacturing systems.

About Biomaterials

- Biomaterials are **materials derived wholly or partly from biological sources** or engineered using biological processes to replace or interact with conventional materials.
- **Unlike petroleum-based materials, they are designed to minimise environmental impact** while promoting sustainable production. These materials are increasingly used in sectors such as packaging, textiles, construction, and healthcare.

Types of Biomaterials

- **Drop-in biomaterials:** **Chemically identical to petroleum-based materials** and compatible with existing manufacturing systems without major changes. Example: Bio-PET used in packaging.
- **Drop-out biomaterials:** **Chemically different from conventional materials** and require new processing or disposal systems. Example: Polylactic acid (PLA), which needs industrial composting.

- **Novel biomaterials:** Advanced materials that offer entirely new properties, such as self-healing materials, bioactive implants, and high-performance composites.

RAT-HOLE MINING

Context: At least 18 miners have died after an explosion at an illegally-operated Rat-hole coal mine in Meghalaya.

About Rat-hole Mining

- It is a **primitive method of coal extraction** in which **very narrow tunnels** (about 3–4 feet wide) are dug into the ground.
- These tunnels are so small that workers have to crawl or squat to extract coal, similar to rats moving through holes. Rat-hole mining has been banned in India since April 2014.

Types of Rat-Hole Mining

- **Side-Cutting Method:** Practised mainly on hill slopes. Mining follows visible coal seams (layers of coal within rocks). Horizontal tunnels are dug into the hillside.
- **Box-Cutting Method:** A vertical pit (circular or rectangular) is dug, sometimes up to 400 feet deep. Workers descend using ropes or bamboo ladders. From the bottom, horizontal tunnels branch out in multiple directions.

ANAVARAN PORTAL

Context: The Forest Survey of India has discontinued its Anavaran–Deforestation Alert System, which had been operational since January 2024.

About the Anavaran Portal

- It is an **AI and satellite-based near real-time forest loss alert system** developed by the **Forest Survey of India** under the **Ministry of Environment Forest and Climate Change**.
- It provides location-specific alerts approx. every 15 days to States and Union Territories and **enables targeted field verification and enforcement actions**.
- It is based on the **Google Earth Engine (GEE) platform**, and uses **Sentinel-2 satellite** images as input data. For continuous monitoring during cloudy and monsoon seasons, this is further integrated with **Sentinel-1 Synthetic Aperture Radar (SAR)** data.

WASTE FOUNDRY SAND (WFS)

Context: The Institute of Indian Foundrymen (IIF) and CSIR Central Road Research Institute (CSIR-CRRI) have signed an agreement to develop solutions for using waste foundry sand in road construction.

About Waste Foundry Sand

- WFS is the **used moulding/core sand discarded from foundry operations** after repeated use in metal casting. It is a byproduct generated during ferrous and non-ferrous metal casting processes.
- It is composed mainly of high-quality silica sand; properties vary depending on the casting process.
- **Source: Types (Based on Binder)**
 - **Clay-bonded (Green Sand):** Contains ~85–95% silica and 4–10% bentonite.
 - **Chemically Bonded Sand:** High-strength sand used in core and mould making.
- **Significance:** Reuse promotes resource efficiency, reduces waste, and supports sustainable development.

SPECIES IN NEWS

Kashmir Markhor 	• India's rarest wild goat, the Kashmir Markhor, faces a critical survival crisis, with only about 200–300 individuals remaining. • Unique Features: The largest wild goat (weighing up to 100 kg). Males are known for massive corkscrew-like spiral horns that can grow up to 160 cm. • In India, the markhor is endemic to the UT of Jammu and Kashmir, with a fragmented distribution across two landscapes: ◦ Kazinag Landscape (North Kashmir): Kazinag National Park (Baramulla district) is the last stable stronghold in India. ◦ Pir Panjal Landscape (South Kashmir): Found in Hirpora Wildlife Sanctuary (Shopian) and Tatakuti Wildlife Sanctuary (Poonch). • Global Habitat: Pakistan, India, Afghanistan, Uzbekistan, Turkmenistan, and Tajikistan • IUCN Red List: Near Threatened; WPA: Schedule I; CITES: Appendix I
Orobanche aegyptiaca 	• India's mustard (the largest oilseed crop) faces a serious threat from Orobanche aegyptiaca, a weed prevalent in major mustard-growing areas of Rajasthan and Haryana. • It is a parasitic weed that attaches to mustard roots and extracts nutrients, carbon, and water. • This causes wilting, yellowing, stunted growth, and reduced mustard seed yields.
Grey Slender Loris 	• Kerala and Tamil Nadu have begun efforts to restore habitats and strengthen monitoring of the grey slender loris. • Taxonomy: A small nocturnal primate belonging to one of the oldest and most primitive primate groups. • Geographic Range in India: Endemic to southern India (Tamil Nadu, Karnataka, and Kerala). • Physical Features: Notable for large, closely set brown eyes that provide excellent stereoscopic night vision. • Diet: Primarily insectivorous and an important biological predator of agricultural pests, especially those affecting tamarind and acacia trees. • Behaviour: Arboreal, moving with slow, stealthy, precise movements. Unlike many primates, it cannot jump or leap. • IUCN Red List: Near Threatened; WPA: Schedule I
Eurasian Otter 	• Once considered locally extinct in Jammu & Kashmir, the Eurasian otter was recently rediscovered in the Sindh River (Ganderbal), suggesting recovery of the local river ecosystem. • Behaviour: Shy, elusive, and mainly nocturnal carnivore. • Diet: Primarily fish, along with amphibians, crustaceans, and small mammals. • Habitat Indicator: Acts as a bio-indicator of healthy river systems, reflecting good water quality and adequate fish populations. • In India, found in the Himalayan foothills, Central India, and the Western Ghats; sightings in J&K had been extremely rare until recently. • IUCN: Near Threatened (NT); CITES: Appendix I; WPA: Schedule II
Loggerhead Turtle	• Loggerhead turtles face multiple threats from climate change.

	- India hosts five of the seven sea turtle species: Olive Ridley, Green, Hawksbill, Leatherback, and Loggerhead. Size: The largest hard-shelled turtle, second only to the leatherback in overall size. Navigation: Uses magnetoreception, enabling migration across vast ocean basins using the Earth's magnetic field. IUCN: Vulnerable (VU); CITES: Appendix I; WPA: Schedule I
Emperor Penguins (Aptenodytes forsteri) 	- The tallest and heaviest penguin species with black heads and backs, white bellies, and bright yellow-orange patches on their necks and heads. - They are flightless but expert swimmers, diving to 550 meters. - Adaptations like dense double-layered feathers, fat reserves, and huddling in colonies help them survive extreme cold. - Males incubate eggs on their feet for months during brutal winters while females forage at sea. - Inhabit Antarctic pack ice and surrounding waters year-round IUCN Red List: Endangered
Rice's Whale 	- Rice's whales belong to the baleen whale family Balaenopteridae and are closely related to Bryde's whales. - Identified as a distinct species in 2021, separate from other Bryde's whales globally. Habitat & Distribution: Medium-sized whale found year-round in the northern Gulf of America (earlier Gulf of Mexico). Mostly seen at depths of 100–400 m in the northeastern region. It is the only whale species residing there throughout the year. Diet: Primarily feeds on silver-rag driftnet. Reproduction: Likely reproduces every 2–3 years; reaches maturity around 9 years. IUCN Red List: Critically Endangered
Snowy Owl (Bubo scandiacus) 	- Snowy Owl is a large white owl of the true owl family. Habitat: Mainly lives in Arctic tundra (open, treeless areas); also found in coastal dunes, prairies, moorlands, meadows, marshes, and farmland. Distribution: Native to Arctic regions of North America and Eurasia. - Unlike most owls, it is not strictly nocturnal and can hunt both day and night. They are a nomadic species, rarely breeding in the same place or with the same mate; may skip breeding if prey is scarce. - Carnivorous; feeds on small mammals like lemmings and voles. - Uses a "wallop" method—swoops down to grab prey with strong talons. IUCN Red List: Vulnerable
Indian Crested Porcupine 	- Large rodent of Old World porcupine family (Hystricidae). - Found in hills, forests, scrublands, and Himalayas (up to 2400 m). - Distributed across South/Southeast Asia and parts of the Middle East. - Lifespan: 18–20 years. Has sharp quills for defence (used in backward attack) and strong claws for burrowing - It is a nocturnal and mostly herbivorous (fruits, roots, grains).animal IUCN: Least Concern.
Bengal Florican	A grassland indicator bustard found in seasonally flooded grasslands of the Gangetic–Brahmaputra plains; occurs in Uttar Pradesh, Assam,



Arunachal Pradesh, Nepal Terai, and Bangladesh.

- **Key sites:** Dudhwa, Manas, Kaziranga, Orang, Dibru-Saikhowa.
- **Features & Behaviour:** Male has black plumage with crest and display feathers; performs “lekking” (jumps, calls, displays) to attract females; shows sexual dimorphism.
- **Diet:** Omnivorous—feeds on insects, seeds, fruits, flowers, and small reptiles.
- **IUCN:** Critically Endangered; **WPA 1972:** Schedule I.

SCIENCE AND TECHNOLOGY

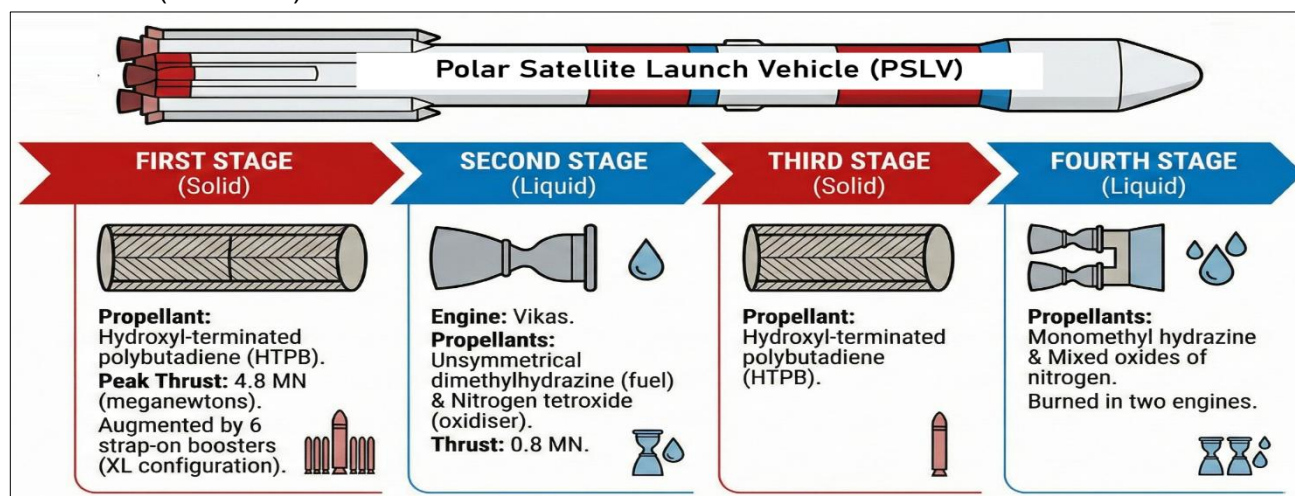
SPACE AND SPACE TECH

POLAR SATELLITE LAUNCH VEHICLE (PSLV)

Context: The Indian Space Research Organization's (ISRO) first launch of the year, PSLV-C62 carrying a total of 16 satellites, ended in failure.

About Polar Satellite Launch Vehicle (PSLV)

- PSLV is the **third-generation launch vehicle** of ISRO. It is the **first Indian launch vehicle to be equipped with liquid stages**.
- After its first successful launch in October 1994, PSLV emerged as a reliable and versatile **workhorse launch vehicle of India**.
- The vehicle has launched numerous Indian and foreign customer satellites. Besides, the vehicle successfully launched two spacecraft: **Chandrayaan-1 in 2008 and the Mars Orbiter Spacecraft in 2013**, that later travelled to the Moon and Mars respectively.
- Due to its unmatched reliability, PSLV has also been used to launch various satellites into geosynchronous and geostationary orbits, such as satellites from the IRNSS constellation.
- The rocket operates in a staged configuration, in which each stage has its own engines that fire sequentially and are jettisoned after burnout to reduce mass and improve efficiency.
- PSLV uses 6,4,2 solid rocket strap-on motors to augment the thrust provided by the first stage in PSLV-XL, QL & DL variants respectively. However, strap-ons are not used in the core alone version (PSLV-CA).



DUST EXPERIMENT (DEX)

Context: The ISRO has recently confirmed, through its first-ever Dust Experiment (DEX), that an interplanetary dust particle enters Earth's atmosphere approximately every 1,000 seconds.

What are Interplanetary Dust Particles (IDPs)?

- IDPs are microscopic shrapnel (micrometre-sized debris) from comets and asteroids that form our atmosphere's mysterious "meteor layer" and show up as "shooting stars" at night.
- Studying these particles offers valuable clues about the early solar system.

What is DEX?

- DEX is India's first indigenously developed instrument designed to detect interplanetary dust particles. It is a 3 kg, 4.5Watt **hypervelocity dust detector** that records the impacts of high-speed particles as they collide with the instrument.

- DEX was flown aboard **PSLV-C58 (XPoSat)** through the **PSLV Orbital Experimental Module (POEM)** on 1 January 2024, and operates at an **orbital altitude of ~350 km**.
- **Key Result:** The instrument successfully detected regular dust impacts (approximately one every 1,000 seconds) and measured the corresponding dust flux.
- **Why it Matters:** DEX enhances our understanding of cosmic dust, contributes to satellite safety, and lays the groundwork for future missions to the Moon, Mars, and Venus.
- **Developer:** Physical Research Laboratory (PRL), Ahmedabad.

MICROLENSING

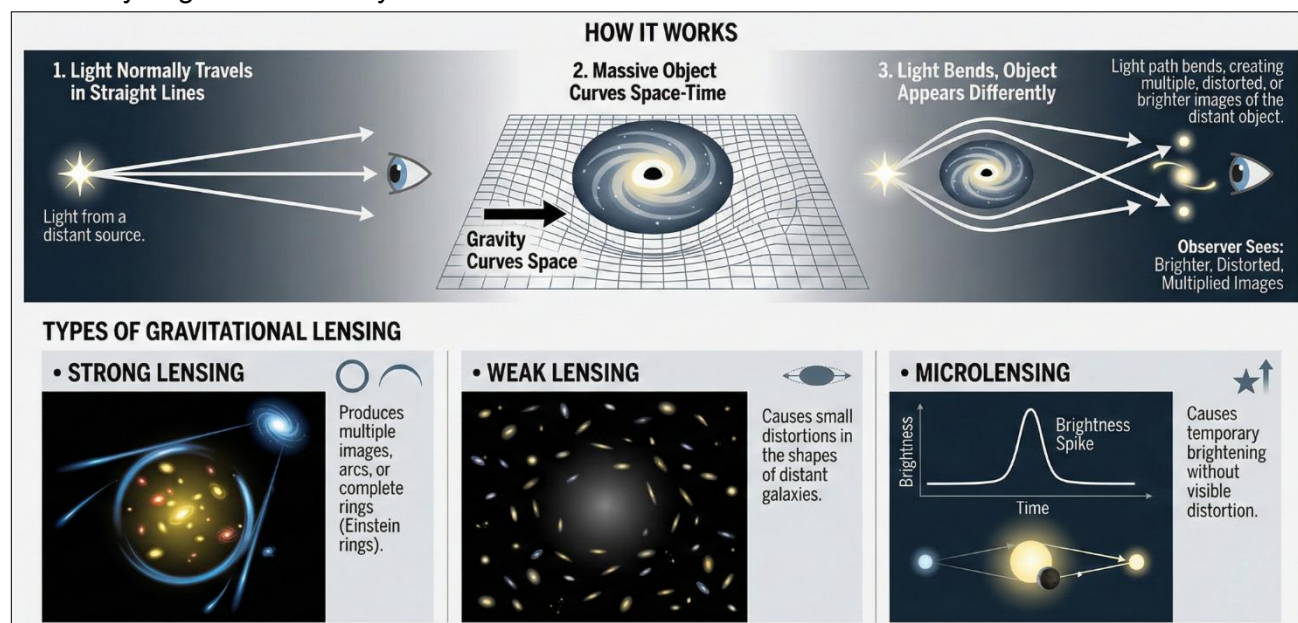
Context: A recent study used microlensing to measure the mass of a **rogue planet** (one that does not orbit any star.)

What is Microlensing?

- **Gravitational Microlensing** is a **gravitational phenomenon** in which a **foreground object** (such as a star, planet, or compact remnant) **passes in front of a distant background star**. The foreground object's gravity bends space-time, briefly **magnifying the background star's light**.
- In this way, **microlensing uses gravity itself as a natural telescope**, allowing astronomers to weigh and detect otherwise invisible worlds.

What is Gravitational Lensing?

- It is a phenomenon in which **light from a distant object** (like a galaxy or star) **bends as it passes near a massive object** (such as another galaxy or a black hole). This happens **because gravity curves space, changing the path of light**.
- **Why it is important:** It helps detect dark matter because lensing shows the mass present, even if it is invisible. It also allows astronomers to study very distant galaxies. This tests Einstein's theory of general relativity.



W URSAE MAJORIS

Context: Astronomers from the Aryabhata Research Institute of Observational Sciences (ARIES) used data from the Devasthal Fast Optical Telescope (DFOT) and NASA's TESS space telescope to create detailed light curves of the W Ursae Majoris (W UMa) star.

About W Ursae Majoris (W UMa) Stars

- W Ursae Majoris stars are **contact binary systems** in which two stars orbit extremely close to each other and share a common outer envelope, resulting in a **dumbbell-like shape and short orbital periods**.

- **Significance:** They act as natural laboratories for precise measurement of stellar masses, radii, and temperatures, and provide critical insights into binary star evolution and their long-term fate.

Aryabhata Research Institute of Observational Sciences (ARIES), Nainital	• An autonomous research institute under the Department of Science and Technology, Govt. • It conducts frontline research in astronomy, astrophysics, and atmospheric sciences, operates advanced observatories at Devasthal • It supports national and international collaborations while contributing to scientific training and public outreach.
Devasthal Fast Optical Telescope (DFOT), Uttarakhand	• A 1.3-metre optical telescope operated by ARIES at Devasthal. • Designed for high-precision photometry and monitoring of variable and transient objects • It plays an important role in studying stars, exoplanets, and active galaxies, and supports coordinated observations with other national and global facilities.
NASA Transiting Exoplanet Survey Satellite (TESS) Space Telescope	• A space telescope launched in 2018 to discover exoplanets using the transit method. • It monitors large areas of the sky to detect tiny dips in starlight, enabling studies of planetary systems, stellar variability, and transient phenomena across the universe.

VOYAGER 1

Context: Voyager 1 is expected to become the first human-made object to reach a distance of about one light-day from Earth.

About Voyager 1:

- Voyager 1 was launched by NASA on September 5, 1977, from Cape Canaveral, shortly after its twin Voyager 2, but overtook it due to a faster trajectory.
- **Mission:** Initially to study the giant planets of the Solar System; later extended as the Voyager Interstellar Mission.
- **Milestones Achieved:**
 - Discovered active volcanoes on **Io (a moon of Jupiter)** and provided detailed observations of Saturn's ring system.
 - Discovered **Jupiter's faint ring system** and helped identify small Jovian moons such as Thebe and Metis. It also helped discover new moons and features such as **Saturn's G-ring**.
 - Conducted **flybys of Jupiter and Saturn** (only spacecraft among the pair to take a trajectory toward interstellar space after Saturn encounter).
 - Entered interstellar space in 2012, becoming the first human-made object to do so.
- **Distance:** Farthest spacecraft from Earth; signals take about 22–24 hours one way.
- **Current Function:** Measures cosmic rays, plasma, and magnetic fields beyond heliosphere.
- **Status:** Still operational; data transmitted via NASA's **Deep Space Network**.

Voyager 2 is NASA's second interstellar probe to explore the outer planets. It uniquely visited all four gas giants (Jupiter & Saturn) and ice giants (Uranus & Neptune), providing the **only close-up data on Uranus and Neptune**.

SCRAMJET ENGINE

Context: DRDO Defense Research and Development Laboratory (DRDL) successfully ground-tested a full-scale, actively cooled, long-duration Scramjet engine.

What is a Scramjet Engine?

- Scramjet stands for **Supersonic Combustion Ramjet**. It is a type of **air-breathing engine** designed to **operate efficiently at hypersonic speeds (faster than Mach 5)**.

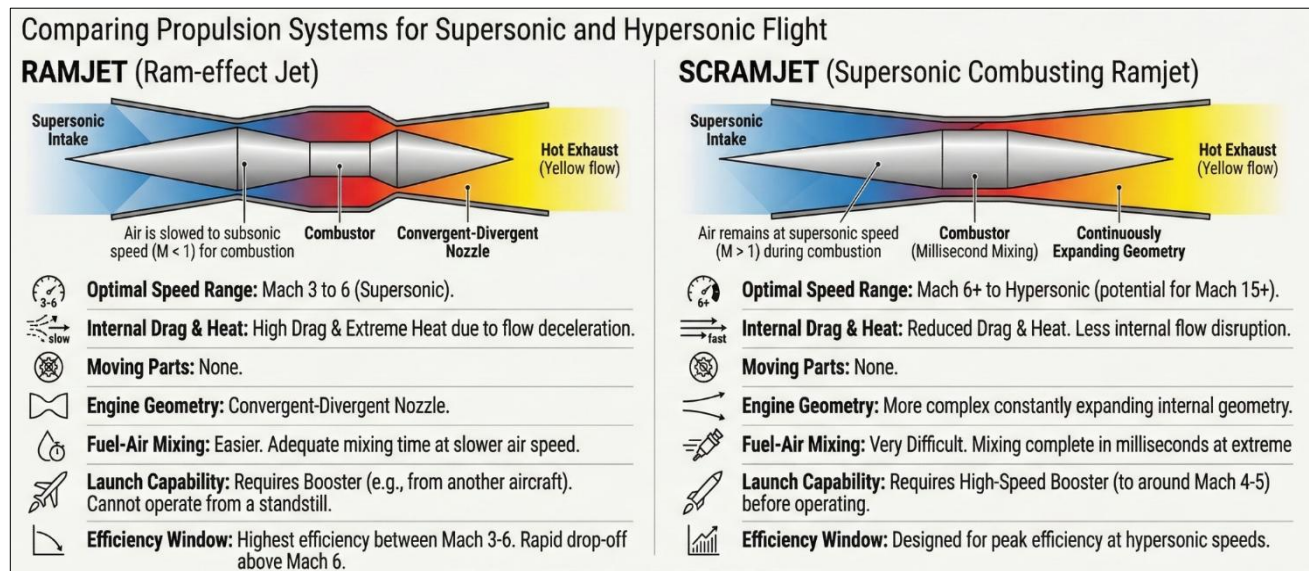
- Mach is a measurement representing an object's speed relative to the speed of sound.
- Only a few countries have demonstrated scramjet flight technology; India became the fourth country to do so.

Working Principle

- Unlike traditional rockets, a scramjet does not carry oxygen for combustion. Instead, it uses oxygen from the atmosphere while flying through air.
- The engine uses the vehicle's extremely high speed to compress incoming air. Fuel (often hydrogen) is injected into this compressed air and ignited to produce thrust.
- Because the engine uses atmospheric oxygen, less propellant needs to be carried, reducing launch cost.

Importance

- **Reduces launch costs:** About 70% of propellant in rockets is oxidiser. Using atmospheric oxygen reduces this requirement.
- **Higher efficiency at hypersonic speeds:** Works best at speeds above Mach 5.
- **Supports reusable launch vehicles:** When combined with reusable rockets, it can make space travel cheaper and more frequent.



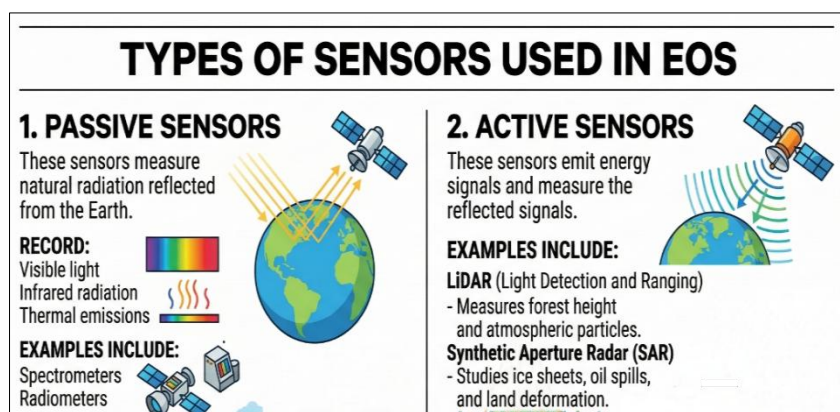
PRIVATE EARTH OBSERVATION (EO) SATELLITE CONSTELLATION

Context: The Pixxel-led consortium signed an agreement with Indian National Space Promotion and Authorisation Centre (INSPACe) to build India's first indigenous commercial EOS constellation.

- The other partners in the consortium that will build and deploy the 12-satellite consortium are PierSight, SatSure Analytics India and Dhruva space.

What are Earth Observation Satellites?

- Earth Observation Satellites (EOS) are spacecraft placed in temporary or permanent orbit around the Earth.
- They carry special sensors and cameras that capture images and data about the Earth's surface and atmosphere.



- The information collected helps scientists study: Weather patterns, Land-use changes, Vegetation cover, Ocean currents, Ice cover, Climate change

MONS MOUTON

Context: ISRO's Space Applications Centre (SAC) has identified a landing zone in the south polar region of the Moon - Mons Mouton for India's first lunar sample-return mission, Chandrayaan-4.

What is Mons Mouton?

- Mons Mouton is a mountain about **6 km high located near the Moon's South Pole** in the **South Circumpolar Region**. It lies on the rim of the **South Pole–Aitken Basin**, the largest and oldest impact basin on the Moon. It is known informally as Leibnitz Beta.
- The mountain is named after NASA mathematician Melba Roy Mouton. The name was proposed by NASA's Volatiles Investigating Polar Exploration Rover (VIPER) team to the International Astronomical Union (IAU), the body responsible for naming lunar features.

Key Features	Significance
• Relatively flat summit, making it a suitable landing site. • Receives extended periods of sunlight, which is favourable for solar-powered missions. • Maintains line-of-sight communication with Earth, enabling easier data transmission.	• Located near permanently shadowed craters that may contain water-ice deposits. • Important for studying the Moon's geology and evolutionary history. • Valuable for future in-situ resource utilisation (ISRU) and long-term exploration of the lunar south pole.

SPHEREX MISSION

Context: NASA's SPHEREx mission observed the **interstellar comet 3I/ATLAS**. It is only the third interstellar object discovered passing through our solar system.

What is the SPHEREx Mission?

- SPHEREx (Spectro-Photometer for the History of the Universe, Epoch of Reionization, and Ices Explorer) is a **NASA space telescope mission** launched in March 2025.
- **Objective:** Survey the sky in optical as well as near-infrared light
- While telescopes like James Webb (JWST) look deeply at small areas, SPHEREx provides a comprehensive, wide-view "panoramic" survey.

Objective	Key Features
To create a 3D map of the universe in order to study: • Cosmic inflation in the early universe • Galaxy formation and evolution • The distribution of water and organic molecules in space	• Two-year prime mission. • Will survey around 450 million galaxies and about 100 million stars in the Milky Way.

COPERNICUS SENTINEL-2 MISSION

Context: The European Space Agency (ESA) recently released a high-resolution image of the 2026 Winter Olympic venues in northern Italy using data from the Copernicus Sentinel-2 mission.

About Copernicus Sentinel-2 Mission

- An Earth observation mission developed by ESA under the European Union's Copernicus Programme to monitor changes in the Earth's land surface.
- It aims to monitor changes in land surface conditions. The satellites have a wide swath width and a high revisit time. This capability support monitoring of changes on the Earth's surface.

Configuration	Technical Features	Applications
• Consists of two twin satellites: Sentinel-2A and Sentinel-2B. • Operate in a sun-synchronous polar orbit.	Provides high-resolution multispectral imagery across 13 spectral bands, including:	• Agriculture and food security monitoring • Ecosystem and land-use analysis

• Provide a global revisit time of about 5 days with a 290 km swath width.	• Visible spectrum • Near-Infrared (NIR) • Short-Wave Infrared (SWIR)	• Disaster management • Water quality monitoring • Tracking methane emissions
--	---	---

Copernicus Programme

- The Copernicus Programme is the European Union's Earth observation component under its Space Programme, led by the European Commission in partnership with ESA.
- It **integrates data from Sentinel satellites and in-situ sources** (ground, airborne, and sea-based sensors) to **provide free, open, and near-real-time information for environmental and security monitoring**.

CHARACTERISING EXOPLANET SATELLITE (CHEOPS)

Context: The European Space Agency's (ESA) CHEOPS recently identified a four-planet system in which the outermost planet is small and rocky, rather than a gas giant.

What is CHEOPS?

- CHEOPS is the first space mission dedicated to the precise study of known exoplanets orbiting bright, nearby stars.
- **Launched:** 2019 | **Orbit:** Sun-synchronous dusk–dawn orbit at about 700 km altitude.
- **Carries a single payload:** a **high-precision photometer** (a specialised camera) designed to measure tiny changes in starlight during planetary transits.

Objective	Significance
• To measure planetary radii with high precision by observing transits, when a planet passes in front of its host star. • Focuses mainly on Super-Earth to Neptune-sized exoplanets.	• Measures planet diameters with about 10% accuracy. • When combined with ground-based measurements of planetary mass, it allows scientists to calculate planetary density. • Density helps determine whether a planet is rocky, gaseous, or water-rich (ocean worlds)

WET DRESS REHEARSAL

Context: NASA detected a hydrogen leak during a wet dress rehearsal for its Artemis II mission.

What is a Wet Dress Rehearsal?

- A wet dress rehearsal (WDR) is the **final full-scale practice before a rocket launch**, during which **actual cryogenic fuels such as liquid oxygen and liquid hydrogen are loaded into the rocket**.
- **Process:** Cooling of fuel lines → Loading of cryogenic propellants → Pressurisation of tanks → Leak and system checks → Full launch countdown simulation (stops just before ignition) → Draining of the propellants
- **Significance**
 - Tests integration between the rocket and ground systems.
 - Identifies leaks or technical faults under cryogenic conditions.
 - Helps ensure readiness for the actual launch day.

About Dry Dress Rehearsal (DDR)

- A Dry Dress Rehearsal is a **launch countdown simulation conducted without loading cryogenic fuels**. Teams power up vehicle and ground systems, test communications, and simulate key events using mock sensor inputs.
- It helps detect procedural or coordination errors while avoiding the risks associated with fuel loading.

VIKKO SAT-1

Context: Thirteen Class XI students from Ariyakudi Government Higher Secondary School in Sivagangai district, Tamil Nadu, successfully launched a mini satellite named Vikko Sat-1.

About Vikko Sat-1

- A 600-gram mini satellite designed as a **high-altitude balloon payload** (not an orbital satellite).
- **Objective:** To detect fungal spores in the stratosphere.
- **Method:** Launched using a helium balloon reaching an altitude of about 22 km, within the stratosphere.
- **Technology:** Equipped with five specialised sensors and adhesive collection surfaces to capture biological particles present in the atmosphere.

Significance

- Fungal spores play an important role in agricultural health and ecological cycles.
- The experiment provides real-time atmospheric data from high altitudes, which is difficult to obtain through ground-based monitoring systems.

MISSION MITRA

Context: ISRO recently launched Mission MITRA in Ladakh to assess astronauts' mental and physical endurance.

About Mission MITRA (Mapping of Interoperable Traits and Response Assessment)

- It is a unique team behaviour study by **ISRO** and the **IAF's Institute of Aerospace Medicine**. It examines physiological, psychological, and operational responses of crew and ground teams in high-altitude conditions.
- Conducted in Leh, Ladakh, which simulates space-like conditions due to low oxygen, extreme cold, and isolation.
- Involves **India's four Gaganyaan astronauts** along with scientists, engineers, doctors, and psychologists.
- Focuses on team coordination, decision-making, and performance under stress.

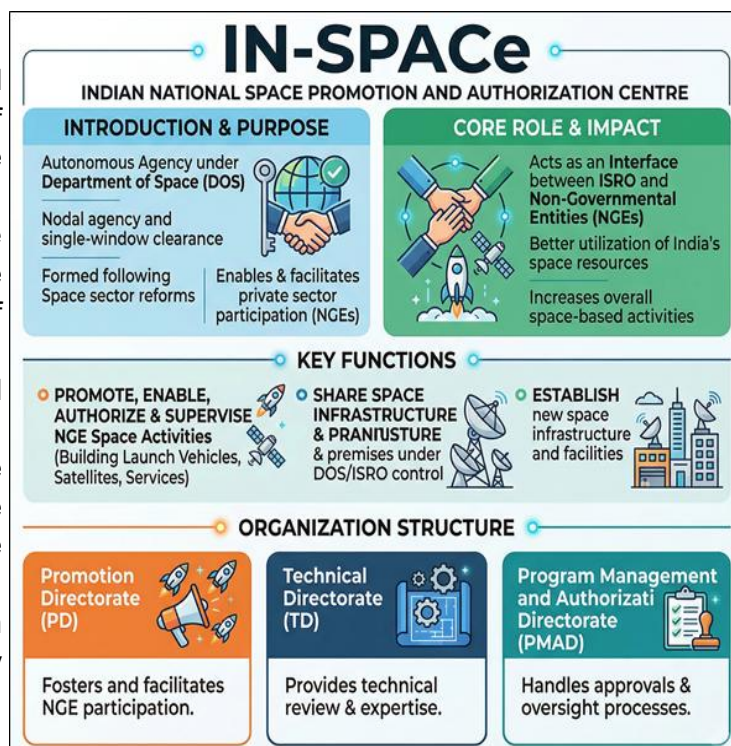
ANTARIKSH VENTURE CAPITAL FUND

Context: India's dedicated space-sector VC fund is progressing, with investments expected from FY2027.

About Antariksh Venture Capital Fund

- It will be a close-ended fund registered with Securities and Exchange Board of India as a Category II Alternative Investment Fund (AIF).
- **Key Investor:** Indian National Space Promotion and Authorization Centre (IN-SPACe) under the Department of Space (DoS).
- **Sponsor:** SIDBI Venture Capital Limited.
- **Objective:** To provide capital to space startups, support scaling, and promote commercialisation of space technologies.

Investment Focus: Invests in Indian space-sector companies with **Technology Readiness Level (TRL) 4** and above (i.e.,



technologies tested and ready for further development).

DART MISSION

Context: A study has revealed that DART Mission not only altered the motion of a small asteroid within its system but also slightly changed the orbit of the entire asteroid pair around the Sun.

About DART (Double Asteroid Redirection Test) Mission (Launched in 2021)

- **NASA's DART Mission** was the **first space mission designed to test and demonstrate asteroid deflection through kinetic impact** as part of planetary defence efforts.
- **Target:** A **binary asteroid system: Didymos and its moonlet Dimorphos**. Due to their gravitational connection, impacting Dimorphos affects the motion of the entire system.
- **Aim:** To prove **kinetic impactors could alter an asteroid's path** by slamming a spacecraft into it at high speed. The sole instrument, **DRACO camera**, provided navigation images during the final approach, aided by SMART Nav autonomous targeting.
- **Impact:** In 2022, DART deliberately collided with Dimorphos, shortening its orbital period by about 33 minutes.
- **Significance:** It marked the first successful human attempt to change the trajectory of an asteroid.

What is a Moonlet?

Moonlets are **particularly small celestial bodies that orbit larger objects**. They can be natural (like rocky fragments) or, less commonly, artificial satellites, and are sometimes called minor moons or minor natural satellites.

ATACAMA LARGE MILLIMETER/SUBMILLIMETER ARRAY (ALMA) TELESCOPE

Context: Recently, astronomers used the ALMA to capture the central region of the Milky Way, revealing a complex network of cosmic gas filaments in unprecedented detail.

About ALMA Telescope (observatory of the “Dark Universe”)

- ALMA is a state-of-the-art **radio telescope** located in the **Atacama Desert in Chile**. It **studies celestial objects at millimetre and submillimetre wavelengths** and has been fully operational since 2013.
- It is a joint project involving: National Radio Astronomy Observatory (NRAO); National Astronomical Observatory of Japan (NAOJ); European Southern Observatory (ESO)

Key Features

- It comprises **66 movable antennas that can be spread over distances of up to 16 km**.
- Functions as an interferometer, enabling extremely high-resolution observations.
- Specialises in studying the cold universe, including gas, dust, and the formation of stars and planets.
- Provides resolution nearly **10 times sharper than the Hubble Space Telescope within its wavelength domain**

ASTEROID 2024 YR4

Context: Recently, NASA officially ruled out the possibility of Asteroid 2024 YR4 colliding with the Moon in 2032.

- 2024 YR4 is an **Apollo-type near-Earth asteroid**, meaning its orbit crosses Earth's path around the Sun.
- **Origin:** Believed to have originated from the Main Asteroid Belt.
- **Discovery:** Detected in 2024 by the ATLAS telescope.
- **Naming:** “Y” indicates discovery in the second half of December. “R4” signifies it was the 117th asteroid recorded during that period.
- **Orbital period:** ~4 years (1468 days)
- **Rotation period:** ~19.5 minutes

- **Composition:** Silicates and nickel-iron, classifying it as an **S-type asteroid**.

ACRYLONITRILE

Context: Recent computer models suggest that acrylonitrile, an organic compound present on Saturn's moon Titan, may self-assemble into cell-like structures.

About Acrylonitrile

- Acrylonitrile is an **organic compound produced through the catalytic reaction of propylene with ammonia**.
- It causes irritation to the skin, eyes, and respiratory tract.

Properties	Applications
• A colourless liquid with a sharp onion- or garlic-like odour. • Volatile, flammable, and toxic; its vapour is heavier than air. • Miscible with water and evaporates quickly. • On burning, it releases toxic gases such as oxides of nitrogen. • Typically stored and handled in closed systems due to its hazardous nature.	• Used in the production of plastics, synthetic rubber, and acrylic fibres. • Previously used (along with carbon tetrachloride) as a pesticide.

MINOR PLANET CENTRE

Context: Recently, the Minor Planet Center announced the discovery of 15 new moons—four around Jupiter and eleven around Saturn.

What is the Minor Planet Centre (MPC)?

- The MPC is the **global hub for collecting and processing data on small Solar System bodies** such as **asteroids and comets**. It operates under the **International Astronomical Union at the Smithsonian Astrophysical Observatory**.
- **Process:** Astronomers submit their observations to the MPC, which verifies the data, calculates orbital paths, and assigns official designations.

Key Functions

- Tracks asteroids, comets, and certain planetary satellites.
- Monitors Near-Earth Objects (NEOs), whose orbits bring them close to Earth.
- Maintains a global database for predicting orbital movements.
- Publishes electronic circulars announcing new discoveries and alerts.

AKASHA300 3D PRINTER

Context: A Kerala-based start-up has delivered the advanced Akasha300 3D Printer to ISRO, marking a significant step toward India's self-reliance in advanced manufacturing.

What is Akasha300 3D Printer?

- It is an **indigenous, industrial-grade, multi-material 3D printer** designed for advanced research and space applications.
- **Dual Extrusion:** Operates at temperatures up to 350°C (with planned upgrades to 500°C), enabling printing of high-performance materials.
- **Heated Bed & Enclosed Chamber:** Maintains stable temperatures and ensures high precision.
- **Modular Design:** Allows hybrid manufacturing and flexibility in applications.
- **Developed By:** Spacetime 4D Printing Solutions, with support from Space Technology Innovation and Incubation Centre (STIIC) at the Indian Institute of Space Science and Technology (IIST) and the Kerala Startup Mission (KSUM).
- **Deployment:** ISRO's Liquid Propulsion Systems Centre (LPSC), Valiyamala

Significance

- Enhances India's indigenous additive manufacturing capabilities.
- Enables rapid prototyping in space technologies such as propulsion and materials.

- Strengthens collaboration between academia, start-ups, and ISRO.
- Supports next-generation manufacturing in the aerospace sector.

SWOT SATELLITE

Context: Recently, NASA used data from the SWOT Satellite to develop a new map of the ocean floor.

About SWOT (Surface Water and Ocean Topography) Satellite

- It is a collaborative **mission between NASA and France's CNES to map Earth's oceans and surface waters with unprecedented detail.**
- **Launch:** December 2022
- **Objective:** To measure changes in global surface water and ocean topography.
- **Key Technology:** Uses the Ka-band Radar Interferometer (KaRIn) to map the height and extent of rivers, lakes, and oceans.
- **Coverage:** Observes about 90% of the Earth every 21 days.
- **Capability:** Can monitor rivers wider than ~100 metres and over one million water bodies.

ORBITAL DATA CENTRES

Context: SpaceX is reportedly planning to launch up to one million data-centre satellites into orbit to overcome power and water constraints on Earth.

What are Orbital Data Centres?

- Orbital data centres are **space-based computing facilities placed in Earth's orbit**, either Low Earth Orbit (LEO) or Geostationary Earth Orbit (GEO), using satellites or space stations.

Core Idea:	Basic Architecture
• Use abundant solar energy in space instead of terrestrial power • Avoid land, water, and cooling constraints on Earth • Process data directly in orbit (e.g., satellite data, military intelligence, AI workloads)	• Modular satellite units equipped with AI chips/servers • Solar panels for power generation • Radiative cooling systems (as no air or water is available) • Data transmission via laser links or relay satellites

Key Challenges

- **Cooling Problem:** In the absence of an atmosphere, heat can only be removed through radiation, which is slow and limits performance of high-power chips.
- **High Launch Costs:** Deploying infrastructure in space remains extremely expensive, requiring frequent large-scale launches.
- **Maintenance & Upgradation:** Systems are difficult to repair or upgrade once deployed, leading to faster obsolescence.
- **Radiation & Harsh Environment:** Exposure to cosmic radiation, solar flares, micrometeoroids, and extreme temperatures can damage hardware.
- **Data Latency & Transmission:** Requires advanced, high-bandwidth communication systems (e.g., laser links), which are still evolving.
- **Related Example**
 - **Project Natick** (Microsoft's Underwater Data Centre) demonstrated a subsea data centre using seawater cooling.
 - Although technically successful, it was not commercially viable due to high costs, limited flexibility, and preference for land-based hyperscale data centres.

PACE SATELLITE

Context: Researchers found that NASA's PACE satellite can now detect nitrogen dioxide pollution at a fine enough scale to isolate emissions from individual factories and highway corridors.

About PACE (Plankton, Aerosol, Cloud, ocean Ecosystem) Satellite

- It is a **NASA Earth-observing mission** launched on **February 8, 2024**. It operates in a **Sun-synchronous orbit at 676.5 km altitude**, providing global hyperspectral coverage every 1-2 days to study ocean biology, atmospheric aerosols, and clouds.
- Key Objectives:** PACE enhances understanding of phytoplankton blooms, ocean health, air quality, and climate dynamics by measuring ocean colour, carbon cycles, and aerosol properties.
- Instruments**
 - The primary Ocean Color Instrument (OCI) is a hyperspectral spectrometer that scans from ultraviolet to shortwave infrared (340–895 nm) at a resolution of 1 km.
 - Complementary polarimeters (HARP2 and SPEXone) analyse aerosol and cloud properties from multiple viewing angles.

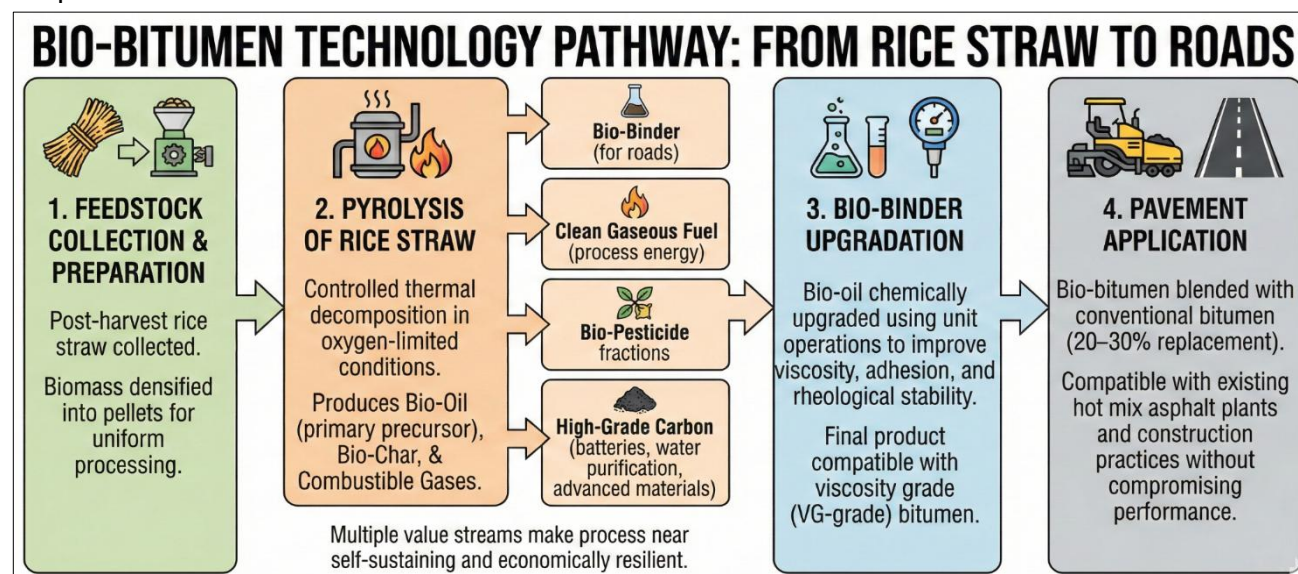
BIOLOGY AND BIOTECH

BIO-BITUMEN

Context: India became the first country to commercially produce bio-bitumen for use as an alternative to traditional asphalt in roadway construction. This was developed by CSIR-Central Road Research Institute (CSIR-CRRI), New Delhi, and CSIR-Indian Institute of Petroleum (CSIR-IIP), Dehradun.

About Bio-Bitumen

- Bio-bitumen is a **renewable, bio-based binder** developed as a **partial replacement or modifier of conventional petroleum bitumen used in flexible pavement (asphalt) construction**.
- Unlike fossil-derived bitumen, bio-bitumen is **produced from biomass and organic waste**, particularly agricultural residues such as rice straw (parali), through thermo-chemical conversion processes.



SPINA BIFIDA

Context: Many countries across the world have initiated programmes to create awareness and prevent spina bifida through folic acid supplementation, but India is yet to do so.

What is Spina Bifida?

- Spina bifida is a **neural tube defect** in which the fetal spine and spinal cord fail to close properly during early pregnancy.
- Types**
 - Spina bifida occulta:** Mild and the most common form.
 - Myelomeningocele:** The spinal cord is exposed; this is the most severe form.
 - Meningocele:** Characterised by a fluid-filled sac; less severe than myelomeningocele.

- **Key Effects:** Paralysis or leg weakness, bowel and bladder dysfunction, hydrocephalus, and orthopaedic deformities; intelligence is usually normal.
- **Causes and Risk Factors:** Multifactorial in nature, including folic acid deficiency, genetic factors, diabetes, obesity, and certain medications.
- **Prevention:** Pre-conception and early pregnancy folic acid intake can prevent a majority of cases.
- Spina bifida is a preventable birth defect with a high socio-economic burden, highlighting the need for greater awareness and food fortification measures.

CETACEAN MORBILLIVIRUS

Context: Recently, scientists used drones to detect a dangerous Cetacean morbillivirus among whales in the Arctic.

What is Cetacean Morbillivirus?

- Cetacean morbillivirus is a **highly contagious viral disease affecting marine mammals, primarily dolphins, whales, and porpoises**.
 - Cetaceans are fully aquatic, carnivorous mammals belonging to the order Cetacea, which includes whales, dolphins, and porpoises found in oceans worldwide.
- Identified in 1987, it has caused repeated outbreaks worldwide, especially in the North Atlantic and the Mediterranean.
- **Transmission:** The virus spreads between species through direct contact and respiratory droplets.
- **Health Impact:** Attacks the respiratory and nervous systems of marine mammals, often leading to mass strandings and deaths.
- **Response:** There is no treatment available; however, reducing stress on affected animals (such as rerouting ships away from sick whales) can help limit harm.

PATHGENNIE

Context: The Ministry of Science and Technology has recently developed a new open-source software called PathGennie for fast tracking of drug discovery.

What is PathGennie?

- PathGennie is a novel, **open-source computational framework** that **accelerates the simulation of rare molecular events**, particularly **drug unbinding from protein targets**, which is a critical step in **computer-aided drug discovery (CADD)**.
- **Why it Matters:** Drug efficacy often depends more on **residence time** (how long a drug remains bound to its target) than on binding strength alone.
- **How it Works:** **PathGennie uses direction-guided adaptive sampling**. It runs many ultra-short, unbiased Molecular Dynamics (MD) trajectories and selectively extends only those progressing toward unbinding, following a "survival of the fittest" approach. This allows it to **identify true unbinding pathways** without the use of artificial forces or elevated temperatures.
- **Scope:** Drug discovery, chemical reactions, catalysis, phase transitions, and self-assembly. It is also compatible with modern machine-learning techniques, making it **easy to integrate into diverse simulation pipelines**.

BACILLUS SUBTILIS

Context: Recently, Kerala officially declared Bacillus subtilis as the "State microbe."

- Bacillus subtilis (B. subtilis) is a type of **probiotic** ("good" bacteria) found naturally in the human gut. It is also **present in fermented foods**.
- **Characteristics:** Gram-positive, rod-shaped, motile, and spore-forming bacterium that produces highly resistant endospores.

- **Habitat and growth:** Commonly found in soil and vegetation; grows best at temperatures between 25–35 °C.
- **Applications:** Used in agricultural biocontrol as a fungicide and in testing the effectiveness of sporicides.

In October 2012, India declared *Lactobacillus delbrueckii subsp. bulgaricus* as the **National Microbe** to recognize its crucial role in traditional food fermentation, particularly in producing curd and yogurt.

STAPHYLOCOCCI

Context: A December 2025 study found high levels of antibiotic-resistant Staphylococcus bacteria in Delhi's indoor and outdoor air.

- Staphylococci (Staph) are a genus of Gram-positive bacteria that **commonly appear as spherical cocci clustered in grape-like formations under a microscope.**
- They are often **found on the skin and mucous membranes of humans and animals** and can cause **infections ranging from minor skin issues to severe conditions.**

INTRINSICALLY DISORDERED PROTEINS

Context: Researchers at the National Centre for Biological Sciences (NCBS), Tata Institute of Fundamental Research, Bengaluru, have developed a deep-learning tool called “Disobind” that predicts how intrinsically disordered proteins (IDPs) interact with their binding partners.

About Intrinsically Disordered Proteins (IDPs)

- IDPs are **proteins or protein regions that lack a stable three-dimensional structure** and remain structurally flexible, changing shape depending on their binding partners.
- This flexibility enables them to regulate cell signalling, gene expression, protein folding and transport, and to form biomolecular condensates.
- Their dynamic structure makes them difficult to study using conventional structural biology methods, yet they are crucial for understanding cellular communication, disease mechanisms, and targeted therapies.

About Disobind

- An AI-based tool built on protein language models to predict binding regions of IDPs.
- **Input:** Requires only protein sequences, without needing structural data or sequence alignment.
- **Core strength:** Identifies which disordered regions are likely to bind to partners.
- **Status:** Open-source and freely available.

Applications

- Understanding disease mechanisms (including cancer, neurodegenerative disorders, and immune conditions).
- Supporting drug design and identifying intervention points.

BIOPHARMA SHAKTI

Context: The Union Minister for Finance announced the launch of the Bio-Pharma SHAKTI initiative in the Union Budget 2026–27.

What is the Bio-Pharma SHAKTI Scheme?

- **Bio-Pharma SHAKTI is a ₹10,000-crore, five-year national initiative aimed at strengthening India's end-to-end ecosystem for biologics and biosimilars production.**
- It represents a **strategic shift** from India's traditional strength in generic medicines toward becoming a global hub for **high-value biopharmaceuticals**, with a target of achieving a 5% share in the global biopharma market.

Key Terms

- **Biologics:** Complex medicines produced from living cells or organisms. Their complicated manufacturing process has largely limited access to high-income countries.

- **Biosimilars:** Medicines that are highly similar to biologic drugs, matching them in safety and effectiveness, while providing more affordable alternatives and increasing competition.

Objectives

- Reduce import dependence in high-value biologics.
- Develop domestic capabilities in research, manufacturing, and regulation.
- Strengthen India's role in global biologics supply chains.
- Improve access to advanced and affordable biologic therapies.
- Position India as a preferred global destination for clinical research.

Key Features

- **Manufacturing Strengthening:** Support for domestic development of high-value biologics and biosimilars.
- **Human Resource Development:**
 - Establishment of three new National Institutes of Pharmaceutical Education and Research (NIPERs).
 - Upgradation of seven existing NIPERs.
 - Focus on specialised skills in biopharma research, manufacturing, and regulation
- **Clinical Research Ecosystem:** Creation of 1,000+ accredited clinical trial sites and expansion of ethical, high-quality clinical trial capacity across the country.
- **Regulatory Capacity Building:** Strengthening of the Central Drugs Standard Control Organization (CDSCO) to enable faster evaluation of complex biologics and alignment with global regulatory standards.

MYOGLOBIN

Context: Researchers have developed a flexible, low-cost biosensor capable of detecting myoglobin, a biomarker associated with the early stages of a heart attack.

What is Myoglobin?

- Myoglobin is a **small oxygen-binding protein** found in **skeletal and cardiac muscles**, making up about **2% of muscle protein**.
- It consists of **one polypeptide chain and contains one heme (iron) group**, which allows it to bind a **single oxygen (O₂) molecule**.
- Unlike hemoglobin, which has four oxygen-binding sites, myoglobin has only one oxygen-binding site.

Functions

- Stores and releases oxygen in muscles during periods of high energy demand.
- Helps regulate mitochondrial respiration, supporting energy production in muscle cells.
- Acts as a marker of muscle injury when detected in blood or urine.

NATIONAL BIOBANK FOR LYSOSOMAL STORAGE DISORDERS

Context: Researchers have compiled the first government-supported national biobank of rare diseases in India focusing on Lysosomal Storage Disorders (LSDs).

What are Lysosomal Storage Disorders (LSDs)?

- LSDs are a group of more than 70 rare inherited metabolic disorders caused by the deficiency of lysosomal enzymes.
- This deficiency leads to the accumulation of toxic fats or sugars inside cells, damaging tissues and organs.
- These conditions are life-threatening and primarily affect children, creating major diagnostic and treatment challenges in India.

About the LSD Biobank

- **India's first government-supported LSD biobank**, led by the Foundation for Research in Genetics and Endocrinology (**FRIGE**), **Ahmedabad** and funded by the Department of Biotechnology.
- The biobank **compiles clinical, biochemical, and genetic data**, along with DNA, plasma, and urine samples from 530 patients across 15 states. India has ~12,000 LSD patients.
- It **covers eight LSD subgroups and 27 disorders**, including Gaucher disease, Tay–Sachs disease, Mucopolysaccharidosis II/III, and Morquio-A syndrome.

Institutional Collaboration

- **Institute for Stem Cell Science and Regenerative Medicine (inStem)**: Developing general therapeutic approaches.
- **Centre for DNA Fingerprinting and Diagnostics (CDFD)**: Creating screening technologies using spectrometry.
- **Tata Institute for Genetics and Society (TIGS)**: Developing stem-cell based disease models.

Significance:

- Establishes India's first centralised clinical-genomic registry for LSDs
- Supports early diagnosis and improved screening technologies
- Enables the development of affordable indigenous therapies and stem-cell disease models
- Reduces dependence on expensive imported treatments and strengthens India's rare disease research ecosystem.

BIO-BASED CHEMICALS

Context: India has prioritised bio-based chemicals and enzymes under the Department of Biotechnology's BioE3 Policy.

About Bio-Based Chemicals

- Bio-based chemicals are **industrial chemicals produced from renewable biological resources** (biomass) such as sugarcane, corn, or agricultural residues.
- They are **manufactured through biological processes like fermentation** or enzymatic reactions, instead of traditional petrochemical methods based on fossil fuels.
- These chemicals are used in **plastics, cosmetics, pharmaceuticals, etc.**
- **Enzymes** play a crucial role in this process. They are **biological catalysts that accelerate chemical reactions during production**. Because enzymes operate efficiently at lower temperatures and pressures, they help reduce energy consumption and make production more sustainable.

Why India Needs Bio-Based Chemicals and Enzymes

- Leverage existing strengths such as a large agricultural base, expertise in pharma-grade fermentation, and a strong manufacturing ecosystem.
- Reduce import dependence on petrochemicals (for example, India imported about \$480 million worth of acetic acid in 2023).
- Create value-added markets for agricultural produce.
- Position India as a global supplier of sustainable industrial inputs.

Risks in the Bio-Based Chemicals Sector

- **High Cost:** Bio-based products are initially costlier than petrochemical alternatives.
- **Supply & Infrastructure:** Uncertain biomass supply and limited biomanufacturing facilities.
- **Adoption:** Industries may be reluctant to shift from petrochemical-based systems.

TETRODOTOXIN (TTX)

Context: Severe illness among people who consumed seafood at a restaurant in Vizhinjam, Kerala, may have been caused by contamination with tetrodotoxin (TTX), a highly potent marine neurotoxin.

What is Tetrodotoxin (TTX) (C₁₁H₁₇N₃O₈)?

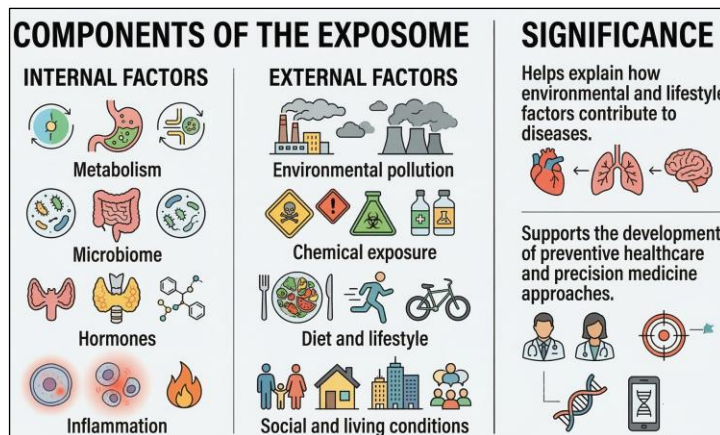
- Tetrodotoxin (TTX) is an **extremely potent marine neurotoxin**. It is found in certain marine species belonging to the order *Tetraodontidae*, including: Puffer fish, Porcupine fish, Ocean sunfish. The toxin is mainly present in the skin, liver, and intestines of these fishes.
- **Mode of Action:** Blocks nerve signal transmission, preventing normal communication between nerves and muscles. This leads to progressive muscle paralysis.
- **Toxicity:** About 1,000 times more toxic than sodium cyanide. Poisoning can be fatal, and no specific antidote exists; treatment is mainly supportive care.

EXPOSOME

Context: Scientists are launching a major global initiative to map the human exposome.

What is the Exposome?

- The exposome refers to the total lifetime exposure of an individual, starting from conception, and its effects on health.
- The International Human Exposome Network (IHEN) defines it as **the integrated set of physical, chemical, biological, and psychosocial factors and their interactions affecting human health.**



PANAMA DISEASE

Context: Scientists have recently discovered a gene that may help protect bananas from the deadly Panama disease.

About Panama Disease (Fusarium Wilt)

- It is a highly destructive banana disease, and the fungus can survive in soil for many years, making it difficult to control. Because of its severe and often irreversible damage, the disease is sometimes referred to as “banana cancer.”
- **Cause:** The disease is caused by the soil-borne fungus *Fusarium oxysporum* f. sp. *cubense*.
- **Affected Variety:** Primarily affects the Cavendish (G9) banana cultivar, which dominates global banana trade.
- **Mode of Spread:** Contaminated soil, Water, Farm tools, Infected planting material
- **Spread:** The fungus enters through plant roots, infects the vascular tissue, and blocks the transport of water and nutrients within the plant.
- **Symptoms:** Yellowing of older leaves, Browning and wilting of leaves, Dark discoloration of the stem, Eventual death of the plant



LENACAPAVIR

Context: Zimbabwe has recently begun rolling out lenacapavir, a long-acting injectable medicine for HIV prevention.

About Lenacapavir

- Lenacapavir is a **HIV** medicine that **works by disrupting the HIV-1 lifecycle**, and clinical trials show nearly 100% effectiveness in preventing infection.
- **Type:** Long-acting injectable HIV PrEP (Pre-Exposure Prophylaxis).

- **Dose:** Administered once every six months, making it the first twice-yearly PrEP option.
- **Mechanism:** Works as a **capsid inhibitor**, blocking the viral protein shell (capsid) and preventing HIV replication inside human cells.
- **Efficacy:** Clinical trials show about 99% reduction in HIV infection risk among high-risk groups.
- **Significance:** Improves treatment adherence compared with daily oral PrEP, representing a major advance in global HIV prevention strategies.

What is a Capsid?

- A capsid is **the protein shell of a virus** that **encloses and protects its genetic material (DNA or RNA)**. It is made of repeating protein units called capsomeres and lies beneath the viral envelope (if present).
- The capsid helps protect the viral genome and deliver it into the host cell.

DAVOS COMPACT ON ANTIMICROBIAL RESISTANCE(AMR) 2025

Context: The Davos Compact on Antimicrobial Resistance (AMR) (2025) has been launched by the World Economic Forum, with support from the Unified Coalition for AMR Response.

About Antimicrobial Resistance (AMR)

- AMR occurs when **bacteria, viruses, fungi, and parasites no longer respond to medicines such as antibiotics, antivirals, and antifungals**.
- This makes standard treatments ineffective, increasing the risk of disease spread and mortality.
- AMR is a natural phenomenon, arising due to genetic changes in pathogens over time.
- However, its spread is significantly accelerated by human activities, particularly: Misuse of medicines, Overuse of antimicrobials

Key Initiatives to Address AMR	
1. National-Level Measures National Action Plan on AMR 2.0 (2025–2029) • Promotes a coordinated approach across human health, animal health, agriculture, and environmental sectors. First Indigenous Antibiotic – Nafithromycin (2024) • Developed to treat both typical and atypical drug-resistant bacterial infections. National Surveillance Networks • Generate annual data on AMR patterns. Data is shared with the Global AMR Surveillance System (GLASS).	2. Global Efforts Global Action Plan (GAP) on AMR (2015) • Adopted during the World Health Assembly to combat AMR globally. United Nations General Assembly High-Level Meeting on AMR (2024) • Aims to reduce global deaths linked to bacterial AMR by 10% by 2030, compared to 2019 levels.

NEWCASTLE DISEASE

Context: Recently, cases of Newcastle disease have been reported across Europe, prompting poultry producers in the UK to increase vigilance as the virus spreads westward.

About Newcastle Disease

- Newcastle disease is caused by **avian paramyxovirus serotype 1** and affects chickens and many other bird species. It is a **highly contagious** and often severe disease **found worldwide in both domestic and wild birds**.
- The disease occurs in **three forms**: lentogenic (mild), mesogenic (moderate), and velogenic (very virulent). Lentogenic strains are widespread but usually cause limited outbreaks.
- Newcastle disease is a **minor zoonosis** (disease of animals that can also infect humans) and can cause conjunctivitis in humans, but the condition is very mild and self limiting.
- **Transmission:** Infected birds spread the virus through exhaled air, respiratory secretions, and feces.

- **Symptoms:** Respiratory illness, though depression, nervous signs, or diarrhoea may dominate. Nervous signs include tremors, paralysis of wings and legs, twisted necks, circling, and spasms.
- **Treatment:** No specific treatment, but there are vaccines.

BIONEST

Context: The Union Minister recently inaugurated a BIRAC–BioNEST Incubation Centre at Central Food Technology & Research Institute (CFTRI) in Mysuru.

About Bioincubators Nurturing Entrepreneurship for Scaling Technologies (BioNEST)

- It is an initiative of **Biotechnology Industry Research Assistance Council (BIRAC)** that aims to strengthen India's biotech innovation ecosystem **by establishing bio-incubators across the country** to promote innovation and entrepreneurship.
- It provides startups with advanced infrastructure, specialised equipment, mentorship, and regulatory support and promotes biotech entrepreneurship. It facilitates collaboration between industry and academia for effective knowledge exchange.
- It offers services such as IP management, legal support, certification, validation, and networking opportunities.
- **Funding:** Supported by BIRAC under the umbrella scheme Biotechnology Research Innovation and Entrepreneurship Development (Bio-RIDE).

About Biotechnology Industry Research Assistance Council (BIRAC)

- BIRAC is a **not-for-profit public-sector enterprise** set up by the Department of Biotechnology (DBT) in 2012 to strengthen India's biotech industry.
- It acts as an interface between academia, research institutes, industry, and startups to convert innovations into affordable, market-ready products.
- **Key Role and Objectives**
 - Promotes research and innovation in biotechnology, especially in healthcare, agriculture, and socially relevant technologies.
 - Supports startups and SMEs in bridging the gap between research and commercialisation through funding, mentoring, and incubation.
- **Major Schemes**
 - **Biotechnology Ignition Grant (BIG):** Provides up to ₹50 lakh for early-stage innovation and product development.
 - **Sustainable Entrepreneurship and Enterprise Development (SEED) Fund:** Early-stage equity support for commercialization
 - **Launching Entrepreneurial Driven Affordable Products (LEAP) Fund:** Scale-up funding for market-ready biotech
 - **E-YUVA (Empowering Youth for Undertaking Value Added Innovative Translational Research) :** Pre-incubation support for student innovators

KEYTRUDA

Context: Recent investigations have revealed a rise in the counterfeit market for Keytruda.

About Keytruda

- Keytruda is the brand name of **pembrolizumab**, an **immunotherapy drug used to treat various cancers**. It is manufactured by the **US-based pharmaceutical company Merck & Co. (MSD)**.
- It belongs to a **class of drugs known as “checkpoint inhibitors,”** which remove the inhibitory signals that prevent T cells (an essential component of the immune system) from attacking cancer cells.
- **In simple terms, it enables the body's own immune system to fight cancer.**
- It is a type of **monoclonal antibody**.
 - Monoclonal antibodies are laboratory-produced molecules designed to bind to specific targets, helping the immune system identify and destroy cancer cells.

- It was **first approved by the US Food and Drug Administration (FDA) in 2014** for advanced skin cancer.
- Keytruda is now widely used for treating certain lung cancers, cervical cancer, renal cell cancer, and aggressive breast cancer, among others.

WHOLE-EXOME SEQUENCING (WES)

Context: Scientists recently used a genetic sequencing technique called whole-exome sequencing to identify a new rare genetic disease.

About Whole-Exome Sequencing (WES)

- WES is **a method used to sequence only the protein-coding regions of the human genome**. These **protein-coding regions** are known as **exons**. The complete set of exons in a genome is referred to as the **exome**.
- Although they constitute less than 2% of the genome, they **contain nearly 85% of genetic variations linked to diseases**.
- **WES focuses specifically on the exome**, making it a more targeted approach compared to whole-genome sequencing (WGS), which analyses the entire genome, including non-coding regions.
- As most disease-related mutations occur in the exome, WES is an effective tool for **diagnosing genetic disorders and understanding disease mechanisms**.
- It is also **faster and more cost-effective than WGS** and simplifies the process of data analysis.

INFORMATION TECHNOLOGY

DATA DUMPING

Context: Data centres can pose risks of “data dumping” in countries with weaker governance if they are poorly designed and weakly regulated.

What are Data Centres?

- Data centres are large, specialised infrastructure facilities that house servers, storage systems, and networking equipment to process, store, and transmit digital data. They form the backbone of cloud computing, artificial intelligence, big data analytics, digital public infrastructure, and e-governance.

What is meant by ‘Data Dumping’ in this context?

- “Data dumping” refers to a situation where the most resource-intensive and least locally beneficial data centres are disproportionately located in countries with weaker zoning regulations, limited public consultation, and strong growth incentives.

Good Data Centres	Bad Data Centres
• Located where reliable power supply exists, with developers paying for necessary grid upgrades. • Operate at high server utilisation, avoiding idle capacity. • Use efficient cooling systems such as optimised airflow management, higher permissible inlet temperatures, ambient air or liquid cooling where feasible, minimising the use of potable water and relying on recycled or non-potable sources. • Continuously monitor energy, water use, and emissions to optimize performance over time. • Deliver net economic and technological benefits with limited environmental harm.	• Located in water-stressed or ecologically sensitive areas. • Rely on water-intensive evaporative cooling. • Use outdated cooling and airflow designs, increasing energy overheads. • Externalise costs by shifting grid upgrade expenses to households. • Appear efficient in project documents but are inefficient in real-world operations.

SOURCE CODE

Context: It was recently reported that the Indian government was contemplating a requirement for smartphone manufacturers to share their source code with the government.

What is Source code?

- Source code is the **fundamental, human-readable set of instructions** written by programmers using high-level programming languages (such as Python, Java, C++, or HTML) to create software, applications, and websites.

Related Terms	Human readable?	What it contains	Can a CPU run it directly?
Source code	Yes	Programmer's instructions	No
Machine code	No	Binary (0s & 1s)	Yes
Executable (.exe)	No	Final ready-to-run program	Yes (on correct OS/CPU)
Script	Yes	Usually source code that gets interpreted	No (needs interpreter)

ASC ARJUN

Context: Indian Railways has introduced a robot named “ASC ARJUN” at Visakhapatnam Station.

- It is a **humanoid robot of Indian Railways**, indigenously built in Visakhapatnam, **deployed with Railway Protection Force (RPF)** for **station security, surveillance, and passenger assistance during peak movement**.
- Key Tech:** Face Recognition System, AI-based crowd monitoring, real-time alerts.
- Other features:** Semi-autonomous patrol, obstacle avoidance, fire & smoke detection, multilingual announcements (English-Hindi-Telgu), passenger interaction (Namaste).

PANCHAM

Context: Recently, the Union Minister of State for Panchayati Raj launched PANCHAM — Panchayat Assistance and Messaging Chatbot.

About PANCHAM

- PANCHAM is a **UNICEF-collaborated digital tool designed to empower Panchayat elected representatives and functionaries** by providing timely guidance, simplified workflows, and easy access to governance information.

Features of PANCHAM

- Interface:** **WhatsApp-based platform** for easy and familiar access by PRI representatives.
- Data:** Integrates live data from **e-GramSwaraj** and validated static content such as the Local Government Directory (LGD), Gram Panchayat Development Plan (GPDP), and Ministry of Panchayati Raj schemes.
- Languages:** Available in 22 Indian languages through **BHASHINI**.
- Users:** PRI representatives and functionaries, with citizen access through QR codes.
- Services:** Provides direct advisories, chatbot-based FAQs, micro-training modules, feedback, and surveys.
- Communication:** Enables a direct, two-way digital connection between the Government of India and Panchayats.

ICE CLOUD

Context: Recently, the Centre for Development of Advanced Computing (C-DAC) revealed that it has significantly expanded the capabilities of the ICE Cloud platform.

About ICE Cloud

- It is an **indigenous, comprehensive digital platform** designed to **support complex scientific research** using **Artificial Intelligence (AI)** and **High-Performance Computing (HPC)**. It provides easy access to advanced computational resources.
- **Features:** Offers open-access supercomputing, AI/ML tools, quantum computing tools, simulations, and cloud-based development services.
- **Users and support:** Used by researchers, students, start-ups, and industry, and funded by the Department of Biotechnology (DBT).

CONTEXT WINDOW IN AI

- The context window is the **maximum amount of text** (measured in tokens) **that a large language model (LLM)** (such as GPT-4o, Claude 3.5, or similar models) **can process at once while generating a response**.
- **What are Tokens?:** LLMs process text in **tokens** (small chunks of characters or subwords), not full words. As a rough guide, **1 token ≈ 0.75 English words (or ~4 characters)**.
- **Components stored in the context window:**
 - System instructions or rules (prompt guidelines)
 - Conversation history or user input text
 - Reserved space for the model's output (generation)
- **Role:** It determines how long a conversation can continue without the model forgetting earlier information and limits the size of documents or code that can be processed at once.
- **Overflow effect:** If the input exceeds the limit, older context is truncated or removed.
- **Computational aspect:** Doubling the context window leads to roughly a fourfold increase in computational cost, making larger windows more resource-intensive.
- **Limitation:** Known as the **“lost-in-the-middle” problem**, where models may overlook important information located deep within long inputs.

AI-POWERED DISTRIBUTED RENEWABLE ENERGY (DRE)

Context: India AI Impact Summit highlighted how Artificial Intelligence (AI) could become a transformative tool for India's rapidly expanding Distributed Renewable Energy (DRE) sector.

Understanding Distributed Renewable Energy (DRE)

- DRE refers to **small-scale, decentralised renewable power systems (ranging from a few kilowatts to megawatts) located close to the point of consumption**.
- Examples include: Rooftop solar systems, Small wind turbines, Biomass-based power units, Solar irrigation pumps.
- Unlike conventional centralised power grids, DRE encourages: Local power generation; Energy decentralisation; Active participation of consumers in energy production and management

India's Renewable Energy Landscape

- Around 52% (about 272 GW) of India's total installed power capacity now comes from non-fossil fuel sources.
- Within this 272 GW, solar power capacity accounts for roughly 140 GW.
- The DRE segment contributes about 38 GW, with nearly 18 GW added in the past 15 months, reflecting rapid growth in decentralised renewable systems.

BHARAT GENAI

Context: Recently, the Ministry of Science and Technology announced that the Bharat GenAI Large Language Model (LLM) will complete text models for all 22 scheduled languages by February.

What is Bharat GenAI?

- Bharat GenAI is the **first government-supported initiative to develop sovereign foundational AI models tailored for Indian languages and contexts**.

- It is developed under the **National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)**.
- The initiative is **implemented through the TIH Foundation for IoT and IoE at IIT Bombay**.
- **Objective:** To transform AI development across India's diverse linguistic and cultural landscape.

Key Features

- **Multimodal AI:** Supports text (LLMs), speech technologies such as Text-to-Speech (TTS) and Automatic Speech Recognition (ASR), and vision–language systems.
- **Multilingual Capability:** Currently supports 15 Indian languages, with plans to expand to all 22 scheduled languages.
- **Four Pillars:** Technology development, entrepreneurship, human resource development, and international collaboration.
- **Bharatiya Dataset Training:** Models trained using indigenous datasets reflecting Indian contexts.
- **Open-Source Approach:** Encourages a collaborative AI ecosystem.
- **Indigenous Generative AI Ecosystem:** Strengthens AI sovereignty and innovation capacity in India.

National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)

- An initiative by **Department of Science and Technology to advance research and applications in cyber-physical systems (CPS)**.
- Launched in **2018** with a budget of Rs. 3,660 crore over five years, it fosters innovation across sectors like AI, robotics, and agriculture.
- NM-ICPS has set up 25 Technology Innovation Hubs (TIHs) as independent entities in top institutes like IITs and IIITs

MODEL CONTEXT PROTOCOL

Context: Recently, the National Statistics Office (NSO) under MoSPI launched the beta version of the Model Context Protocol (MCP) server for the **eSankhyiki portal**.

What is Model Context Protocol?

- MCP is a **standard protocol that allows Large Language Models (LLMs) and AI agents to access datasets, tools, and workflows directly**.
- It enables structured, real-time access to information, helping AI systems perform tasks using reliable data sources.

About eSankhyiki Portal

- Launched by NSO (MoSPI), it is a **centralized platform for managing and disseminating official statistics**. It was launched on Statistics Day on June 29, 2024.
- **Users:** Planners, policymakers, researchers, and the public.

Key Modules of eSankhyiki Portal

- **Data Catalogue Module:** Central repository of major MoSPI datasets such as National Accounts Statistics (NAS), Consumer Price Index (CPI), Index of Industrial Production (IIP), Annual Survey of Industries (ASI), Periodic Labour Force Survey (PLFS), Household Consumption Expenditure Survey (HCES), and Multiple Indicator Survey (MIS).
- **Macro Indicators Module:** Provides time-series macroeconomic data with filtering, visualisation, custom downloads, and API access.

GRAPHICS PROCESSING UNITS (GPUS)

Context: India and the United States have announced that they will “significantly increase trade in technology products, including GPUs and other goods used in data centres.”

What is a GPU?

- A GPU is a **specialised processor designed for high-speed parallel computations**. It was **initially developed for rendering 3D graphics**. It works alongside the Central Processing Unit (CPU), which directs and coordinates overall operations.

- **Types**
 - **Discrete GPU:** A **separate add-on card**, commonly used in desktop computers.
 - **Integrated GPU:** Built into the **same chip or package as the CPU**, commonly used in laptops and gaming consoles.
- **Key Features**
 - **Parallel processing architecture** with many cores that can perform multiple calculations simultaneously.
 - Dedicated **Video Random Access Memory (VRAM)** for handling large volumes of graphical or computational data.
 - Optimised for **intensive computational tasks requiring high processing power**.
- **Uses:** Artificial Intelligence (AI) and Machine Learning (ML), deep learning, High-Performance Computing (HPC), weather and climate modelling, gaming, cryptocurrency mining, and data centres.

GPU vs. Graphics Card

- The terms GPU and graphics card are often used interchangeably, but they are not the same.
- A **graphics card is an add-in board** inserted into a computer's motherboard and **includes a GPU** along with components such as VRAM, ports (HDMI/DisplayPort), and cooling systems.

INDIA AI STACK

Context: India is developing a comprehensive, sovereign "IndiaAI Stack" under IndiaAI Mission to democratize AI, with a focus on local languages, healthcare, and agriculture

What is India AI Stack?

- India AI Stack is an integrated national artificial intelligence ecosystem designed to enable AI deployment at population scale, aligned with the vision of democratising AI.
- It integrates infrastructure, models, computing power, data, and applications to convert data and computing capacity into real-world outcomes.

Key Layers of India AI Stack

- **Application Layer:** AI-based solutions for sectors such as agriculture, healthcare, education, justice, and disaster management.
- **AI Model Layer:** Development of indigenous and sovereign AI models under initiatives such as the IndiaAI Mission, BharatGen, and Bhashini.
- **Compute Layer:** Provides subsidised access to Graphics Processing Units (GPUs) and Tensor Processing Units (TPUs) through the IndiaAI Compute Portal.
- **Data and Network Infrastructure Layer:** Includes data centres, optical fibre networks, and 5G connectivity, which support large-scale AI operations.
- **Energy Layer:** Ensures reliable and increasingly clean energy supply to power AI infrastructure and high-performance computing systems.

MOLTBOOK PLATFORM

Context: A new technological phenomenon called Moltbook has emerged across social media as the first social network designed exclusively for artificial intelligence (AI) agents.

What is Moltbook?

- Moltbook is an **online machine-to-machine social platform where AI agents interact autonomously**.
- It was founded by developer Matt Schlicht.
- It demonstrates the emergence of AI-to-AI communication ecosystems.

SARVAM AI

Context: At the India AI Impact Summit 2026, the Union Minister of Home Affairs stated that Sarvam AI demonstrates why the future of artificial intelligence innovation may belong to India.

What is Sarvam AI?

- Sarvam AI is a Made-in-India full-stack artificial intelligence company developing sovereign, multilingual foundational models aligned with India's public service and governance needs.
- Selected under the Innovation Centre pillar of the IndiaAI Mission to develop indigenous foundational AI models.
- Receives financial and computing support of ₹246.72 crore.

Core Focus • Development of indigenous Large Language Models (LLMs) and speech models. • Models trained on Indian languages and locally relevant datasets. • Aims to reduce dependence on foreign AI ecosystems.	Key Products • Bulbul: A Text-to-Speech system supporting 11 Indian languages. • Saaras: A Speech-to-Text system supporting 22 Scheduled Languages of India.
---	---

SAHI AND BODH INITIATIVE

Context: The Union Minister of Health and Family Welfare recently launched two national initiatives at the India AI Summit: SAHI and BODH.

Strategy for Artificial Intelligence in Healthcare for India (SAHI)	• A national framework designed to ensure the safe, ethical, evidence-based, and inclusive use of AI in India's healthcare system. • Acts as a policy guide for the responsible integration of AI in healthcare. • Helps States adopt AI technologies in alignment with public health priorities.
Benchmarking Open Data Platform for Health AI (BODH)	• Developed by IIT Kanpur in collaboration with the National Health Authority. • A privacy-preserving benchmarking platform that evaluates AI models using real-world health data without sharing the datasets. • Provides a structured mechanism to test and validate AI solutions before large-scale deployment. • Functions as a digital public good under the Ayushman Bharat Digital Mission, improving trust, transparency, and quality in Health AI systems.

VOICERA

Context: The Digital India BHASHINI Division under the Ministry of Electronics and Information Technology (MeitY) recently launched VoicERA.

About VoicERA

- VoicERA is an **open-source end-to-end Voice AI stack**, at the India AI Impact Summit 2026. It marks an important step in India's Digital Public Infrastructure (DPI) development.
- **BHASHINI (Bhasha Interface for India) is India's Digital Public Infrastructure for languages**, launched by MeitY to enable multilingual digital communication.

Objective • To create a national multilingual voice execution layer on BHASHINI. • Reduce vendor lock-in and enable scalable voice-based services across platforms.	Key Features • Modular and interoperable architecture. • Can be deployed on cloud or on-premises systems. • Supports real-time speech processing, conversational AI, and multilingual telephony.
--	---

Significance

- Expands BHASHINI from a translation platform to a comprehensive Voice AI ecosystem.
- Enables voice-based citizen services in sectors such as agriculture, education, and grievance redressal.
- Strengthens sovereign, inclusive, and multilingual AI infrastructure in India.

YUVA AI FOR ALL INITIATIVE

Context: Recently, MeitY launched Kaushal Rath under the National AI Literacy programme “Yuva AI for All.”

About Kaushal Rath

- It is a fully equipped mobile computer lab with internet-enabled systems, audio-visual tools, and structured training modules.
- It will travel to schools, colleges, ITIs, and community spaces to deliver hands-on exposure to AI and Generative AI tools, supported by trained facilitators and contextualised Indian use-cases.

About Yuva AI for ALL

- **Launched by:** MeitY under the IndiaAI Mission
 - **Objective:** AI literacy for 1 crore citizens
- Course Features:**
- Free, self-paced foundational AI course
 - India-centric practical examples
 - Available on FutureSkills Prime & iGOT Karmayogi
 - Govt. of India certificate on completion

MOONSHOT PROJECT

Context: Recently, the Indian Institute of Science (IISc) launched a Moonshot Project.

About the Project

- It is a **flagship multidisciplinary initiative by IISc, funded by the Pratiksha Trust**, aimed at **developing AI-powered brain co-processors (both implantable and non-invasive)**.
- **Function:** Decodes, processes, and re-encodes brain signals in a closed-loop system.
- **Use:** Helps restore motor and cognitive functions in patients affected by stroke.
- **Focus Areas:** Combines neuromorphic hardware, artificial intelligence, and neural stimulation.
- **Long-term Goal:** To develop affordable, indigenous neurotechnology for clinical use in India.

MISCELLANEOUS

THORIUM-POWERED FUTURE

Context: India’s nuclear strategy is built around a three-stage programme reflecting limited uranium resources and abundant thorium.

How Thorium Can Be Helpful for India?

- **Large reserves:** India has limited domestic uranium but among the world’s largest thorium reserves, mainly in monazite sands of Kerala, Tamil Nadu, and Odisha.
- **Energy security:** Thorium supports long-term energy security through a largely indigenous nuclear fuel cycle, reducing dependence on imported uranium.
- **Environmental benefits:** Nuclear power is low-carbon and reliable, supporting India’s net-zero target (2070) and rising baseload demand.
- **Technical advantages:** Thorium dioxide (ThO₂) has a higher melting point and better thermal conductivity than uranium dioxide (UO₂), enhancing reactor safety. When irradiated, thorium-232 converts to uranium-233 (U-233), which has strong neutron economy suitable for sustained power generation.

Significance

- **Long-term power potential:** Capability to generate electricity for centuries using domestic resources.
- **Economic gains:** Reduced uranium imports and growth of indigenous nuclear technologies.
- **Strategic autonomy:** Higher proliferation resistance due to U-232 contamination.
- **Climate resilience:** Clean baseload power complementing renewable energy.

Challenges

- **Thorium is not directly fissile:** Requires initial fissile material such as enriched uranium or plutonium.
- **Handling issues:** Due to high gamma radiation from U-232 contamination.
- **High capital costs:** Long gestation periods and need for skilled manpower.
- **Need for greater private sector participation:** Along with sustained research and development investment.



INDIA'S THREE-STAGE NUCLEAR PROGRAMME

Conceived by Dr. Homi Bhabha to systematically transition from uranium to thorium.

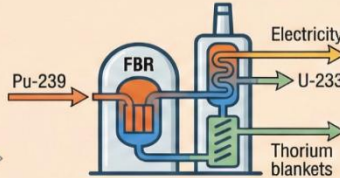
STAGE I — Pressurized Heavy Water Reactors (PHWRs)



- Use **natural uranium** and **heavy water** as moderator and coolant to generate electricity and produce plutonium-239.
- India operates a large PHWR fleet under the **Nuclear Power Corporation of India Limited (NPCIL)**.

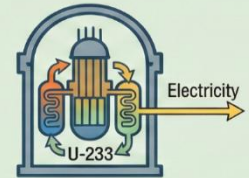
With imported uranium access, capacity expands, creating opportunities to irradiate thorium alongside advanced fuels (e.g., HALEU — High-Assay Low-Enriched Uranium, 5–20% uranium-235) and begin building a U-233 inventory.

STAGE II — Fast Breeder Reactors (FBRs)



- Use **plutonium** from PHWRs to breed more fissile material.
- The **Prototype Fast Breeder Reactor (500 MWe)** is central to this stage.
- **Thorium blankets** in FBRs enable breeding of U-233, supporting the transition to thorium-based systems.

STAGE III — Thorium-Based Reactors



- Focuses on reactors operating primarily on the **thorium–U-233** fuel cycle.
- The **Advanced Heavy Water Reactor (AHWR — 300 MWe)** is designed with passive safety features and high thorium utilization.

MPEMBA EFFECT

Context: Recently, researchers from the Jawaharlal Nehru Centre for Advanced Scientific Research used supercomputers to develop the first simulation of ice formation, providing evidence for the Mpemba effect in water.

What is the Mpemba Effect?

- The Mpemba effect is a counter-intuitive phenomenon in which **hot water cools or freezes faster than cold water under certain conditions**.
- The effect was described by Aristotle in his book *Meteorologica* and is named after Erasto Mpemba (1969), who experimentally highlighted the phenomenon.

Proposed Explanations (Hypotheses)

- **Evaporation:** Hot water loses more mass and heat, speeding up cooling.
- **Convection:** Higher temperature gradients enhance heat transfer within the liquid.
- **Dissolved gases and microbubbles:** Heating expels dissolved gases, improving thermal conductivity.
- **Solute effects:** Boiling removes dissolved salts, slightly raising the freezing point.
- **Frost insulation:** Ice or frost around colder samples may reduce heat loss. For example, in a freezer, frost often builds up around a cold container, acting as an insulating layer that slows heat loss.

Recent Findings Related to the Mpemba Effect

- The effect is not limited to water and has been observed in other materials during fluid–solid phase transitions. Supercomputer simulations of ice formation provide strong evidence supporting this paradoxical cooling and freezing behaviour.

HYDROKINETIC TURBINE TECHNOLOGY

Context: The Tripura government recently identified 10 river sites to generate 185 MW of power using hydrokinetic turbine technology.

What is Hydrokinetic Turbine Technology?

- Hydrokinetic turbines generate **electricity from the kinetic energy of flowing water**. They are **installed directly in river or tidal currents without dams or barrages**. There is no big dam and no large drop created.

How does it differ from conventional hydropower?

- No large civil structures (dams or barrages).
- Uses flow velocity rather than stored water head.

Key Benefits

- They are a renewable and clean energy source, drawing on the continuous flow of natural water bodies.
- Their environmental footprint is minimal, causing little disruption to river ecology.
- The technology is also highly scalable and flexible, suitable for both small installations and large multi-turbine arrays.
- With fewer components and a debris-tolerant design, these turbines require relatively low maintenance.

FOREVER CHEMICALS

Context: When scientists tested human blood samples collected between 2003 and 2021, they found that levels of older PFAS, also known as “forever chemicals,” dropped by up to 86% in some analyses because manufacturers stopped producing them.

About Forever Chemicals

- Commonly known as **PFAS (per- and polyfluoroalkyl substances)**, are a large group of thousands of synthetic (man-made) chemicals that have been used since the 1940s.
- They feature **strong carbon-fluorine bonds**, making them extremely resistant to breakdown. They persist in the environment, wildlife, and human bodies for decades or longer.
- Uses:** Valued for non-stick, water-repellent, and grease-resistant properties; used in cookware, textiles, cosmetics, food packaging, and firefighting foam.
- Environmental risks:** Can enter soil, water, and air; exposure occurs through contaminated food and water, consumer products, and inhalation. They can bioaccumulate in living organisms.
- Health concerns:** Associated with immune, liver, and thyroid disorders, high cholesterol, developmental issues, and kidney and testicular cancers.
- Global regulation:** The **Stockholm Convention** lists some Forever Chemicals such as **perfluorooctane sulfonic acid (PFOS)** and **perfluorooctanoic acid (PFOA)**, along with their related compounds and salts, as **Persistent Organic Pollutants (POPs)**.

SOFT MATTER

- Soft matter are **substances that can behave like solids or liquids depending on the force applied** and the time over which it acts. Examples include toothpaste, shampoo, gels, creams, foams, and biological materials.
- Soft matter is a **subfield of condensed matter physics**, includes materials easily deformed by thermal fluctuations or weak external stresses (comparable to room-temperature energy kT)
- Internal Structure:** They are made of large microscopic building blocks (such as polymers, droplets, or particles) held together by relatively weak intermolecular forces, making their structure flexible and easily rearranged.
- Response to Force and Time:**
 - Slow or gentle force → often shows solid-like behaviour.
 - Strong or sustained force → flows like a liquid.

- **Scientific Significance:** This behaviour is studied in rheology and demonstrates that whether a material behaves as a “solid” or a “liquid” depends on the time scale, rate of deformation, and magnitude of applied stress, not only on its composition.

BATTERY PACK AADHAAR NUMBER (BPAN)

Context: The Ministry of Road Transport and Highways has proposed assigning an Aadhaar-like unique identification number to electric vehicle (EV) batteries.

- BPAN is an **indigenous digital identification** and **data storage system** designed to ensure end-to-end traceability of batteries throughout their lifecycle.
- Producers or importers will be required to assign a 21-character Battery Pack Aadhaar Number (BPAN) to every battery they introduce into the market.
- They will also be required to upload relevant battery pack dynamic data on the official BPAN portal.
- Electric vehicle batteries and industrial batteries with a **capacity above 2 kWh** are required to maintain this Battery Pack Aadhaar as an electronic record.

(Detailed Explanation on Prelims KnockOut Part 1, Page 383)

ZEIGARNIK EFFECT

- Zeigarnik Effect is a psychological phenomenon **where unfinished or interrupted tasks are remembered better than completed ones.**
- It was proposed by Bluma Zeigarnik, based on observations by Kurt Lewin.
- **Why does it happen?:** Starting a task creates mental tension. If incomplete, it remains an “open loop” in short-term memory. This causes cognitive tension, making it harder to forget.
- **Use & Limitation:** It is useful in learning/productivity, can cause stress if too many tasks remain unfinished.

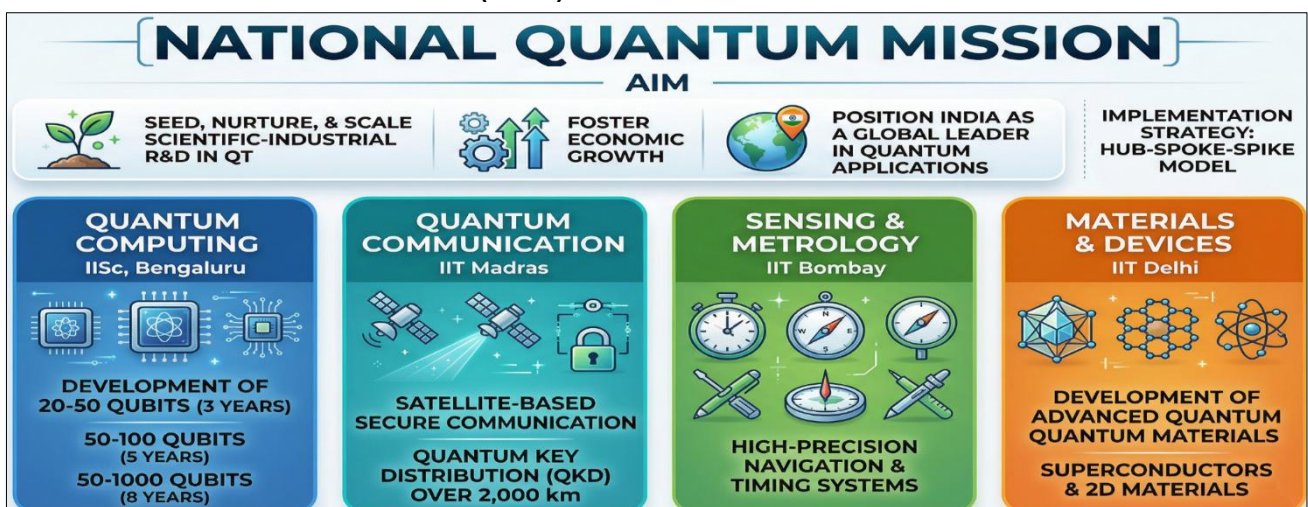
NATIONAL QUANTUM MISSION

Context: Under the National Quantum Mission, the foundation stone of the **Quantum Valley Project** has been laid in Amaravati, Andhra Pradesh.

About Quantum Valley Project

- The project aims to: **Develop Amaravati as a global hub for quantum technologies** and **Install India’s first 133-qubit quantum computer by 2026.**
- It follows the **Triple Helix Model**, involving collaboration between: Government, Industry (IBM, TCS, L&T), Academia

About National Quantum Mission (NQM)



- The NQM is a flagship initiative of the **Ministry of Science and Technology** to advance quantum technologies. Approved in April 2023, it runs from 2023-24 to 2030-31 with a budget of ₹6,003.65 crore.

- It is one of the nine national missions governed by the **Prime Minister's Science, Technology and Innovation Advisory Council (PM-STIAC)**.
- **Global Position:** India is the 7th country to launch a dedicated quantum mission (after the USA, China, Finland, Austria, France, and Canada).

Other Initiatives by India

- **QuEST (Quantum Enabled Science and Technology):** Launched in 2018 by the Department of Science and Technology to build foundational infrastructure and support quantum research.
- **MeitY Quantum Computing Applications Lab:** Collaboration with Amazon Web Services to provide cloud-based quantum computing platforms.
- **Quantum Key Distribution (QKD):** In 2022, DRDO and IIT Delhi demonstrated a secure QKD link between Prayagraj and Vindhyachal (100 km apart).
- **Quantum Frontier Mission:** Led by the PM-STIAC to advance quantum research and innovation.

Global Initiatives and Cooperation

- **iCET (Initiative on Critical and Emerging Technology):** India–US initiative focusing on quantum technologies, AI, semiconductors, and expanding into areas like biotechnology, energy, and space.
- **Critical and Emerging Technology Working Group (Quad, 2021):** Aims to ensure that standards for technologies like 5G, AI, and quantum computing align with shared values.
- **The Wassenaar Arrangement:** Covers dual-use technologies (civilian and military applications), including quantum technologies.

QUORUM SENSING

Context: Quorum Sensing may become a game changer in medicine by enabling the development of anti-quorum sensing therapies as alternatives to conventional antibiotics.

What is Quorum Sensing (QS)?

- Quorum sensing is a **mechanism by which bacteria regulate gene expression according to their population density** using chemical signal molecules called **autoinducers**.

Mechanism	Functions
• Bacteria release autoinducer molecules into their surroundings. • As the bacterial population increases, autoinducers accumulate. • Once a threshold concentration is reached, specific genes are activated, coordinating collective bacterial behaviour.	• Virulence regulation (disease-causing ability) • Biofilm formation • DNA uptake (competence) • Horizontal gene transfer • Symbiotic interactions

Examples

- **Pseudomonas aeruginosa:** Uses quorum sensing to regulate pathogenic behaviour.
- **Rhizobium leguminosarum:** Uses quorum sensing during nitrogen fixation in symbiosis with plants.

DARK OXYGEN

Context: Scientists exploring the Pacific Ocean seafloor have reported the presence of “dark oxygen” in environments where sunlight does not reach.

What is Dark Oxygen?

- Dark oxygen refers to **oxygen produced thousands of feet below the ocean surface without the presence of light or photosynthesis**.
- It was discovered in 2013 in the **Clarion-Clipperton Zone**, a deep-sea region in the Pacific Ocean.

Key Mechanism

- **Polymetallic nodules** (the rock-like deposits on the ocean floor rich in metals such as nickel, cobalt, manganese, and iron) **act like natural electrochemical batteries**.

They generate small electric currents that drive the electrolysis of surrounding seawater, splitting water molecules into hydrogen and oxygen.

- As a result, oxygen is released abiotically, without the involvement of sunlight or photosynthesis.

Significance

- Establishes a non-photosynthetic (abiotic) source of oxygen.
- Raises concerns regarding deep-sea mining of polymetallic nodules.
- Supports the possibility of oxygen generation on other planets, highlighting its relevance for astrobiology.

CRITICALITY

Context: Recently, the indigenously developed Prototype Fast Breeder Reactor (PFBR) at Kalpakkam, Tamil Nadu, attained criticality.

What is Criticality?

- Nuclear reactors produce energy through **fission**, where uranium atoms split and release heat and neutrons. These neutrons trigger further reactions, creating a chain reaction used to generate electricity.
- **Criticality is the condition where a reactor maintains a steady chain reaction.** Each fission produces just enough neutrons to sustain the next reaction.
- The number of neutrons produced = neutrons lost → system remains stable. This is the normal operating state of a nuclear power plant.

What is Supercriticality?

- **Supercriticality occurs when more neutrons are produced than lost.** This increases the rate of fission, leading to rising power output.
- It is used briefly during reactor start-up to reach desired power levels.

WHITE PHOSPHORUS

Context: Recently, Human Rights Watch accused Israel of “unlawfully” using white phosphorus over residential areas of a southern Lebanese town.

About White Phosphorus

- It is a white to yellow, waxy substance with a garlic-like odour; highly reactive **allotrope of phosphorus**.
- It **ignites spontaneously in air at temperatures above 30°C and continues to burn at temperatures around 1300°C until fully oxidized or until oxygen is exhausted**.
- It produces **dense white smoke** composed of phosphorus pentoxide, which forms phosphoric acid upon contact with water.

Uses	Health Impact
• Military: Used for illumination, smoke screens, and as an incendiary agent (in grenades and shells). • Industrial: Used to produce phosphoric acid, which is further processed into phosphates for fertilizers and detergents. • Others: Used in fireworks and was earlier used in rodenticides.	• Toxic through inhalation, ingestion, and skin contact. • Causes severe deep burns that can reach the bone. • The smoke irritates the eyes and lungs due to the formation of phosphoric acid and phosphine.
Legal Status White phosphorus is not banned under the Chemical Weapons Convention. However, its use against civilians is restricted under International Humanitarian Law (IHL) and Protocol III of the Convention on Certain Conventional Weapons (CCW).	

G- SPIDER ROBOT

Context: Recently, under the Swachh Bharat Mission Urban 2.0, the Thiruvananthapuram Municipal Corporation has deployed an AI-powered G-SPIDER robot.

About G-SPIDER Robot

- It is an **automated canal-cleaning system** developed by **Genrobotic Innovations**.
- It is designed to operate in complex and high-risk canal environments without requiring human entry.
- Built on a **Cable-Driven Parallel Robotics (CDPR) architecture** and powered by **AI-enabled vision and sensor intelligence**
- It enables precise detection, assessment, and removal of accumulated waste.
- Genrobotic Innovations also developed the robotic scavenger '**Bandicoot**'.

LOW TEMPERATURE THERMAL DESALINATION TECHNOLOGY

Context: The Union Minister for Earth Sciences visited the LTTD plant at Kavaratti, which is developed by National Institute of Ocean Technology (NIOT).

What is Low Temperature Thermal Desalination (LTTD)?

- LTTD is a **desalination method** in which **warm surface seawater is evaporated under low pressure**, and the **resulting vapour is condensed using cold deep-sea water to produce fresh water**.
- Deep-sea water at depths of about 350 to 400 metres is $\sim 15^{\circ}\text{C}$ colder than surface water.
- **This temperature difference is utilised in LTTD:** warm surface seawater is flash-evaporated at low pressure, and the vapour is then cooled by cold deep-sea water, causing it to condense into fresh water.

Key Features	Significance
• Does not require chemicals or membranes. • Low pollution and low maintenance. • Suitable for islands and coastal areas.	• Provides safe drinking water. • Eco-friendly and energy-efficient. • Particularly ideal for regions like Lakshadweep and other remote islands.

DIMETHYL ETHER (DME)

Context: The CSIR–National Chemical Laboratory, in collaboration with a processing engineering partner, is preparing to scale up DME technology to an industrial-scale demonstration.

What is Dimethyl Ether (DME) Technology?

- **Dimethyl Ether (CH_3OCH_3) is a clean alternative fuel** that can substitute or be blended with LPG and diesel.
- The technology involves producing and utilising DME as a low-emission fuel.
- **The core production pathway is: Methanol $\rightarrow$ (catalytic dehydration) $\rightarrow$ DME**
- Methanol itself can be produced from multiple feedstocks such as coal, biomass (agricultural waste), natural gas (via syngas), and captured CO_2 .

How Can It Help India?

- **Lower Imports:** Reduces dependence on LPG (currently ~ 60 – 65% imported).
- **Energy Security:** Enables domestic production from coal, biomass, and CO_2 .
- **Cleaner Fuel:** No soot; lower NO_x and SO_x emissions.
- **Economic Gains:** Potential savings of $\sim ₹9,500$ crore; can become cost-competitive.
- **Easy Adoption:** Compatible with existing LPG infrastructure.
- **Flexible Source:** Uses both fossil and renewable feedstocks.

Challenges

- **Methanol Dependence:** India currently imports methanol (~ 3.4 million metric tons annually)
- **High Cost:** DME costs about 1.8 times that of methanol

- **Scale Constraints:** Presently at semi-pilot scale (~250 kg/day)

FLOATING LIDAR BUOY SYSTEM

Context: Recently, the National Institute of Ocean Technology (NIOT) successfully tested an indigenously developed Floating LiDAR Buoy System off the coast of Muttom.

What is a Floating LiDAR Buoy System?

- It is an **advanced ocean-based instrument used to measure wind conditions over the sea.** It aims to **measure wind profiles and atmospheric conditions over ocean regions.**

Working

- The system operates using **LiDAR (Light Detection and Ranging) technology.**
- A floating buoy emits laser pulses upward, which reflect off particles in the air and return to the sensor. The returned signals are analysed to determine wind speed and direction at different heights.
- Unlike traditional instruments, it can **capture detailed wind data up to 300m above sea level.**

Significance

- Supports offshore wind energy development.
- Improves weather forecasting accuracy.
- Aids in cyclone tracking.
- Contributes to climate studies.

MXENE

Context: Recently, a research team from IIT Guwahati developed a MXene-based catalyst capable of efficiently producing hydrogen from water and also functioning as a photocatalyst for desalination.

What is MXene?

- MXenes are a large family of two-dimensional (2D) inorganic compounds (transition metal carbides, nitrides, or carbonitrides). **Titanium carbide (Ti_3C_2Tx) is the most widely used MXene.**
- They are **derived from a bulk crystal known as MAX phases.** They were first discovered in 2011.
- It has a **General formula M_n+1X_nTx , where:**
 - **M:** Early transition metal
 - **X:** Carbon and/or nitrogen
 - **T:** Surface functional groups (commonly O, OH, or F)

Properties of MXenes

- High electrical conductivity
- Excellent mechanical strength
- Good chemical stability
- Strong affinity for water (hydrophilicity)

Applications of MXenes

- **Energy Storage:** Used in batteries and supercapacitors
- **Water Treatment:** Applied in desalination and wastewater treatment
- **Filtration/Separation:** Used in industrial membranes for efficient separation processes

HELIUM

Context: India's semiconductor and printed circuit board (PCB) industry may face disruptions in helium supply following Iran's attack on Qatar's Ras Laffan LNG hub.

About Helium (He)

- Helium is an **inert, non-combustible gas** discovered in **1868** by Pierre Janssen and Norman Lockyer through a yellow spectral line observed during a solar eclipse. Its name is derived from the Greek word Helios, meaning Sun.
- It is a **noble gas** (Group 18 of the periodic table) with **extremely low chemical reactivity** and a **very low boiling point**, making it the only substance known to remain liquid down to near absolute zero.
- The largest global reserves are found in the United States, Algeria, and Russia. In India, the Rajmahal Volcanic Basin in Jharkhand is a significant helium reservoir, with gas trapped for billions of years.

Properties of Helium	Applications
Atomic number: 2 (second lightest element after hydrogen) - Extremely low boiling point (-268.9°C) - Non-toxic but acts as an asphyxiant by displacing oxygen - Does not solidify under normal pressure	Cryogenics: Cools superconducting magnets in MRI/NMR machines, particle accelerators, and satellites Welding & Industry: Used as an inert shielding gas in arc welding and high-tech manufacturing. Lifting & Pressurization: Fills balloons and pressurises rocket fuel tanks.

LPG SHORTAGE IN INDIA

Context: The government stated there is no national LPG shortage. However, there are reports of delivery delays caused by panic booking and supply chain disruptions due to war in West Asia.

What is LPG (Liquefied Petroleum Gas)?

- Liquefied Petroleum Gas (LPG) is a clean-burning fuel mainly composed of two gases: Propane and Butane
- These gases are **normally in gaseous form** but are **converted into liquid under moderate pressure for easy storage and transport**.
- Common Uses:** Household cooking (gas cylinders); Heating; Industrial fuel; Automotive fuel (Auto LPG)

LPG is produced during the processing of crude oil and natural gas.

A. From Crude Oil (Refining Process)

- Crude oil is heated in a refinery.
- It separates into different components based on boiling points (called fractional distillation).
- Lighter gases like propane and butane are collected → converted into LPG.

B. From Natural Gas Processing

- Raw natural gas contains methane along with propane and butane.
- These heavier gases are separated out in processing plants.
- The extracted propane and butane are liquefied → LPG.

What is Liquefied Natural Gas (LNG)?

- LNG is natural gas (mainly **methane**) that has been cooled to very low temperatures (-162°C) to convert it into liquid form.
- It is mainly used for power generation, industrial fuel, and long-distance energy transport.

How is LNG made?

- Natural gas is first purified to remove impurities like water, carbon dioxide, and sulfur.
- It is then cooled to extremely low temperatures, turning it into a liquid.
- This process reduces its volume by about 600 times, making storage and transportation easier.

INDIA'S ENERGY LANDSCAPE: LPG vs. CNG vs. PNG		LPG (LIQUEFIED PETROLEUM GAS)	CNG (COMPRESSED NATURAL GAS)	PNG (PIPED NATURAL GAS)
CORE CHARACTERISTICS [100 EST.]	COMPOSITION	 PROPANE (C_3H_8) & BUTANE (C_4H_{10})	 METHANE (CH_4)	 METHANE (CH_4)
	STATE & STORAGE	 LIQUID IN CYLINDERS	 GAS IN HIGH-PRESSURE CYLINDERS	 GAS IN CONTINUOUS PIPELINES
	PRESSURE	 MODERATE PRESSURE	 VERY HIGH PRESSURE	 VERY LOW PRESSURE
KEY USAGE & SAFETY	PRIMARY USES	 DOMESTIC COOKING  INDUSTRIAL HEATING  SOME VEHICLES	 COMMERCIAL & PRIVATE VEHICLES (AUTO FUEL)	 DOMESTIC COOKING  HEATING  INDUSTRIAL FUEL
	WEIGHT VS. AIR	 HEAVIER THAN AIR	 LIGHTER THAN AIR	 LIGHTER THAN AIR
INDIA'S SUPPLY PROFILE [2026 EST.]	IMPORT DEPENDENCE	60% - 66%	~50% IMPORTED AS LNG, THEN CONVERTED	~50% IMPORTED AS LNG, THEN CONVERTED
	DOMESTIC PRODUCTION	34% - 40% (via domestic refineries)	~50% (KG Basin & other fields)	~50% (KG Basin & other fields)
	MAJOR SUPPLIERS	 UAE  QATAR  SAUDI ARABIA  KUWAIT	 QATAR  UAE	 QATAR  UAE

INDUCTION COOKTOP TECHNOLOGY

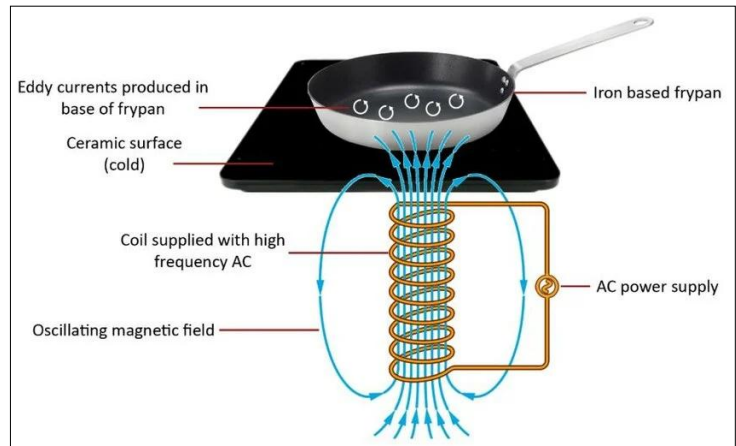
Context: The conflict in West Asia has severely disrupted cooking gas supplies in India, driving up the surge in the sale of induction cooktops.

What is Induction Cooktop Technology?

- Induction cooking technology **relies on the scientific principle of electromagnetic induction rather than chemical combustion** used in Stoves.

Working Mechanism

- A copper coil under the ceramic or glass surface of the cooktop creates a changing magnetic field when electricity flows. This field passes through the cooktop surface without heating it.
- When a metal pan is placed, the field generates electric currents (**eddy currents**) inside the base of the pan.
- Because metals possess inherent electrical resistance, these moving currents encounter "**electrical friction**." This friction **converts the kinetic energy of the electrons directly into thermal energy (heat)**, turning the pan itself into the primary heat source.



Difference from Traditional Stoves

- Heating method:** LPG stoves use flame (combustion). Induction uses magnetic energy (no flame).
- Heat transfer:** Gas heats air and surroundings along with the pan. Induction heats only the pan, keeping surroundings cooler.

Benefits:

- High efficiency:** ~85–90% energy used vs ~40–50% in gas.
- Faster & safer:** No open flame, surface stays relatively cool.
- Energy security:** Not dependent on LPG supply.

Challenges:

- Needs continuous electricity.
- Costly repairs due to electronic parts.
- Works only with magnetic cookware (iron, certain steel).

CULTURE

FAIRS AND FESTIVALS

CHARAICHUNG FESTIVAL

Context: Recently, 'Charaichung Festival' was hosted in **Assam's Majuli island** in December 2025. This was the second edition of the festival.

- The Charaichung Festival is a **4-day annual event** held in Majuli, Assam, dedicated to reviving the 392-year-old Charaichung Royal Bird Sanctuary. It was organised by Majuli Sahitya and local communities.

About Charaichung Royal Bird Sanctuary

- It is **Asia's first protected bird sanctuary**, established in **1633 AD** by **Ahom king Swargadeu Pratap Singha**.
- **Location:** Majuli, the world's largest river island.
- **Ecological Significance:** Habitat for nearly **150 indigenous and migratory bird species**.

About Majuli Island

- The **world's largest river island**, located in Assam, formed by the Brahmaputra River and its tributaries Kherkutia Xuti and Subansiri.
- **Rice cultivation** is the main livelihood; notable varieties include Komal Saul and Bao Dhan.
- The majority population belongs to the **Mishing, Deori, and Sonowal Kachari tribes**.
- During the early 16th century, **Srimanta Sankaradeva** established several **Satras** in Majuli to promote the spread of **Neo-Vaishnavism**. It houses numerous *satras* (Vaishnavite monasteries), including prominent ones like Auniati, Kamalabari, and Dakhinpat.

ALO PRABHAT

Context: Dong, India's easternmost village in Anjaw district of Arunachal Pradesh, welcomed the first sunrise of 2026 with "Alo Prabhat: Dance of the Dawn."

About Alo Prabhat

- The performance was part of the **inaugural Sunrise Festival** organised by the State Tourism Department at Dong, the first human habitation in India to receive the earliest rays of the sun.
- The performance draws inspiration from the **cultural traditions of the indigenous Meyor and Mishmi communities**.
- The festival has been conceptualised to create meaningful livelihood opportunities for local communities while promoting responsible and eco-friendly tourism.

MAGH MELA

Context: The Magh Mela recently began at Prayagraj.

About Magh Mela

- It is an **annual religious and cultural gathering held at the Triveni Sangam**, the sacred confluence of the Ganga, Yamuna, and the mythical Saraswati rivers in **Prayagraj, Uttar Pradesh**.
- The Prayag Magh Mela is a 45-day-long pilgrimage that **begins at the Paush Purnima (the full moon day of the month of Paush) and ends at Mahashivaratri**, spanning over the **entire month of Magh**.
- It has **ancient origins** and is mentioned in Hindu scriptures such as the Puranas and Dharmashastra texts.
- Hieun Tsang, the Chinese Buddhist missionary renowned for his extensive travels in India, documented the religious gatherings at Prayag.

- Bathing at the Sangam during this period is believed to purify the soul and wash away sins.
- An important feature of the Magh Mela is the **Kalpvas tradition**, in which devotees (called Kalpvasis) live in simple temporary camps near the Sangam for about a month, following a disciplined spiritual routine.

SHIKSHAPATRI DWISHATABDI MAHOTSAV

- The Prime Minister addressed the Shikshapatri Dwishatabdi Mahotsav, commemorating the 200th anniversary of Bhagwan Swaminarayan's Shikshapatri.
- The **Shikshapatri** is a **spiritual and ethical text authored in 1826 by Bhagwan Swaminarayan** (also known as Sahajanand Swami), the **founder of the Swaminarayan tradition**.
- It is a **concise Sanskrit scripture** consisting of **212 verses** that lay down a code of moral, social, and spiritual discipline for followers.

THAIPUSAM

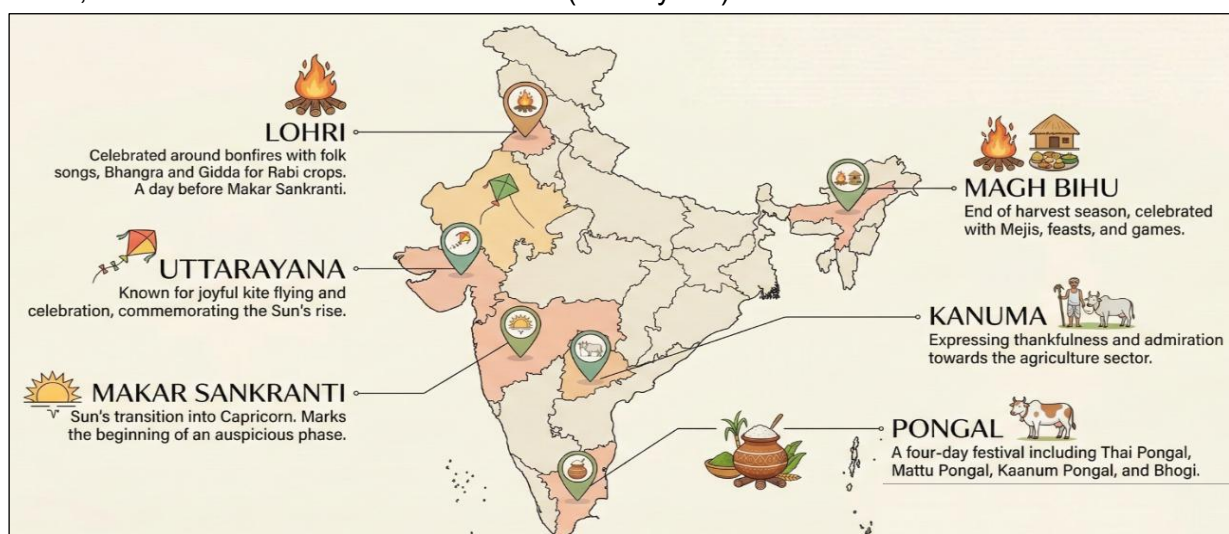
Context: The Prime Minister recently extended greetings to people on the occasion of Thaipusam.

About Thaipusam (also called Thai Poosam)

- Thaipusam is a Hindu festival dedicated to **Lord Murugan (also known as Lord Kartikeya)**, the deity associated with war, victory, and wisdom. It is observed on the full moon day of the Tamil month of Thai.
- The name Thaipusam combines:
 - **Thai:** The Tamil month in which the festival is celebrated.
 - **Poosam:** A star (Pushya) that is at its highest point during the festival.
- This Festival celebrates the birth of Murugan, lord of the Kuringi (mountain) landscape also known as Lord Subramaniam.
- The festival **commemorates the day when Goddess Parvati gave Lord Murugan a divine spear called the Vel**. With this weapon, Murugan defeated the demon Soorapadam, symbolising the victory of good over evil.
- Widely celebrated by the Tamil community in Tamil Nadu and across the world, particularly in Sri Lanka, Malaysia, and Singapore.
- Devotees perform rituals such as carrying kavadi (decorated structures), offering prayers, and undertaking acts of devotion and penance.

HARVEST FESTIVALS

Context: Traditional harvest festivals are celebrated across different parts of India. Though known by different names and customs, these festivals generally mark the harvest season, the change of seasons, and the Sun's northward movement (Uttarayana).



BASTAR PANDUM FESTIVAL

Context: The Bastar Pandum Festival was recently celebrated in Chhattisgarh.

- Bastar Pandum is a **state-organised tribal cultural festival** held in the Bastar region.
- It has emerged as an **important cultural platform showcasing Bastar's tribal identity** through art, music, dance, handicrafts, and indigenous cuisine.

Key Highlights

- Divisional-level competitions were organised during the festival.
- More than 700 artists participated across twelve cultural disciplines.
- The performances provide visitors with a comprehensive experience of Bastar's rich cultural traditions.

RONGALI BIHU

Context: Recently, Rongali Bihu celebrations have begun across Assam, marking the festive spirit in the state.

About Rongali Bihu (Bohag Bihu)

- Rongali Bihu is a major festival of Assam celebrating the Assamese New Year and arrival of spring. The term 'Rongali' comes from 'Rong', meaning joy and celebration.
- It reflects the rich cultural traditions of Assamese society.
- Women wear traditional mekhela chador made of pat, muga silk, or cotton. The **gamocha** (Bihuwaan) is exchanged as a symbol of respect and affection.

Key Facts about Bihu

- Celebrated across Assam irrespective of caste, creed, or religion.
- **Rongali/Bohag Bihu:** April (New Year and spring festival).
- **Kati/Kongali Bihu:** October (associated with prayers and austerity).
- **Magh Bihu:** January (harvest festival).



CHAPCHAR KUT

Context: Chapchar Kut was recently celebrated in Aizawl. The Chief Minister of Mizoram, who served as the **Kut Pa (Father of the festival)**, highlighted the Mizo community's close connection with nature and agriculture.

About Chapchar Kut

- The **week-long spring festival of Mizoram** is usually celebrated in **March**, after the completion of the difficult task of **Jhum cultivation**, clearing forests and burning the remaining vegetation.
- The festival celebrates **Mizo culture**, featuring traditional dances, music, art, and cuisine. It brings communities together to honour their heritage.
- The **theme** of the festival was "**Zo nun ze mawi – Inremna**" (Mizo Ethics – Reconciliation).

BAISAKHI FESTIVAL

Context: The festival of Baisakhi is being celebrated in Punjab with devotion, enthusiasm, and a spirit of brotherhood.

About Baisakhi Festival

- Baisakhi, also known as Vaisakhi, is a **spring harvest festival** celebrated in **northern India**, especially by the Sikh and Punjabi communities.
- It is traditionally observed on the **first day of the month of Vaishakha** in the Hindu solar calendar, which usually falls in April. The festival is celebrated annually and **marks the Sikh New Year**.

- It is primarily a **harvest festival** during which farmers express gratitude for a good crop yield. It symbolises prosperity, hard work, and new beginnings.
- It holds special significance for the **Sikh community**. In 1699, the **foundation of the 'Khalsa Panth'** (order of the pure ones) was established on **Baisakhi by the tenth Sikh Guru, Guru Gobind Singh, at Anandpur Sahib**.

Similar celebrations are observed across India, such as:

- **Pohela/Poila Boishakh** or Nobo Borsho as the Bengali New Year
- **Vishu** in Kerala
- **Bohag Bihu** in Assam
- **Puthandu** as the Tamil New Year
- **Vaishakha**, associated with the worship of Surya in Bihar

ARCHITECTURE AND SCULPTURES

PETRA & ELLORA CAVES

Context: India and Jordan signed a twinning agreement between the Ellora Caves and Petra, both globally renowned for their rock-cut architectural heritage.

About Ellora Caves

- **Location:** Charanandri Hills, Maharashtra, near the Elaganga River
- **Period:** Carved between 600–1000 CE
- **Dynasties:** Predominantly under the Rashtrakuta and Yadava rulers
- **Architecture:** Rock-cut caves excavated top-down into basalt cliffs
- It has been a UNESCO World Heritage Site since 1983.

Religious Significance:

- Houses Hindu, Buddhist, and Jain monuments side by side
- Contains mural paintings associated with all three religions, symbolising religious harmony

About Petra (Jordan)

- An ancient city and archaeological site in southern Jordan
- Also known as the “**Rose City**” due to its pink sandstone cliffs
- Capital of the **Nabataean Kingdom** from around the 4th century BCE
- The city is one of the New 7 Wonders of the World and a UNESCO World Heritage Site.

Architecture:

- Half-built and half-carved into rock
- Surrounded by rugged mountains with narrow gorges and passages

TURKMAN GATE

Context: Turkman Gate was recently in the news following violence linked to a demolition drive.

- The gate was constructed in the **17th century during the reign of Mughal emperor Shah Jahan, when he established his new capital at Shahjahanabad (Old Delhi)**.
- Unlike many city gates that were named after the directions or cities they faced, Turkman Gate is **named after a revered mystic whose shrine predates the Mughal city**.
- It is named after the **13th-century Sufi saint Hazrat Shah Turkman Bayabani, whose tomb (dargah) is located near the gate**.

SOMNATH TEMPLE

Context: Somnath Swabhimani Parv commemorates 1,000 years since the first attack by Mahmud of Ghazni on the Somnath Temple in 1026.

About Somnath Temple

- Situated at Prabhas Patan near Veraval in Gujarat, the temple has been an important pilgrimage centre since ancient times because it lies at a Triveni Sangam, the confluence of three rivers—**Kapila, Hiran, and Sarasvati**.
- The temple is revered as the first among the 12 Aadi Jyotirlingas of Shiva.

- The present temple is built in **Maru-Gurjara architecture**, also known as the Chalukya or Solanki style.
- It follows the “**Kailash Mahameru Prasad**” form, consisting of: Garbhagriha (sanctum sanctorum), Sabhamandap (assembly hall), Nrityamandap (dance hall),.
- The temple is crowned with a 150-foot shikhar (spire), topped by a 10-tonne kalash.

Attacks on Somnath

- In 1026, during the reign of Bhima I, the Turkic ruler Mahmud of Ghazni raided and plundered the temple, breaking its Jyotirlinga.
- The temple was subsequently destroyed in 1297, 1394, and finally in 1706 under the Mughal ruler Aurangzeb. Historical accounts indicate that the temple was looted as many as 17 times.

MARU-GURJARA ARCHITECTURE (SOLANKI STYLE)

GENESIS

This architectural style originated in the 6th century in regions historically known as Marudesh (Rajasthan) and Gurjaratra (Gujarat).

It reached its peak during the rule of the Solanki dynasty (Chalukyas of Gujarat).

KEY FEATURES

JHAROKHA:

A projecting stone window or suspended balcony supported by brackets or corbels.

CHATTRI:

An umbrella-shaped dome or pavilion, often used as a memorial structure over funerary sites.

HAVELI:

Large mansions or townhouses of the aristocracy, usually built around a central courtyard. The courtyard helps regulate temperature, provides light and ventilation, and creates a transition between public and private spaces.

JAALI:

A perforated stone screen with geometric or calligraphic patterns.

BAOLI (STEPWELL):

Elaborate water structures with descending steps used to access groundwater.

JOHAD:

Rainwater storage tanks or simple barriers made of mud or rubble, constructed across slopes to be slopes to capture rainwater and recharge groundwater.

Reconstruction

- Reconstruction of the present temple was initiated after independence by Sardar Vallabhbhai Patel in 1947.
- The Pran Pratistha (inauguration ceremony) was performed by Rajendra Prasad, the first President of India, on 11 May 1951. Earlier, the temple had been rebuilt in the 18th century (around 1783) by Ahilyabai Holkar.

About Bhadrakali Inscription

- Describes the legendary history of the Somnath Temple across four Yugas, mentioning its construction in gold, silver, wood, and later stone by Bhimdev Solanki.
- A **12th-century inscription (1169 CE) at Prabhas Patan**, Gujarat, embedded in the wall of the Bhadrakali Temple.
- Written as a **prashasti** (eulogy) for **Acharya Bhavabrihaspati**, the spiritual teacher of **Solanki king Kumarapala**.
- Highlights the Solanki dynasty's role in the revival of the Somnath Temple, especially under Kumarapala in the 12th century.

ZEHANPORA SITE

Context: Archaeologists uncovered a 2,000-year-old Buddhist complex at the site after drone surveys and systematic excavations confirmed that several mounds in the area were man-made.

About Zehanpora Buddhist Site

- The Zehanpora archaeological site is located in Baramulla district of **Jammu and Kashmir**, near the Jhelum River.
- The remains mainly date to the Kushan period (1st–3rd centuries CE), a time when Buddhism expanded significantly across northern India and Central Asia.
- Excavations have revealed: Buddhist stupas, Monastic structures and cells, Stone walls and settlement remains, Pottery fragments and copper artefacts
- The layout of the structures **resembles the Gandhara Buddhist architectural tradition**, indicating cultural links with regions of present-day Afghanistan and Pakistan.
- The discovery confirms Kashmir's role as an important centre of Buddhism and learning.

DEVNIMORI RELICS

Context: Devnimori Relics of Lord Buddha recently arrived in Sri Lanka for a special exposition.

About Devnimori Relics

- The relics are named after the **Devnimori archaeological site**, located near the Hindu pilgrimage centre of **Shamlaji in Aravalli district, Gujarat**.
- The site was first explored in 1957 by archaeologist **S. N. Chowdhry**.
- Excavations uncovered important Buddhist structures and relics, indicating the spread of Buddhism in western India during the early centuries of the Common Era.
- A relic casket discovered inside the Devnimori Stupa carries an **inscription in Brahmi script** and Sanskrit reading **“dashabala sharira nilay”**, meaning “the abode of the Buddha’s bodily relic.”
- The casket contains a copper box holding organic material with sacred ashes, along with silk cloth and beads.

IMPORTANT PERSONALITIES

BULLEH SHAH

Context: A shrine associated with Bulleh Shah was recently vandalised in Mussoorie, Uttarakhand.

About Bulleh Shah (1680-1757)

- Bulleh Shah was a renowned **Punjabi Sufi poet** who lived in the late 17th and early 18th centuries. Born in **1680** in **Pandoke Village, a few miles from Lahore** (present-day Pakistan), his real name was Abdullah Shah.
- He was trained in Islamic scholarship but later chose **Shah Inayat Qadiri as his Sufi mentor**. Along with the Chishti order, the **Qadri order was among Punjab’s most tolerant Sufi traditions**, embracing music and followers from diverse faiths.
- He primarily wrote in the **Kafi form**, a lyrical, musical style of Punjabi (also used in Sindhi/Saraiki poetry and by Sikh Gurus). His work has been sung for centuries by qawwals and folk artists.
- He preached the **importance of ishq (universal love) above all religions**, rejecting divisions of caste, creed, religion, and gender.
- He believed that God is found within, not through rituals, strict rules, or religious labels.
- His philosophy also drew inspiration from the Nath yogis and the Bhakti movement.

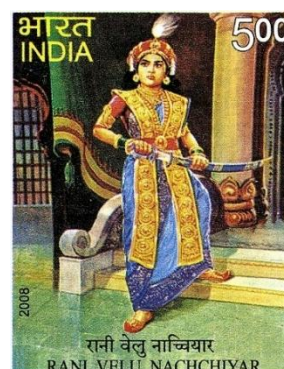


RANI VELU NACHIYAR

Context: The Prime Minister paid tributes to Rani Velu Nachiyar on her birth anniversary.

Rani Velu Nachiyar of Sivaganga (1730-1796)

- Born in Ramanathapuram in 1730, Velu Nachiyar is regarded as **one of the earliest Indian queens to actively oppose British rule**, fighting colonial forces decades before the Sepoy Mutiny of 1857.
- After the death of her husband, the King of **Sivaganga**, she was drawn into the conflict with the British. **In collaboration with Hyder Ali and Gopala Nayaker, she waged a war against the British and eventually regained her kingdom.**
- She is remembered for organising one of the earliest recorded instances of a suicide attack against British ammunition depots and for establishing a women’s military unit in the late 1700s.
- Nachiyar was trained in various combat techniques, including the use of traditional weapons and martial arts such as Valari and Silambam.
- She was **succeeded by her daughter Vellacci** in 1790 and died a few years later in 1796.

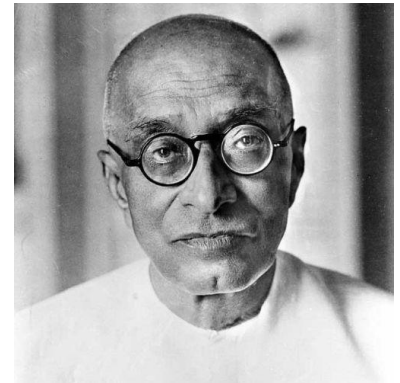


C RAJAGOPALACHARI

Context: President Droupadi Murmu recently unveiled a statue of C. Rajagopalachari in the central courtyard of Rashtrapati Bhavan, replacing the bust of British architect Edwin Lutyens.

About C. Rajagopalachari (1878–1972)

- C. Rajagopalachari, popularly known as Rajaji or CR, was an Indian statesman, lawyer, writer, and freedom fighter. He was described by Mahatma Gandhi as his "keeper of my conscience".
- He was born in Thorapalli village in present-day Krishnagiri district of Tamil Nadu (then part of the Madras Presidency).
- Rajaji entered public life early, serving on the Salem Municipal Council and later joining **Annie Besant's Home Rule League**.
- During the freedom movement, he **supported the Rowlatt Satyagraha (1919)** and played a key role in spreading the **Non-Cooperation Movement** in Tamil Nadu. He gave up his legal career to fully participate in the national struggle.
- In 1930, he led the **Vedaranyam Salt Satyagraha**, a major civil disobedience campaign in South India inspired by Mahatma Gandhi's Dandi March.
- In 1944, Rajaji **proposed the Rajaji Formula**, which **suggested cooperation between the Indian National Congress and the Muslim League** and recommended a plebiscite on the creation of Pakistan after independence in Muslim-majority regions.
- Rajaji was also an important social reformer. He **supported temple entry for marginalised castes and advocated Dalit upliftment**. As Premier of Madras (1937–39), he supported legislation that made discrimination in employment and access to public facilities punishable.
- After independence, he became the **Governor-General of India** in **1948**, succeeding Lord Mountbatten and becoming the only Indian to hold that office before India became a republic.
- He later served as India's Home Minister (1950–51) and Chief Minister of Madras State (1952–54). In 1954, he was awarded the Bharat Ratna, India's highest civilian honour.
- Rajaji criticised excessive state control in the economy and **founded the Swatantra Party in 1959**, advocating free enterprise and economic liberalism.



Literary Contribution

- Apart from politics, Rajaji was also a noted writer and scholar. His retellings of the Ramayana and Mahabharata became widely popular.
- In 1958, he received the Sahitya Akademi Award for his Tamil retelling of the Ramayana titled "**Chakravarti Thirumagan**."

SAMPRATI (GRANDSON OF ASHOKA)

Context: On the occasion of Mahavir Jayanti (March 31), PM Modi inaugurated the Samrat Samprati Museum in Koba, Gandhinagar.

About Samprati (Ruled c. 230–220 BCE)

- Samprati, a Mauryan ruler, is remembered in Jain traditions as one of the greatest royal patrons of Jainism. His role in Jainism is often compared to Ashoka's role in Buddhism.
- Mentioned mainly in Shvetambara Jain texts such as **Sampratikatha, Parishistaparva, and Prabhavakcharita**. Later texts like **Samprati Nripa Charitra** further expanded his legacy.
- Most accounts state he converted to Jainism under the monk **Suhastin** at Ujjain.
- He sent Jain monks to different regions to propagate teachings. Helped expand Jainism across regions like Gujarat, Maharashtra, Karnataka, Andhra, Tamil Nadu, Malwa, and Rajputana.

THIRUMANGAI ALVAR

Context: The Ashmolean Museum, in Oxford, England, has returned a 16th-century bronze statue of Saint Thirumangai Alvar to the Government of India.

About Thirumangai Alvar

- Thirumangai Alvar was one of the twelve **Alvars** (Tamil poet-saints of **Bhakti movement devoted to Vishnu**) and is generally placed between the 8th and 9th centuries CE.
- He is regarded as the **last among the Alvars** and one of the most prolific contributors to the **Divya Prabandham**, a collection of **4,000 Tamil devotional hymns** central to the **Vaishnava tradition**.
- He was **initially a military leader** who later renounced worldly life and embraced intense devotion (bhakti) to Vishnu.
- He holds the title **Narkavi Perumal**, the mark of an excellent poet, and **Parakala** (Beyond Time).
- His compositions are marked by emotional intensity, poetic richness, and theological depth, and they describe devotion to Vishnu in sacred temples known as **Divya Desams**.
- His most important work is **Periya Tirumoli**, composed of 1,084 hymns. His other works include **Tirunetuntantakam**, **Siriyā Tirumadal**, and **Periya Tirumadal**.



MAHATMA JYOTIBA PHULE

Context: The Government of India is commemorating the 200th Birth Anniversary of Mahatma Jyotiba Phule through year-long celebrations from April 2026 to April 2027.

About Jyotiba Phule (1827-1890)

- He was a pioneering social reformer from Maharashtra. Born on April 11, 1827, into a lower-caste Mali family, he dedicated his life to challenging caste discrimination, promoting women's education, and advocating for the rights of Shudras and Dalits. He married Savitribai, who became his partner in reform efforts.
- He was influenced by Thomas Paine's work *The Rights of Man* and believed that educating women and lower castes was essential to eliminating social evils.
- He was **conferred the title of "Mahatma"** on 11 May 1888 by the Maharashtrian social activist **Vithalrao Krishnaji Vandekar**.



Key Contributions

- **Educational Reforms:** Phule, along with his wife Savitribai Phule, established India's first girls' school in 1848. They later started night schools (1855) in Pune for workers, farmers, and women.
- **Opposed Orthodoxy:** He opposed caste-based oppression, criticised Brahmanical dominance, and supported British interventions as a means to uplift oppressed communities and women.
- **Anti-Caste Movement:** He founded the **Satyashodhak Samaj in 1873** to challenge caste hierarchy. In his work *Gulamgiri*, he compared caste oppression with American slavery. **Deenbandhu**, a Marathi weekly founded by Krishnarao Pandurang Bhalekar in 1877, served as a **platform for the Satyashodhak Samaj**.
- **1857 Revolt Critique:** He viewed the Revolt of 1857 as an attempt by upper castes to restore Brahminical dominance.
- **Economic Reforms:** He advocated compulsory education for lower castes and emphasised economic upliftment to dismantle caste hierarchies.
- **Religious Freedom:** In **Satsar** (The Essence of Truth), he defended the right of Pandita Ramabai to convert to Christianity.
- **Farming Reforms:** In **Shetkaryanche Asud** (Farmer's Whip), he criticised the exploitation of Shudra peasants by the British and Brahmin bureaucratic alliance.
- **Rationalism:** In **Sarvajanik Satya Dharma Pustak**, he advocated a just and equitable society, presenting God as a rational and benevolent creator while rejecting traditional hierarchies.

- **Major Publications:** Tritiya Ratna (1855), Powada: Chatrapati Shivajiraje Bhosle Yancha (1869), Gulamgiri (1873), Shetkarayacha Aasud (1881)

MISCELLANEOUS

UN ALLIANCE OF CIVILIZATION (UNAOC)

Context: Recently, the United States and Israel announced withdrawal from UNAOC.

About United Nations Alliance of Civilizations (UNAOC)

- UNAOC is a UN initiative aimed at **countering extremism by promoting intercultural and interreligious dialogue**, with special focus on easing tensions between the Western and Islamic worlds.
- **Origin:** Proposed in 2005 at the UN General Assembly by Spain and co-sponsored by Turkey. Formally proclaimed in July 2005.
- **UN Recognition:** Mandate endorsed by the UN General Assembly in 2009 and reaffirmed in 2015, establishing UNAOC as an entity within the UN system.
- **HQ:** UN campus in New York.
- The Secretary-General has established a voluntary Trust Fund for UNAOC that supports the UNAOC projects.
- **Composition:** 160 Members of which are 130 UN Member States (**including India**), 1 non-member state, and 29 international organizations

OL CHIKI SCRIPT

Context: Ministry of Culture organised centenary celebrations of the Ol Chiki script, marking 100 years since its creation. The government also released a commemorative coin and postage stamp.

About Ol Chiki Script

- **Ol Chiki is the official script of the Santhali language**, a major tribal language spoken widely in **Jharkhand, Odisha, West Bengal, Assam, and Bihar**. Santhali belongs to the Austroasiatic language family.
- Before the 20th century, Santhali was written using borrowed scripts such as Roman, Bengali, Odia, and Devanagari. However, these scripts were not designed for the language and could not accurately represent its unique sounds and phonetic features.
- To address this limitation, **Pandit Raghunath Murmu developed the Ol Chiki script in 1925 specifically for the Santhali language**. In 1936, he also wrote “High Serena,” the first book published in Ol Chiki.
- **In 2003, Santhali was included in the Eighth Schedule** of the Constitution of India.



BHARAT GI

Context: Bharat GI was launched by DPIIT at the India AI Impact Summit 2026 in New Delhi.

About Bharat GI

- Bharat GI is a national umbrella initiative aimed at **promoting and showcasing India's Geographical Indication (GI) products at the global level**.
- Launched by the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce.
- It aims to promote India's unique products, such as coffee, spices, handicrafts, and textiles.
- Branded as “**A World Exclusive**”, Bharat GI seeks to give these products global recognition, premium positioning, and international visibility, starting with Indian GI coffee.

Key Benefits

- Enhances international recognition of Indian GI products.
- Helps in premium positioning of traditional goods in global markets.
- Expands market access for artisans and farmers.

TAMIL BRAHMI SCRIPT

Context: Researchers have discovered Tamil Brahmi inscriptions in the Valley of the Kings (Egypt), dated between the 1st and 3rd centuries CE.

- These inscriptions mention names of traders such as **Cikai Korran** (Crown Leader), **Kopan, Catan**, and **Kiran**, indicating ancient trade connections.
- The term "**Korran**" also appears in Sangam literature, referring to a Chera king.

About Tamil Brahmi Script

- Tamil Brahmi is a regional adaptation of the Brahmi script, used to write early Tamil inscriptions. It represents one of the earliest writing systems of the Tamil language.
- **Time Period:** It was in use roughly between 300 BCE and 100 CE.
- **Literary Association:** One of the most notable works associated with early Tamil tradition is the Thirukkural.

SPORTS IN NEWS

DOPING

Context: According to the Annual Report 2024 published by World Anti-Doping Agency (WADA), India recorded the highest number of doping violations globally for the third consecutive year. In terms of absolute numbers, India is followed by France and Italy in reported doping violations.

What is Doping?

- It refers to **the use of prohibited substances or methods**, also known as performance-enhancing drugs (PEDs), to unfairly improve athletic performance and gain an advantage over competitors.

About World Anti-Doping Agency (WADA)

- **Established in 1999**, following the **First World Conference on Doping in Sport** convened by the **International Olympic Committee (IOC)** in Lausanne, Switzerland.
- The conference led to the **Lausanne Declaration on Doping in Sport**, which called for the creation of an independent international anti-doping agency, **operational from the 2000 Olympic Games**.
- It is an **independent international organisation**, jointly composed and **funded by the Sport Movement and governments worldwide**.
- **Function:** To lead a coordinated global movement for doping-free sport.
- **Key Tool:** The Anti-Doping Administration and Management System (ADAMS), which coordinates and streamlines global anti-doping activities.
- **Headquarters:** Montreal, Canada
- India is one of the founder members of the World Anti-Doping Agency (WADA).

About National Anti-Doping Agency (NADA) India

- NADA is India's national organisation responsible for promoting, coordinating, and monitoring the doping control program in sports in all its forms.
- It was constituted under the **Societies Registration Act** as an **autonomous body** under the **Union Sports Ministry** in 2005. National Anti-Doping Act, 2022 converted NADA from a registered society into a **statutory body**.
- It **implements the anti-doping programme in India**, in line with the **World Anti-doping Code 2021**.

FIDE WORLD RAPID CHESS CHAMPIONSHIP 2025

Context: Indian Grandmasters **Koneru Humpy** and **Arjun Erigaisi** secured bronze medals at the 2025 FIDE World Rapid Chess Championship in Doha, Qatar on December 26-30.

- The championship featured rapid time controls in a 13-round Swiss system format, drawing elite players worldwide.
- **Arjun Erigaisi** of India claimed bronze with 9.5/13, marking a historic medal for an Indian male after Viswanathan Anand.
- **Koneru Humpy** of India secured bronze; this adds to her 2019 and 2024 wins.

KHELO INDIA TRIBAL GAMES

Context: The inaugural Khelo India Tribal Games were held as **India's first national multi-sport** event dedicated to tribal athletes, featuring 3,800+ athletes from 30 states and UTs

- The Games were hosted in **Chhattisgarh** across Raipur, Jagdalpur, and Surguja.
- The Games featured seven medal sports—athletics, football, hockey, weightlifting, archery, swimming, and wrestling—along with demonstration events such as mallakhamb and kabaddi, reflecting both competitive sport and India's indigenous sporting traditions.

- The official mascot of the Games is **Morveer**. Derived from the Chhattisgarhi words 'Mor' (our own) and 'Veer' (bravery), it symbolises pride, spirit, and the identity of India's tribal communities.
- In the overall medal tally, **Karnataka emerged as the overall champion** with 23 gold, 8 silver and 7 bronze medals. Odisha finished second with 21 gold, 15 silver and 21 bronze medals.

About Khelo India – National Programme for Development of Sports

- Launched in 2016-17, the Khelo India **aims to promote mass participation and sporting excellence in both rural and urban areas.**
- It is a **Central Sector Scheme** implemented by the Ministry of Youth Affairs and Sports.
- Through a combination of competitions, training, and financial assistance, it aims to create a more structured and accessible sports ecosystem.
- The revised Khelo India Scheme (2021–22 to 2025–26) comprises the following components:
 - Creation and upgradation of sports infrastructure
 - Sports competitions and talent development
 - Khelo India Centres and Sports Academies
 - Fit India Movement
 - Promotion of inclusiveness through sports
- **Khelo India Games include:** Khelo India Youth Games, Khelo India University Games, Khelo India Beach Games, Khelo India Para Games, Khelo India Winter Games, Khelo India Water Sports Festival

AWARDS & PERSONS IN NEWS

NATIONAL ENERGY CONSERVATION AWARD (NECA)

Context: President Murmu presented the 35th NECA on December 14, 2025, in New Delhi.

About National Energy Conservation Award (NECA)

- Instituted in 1991 by the Bureau of Energy Efficiency (BEE) under the Ministry of Power, it promotes reduced energy use while sustaining productivity, aligning with national goals like lower emissions and sustainability.
- It honors top performers annually on **National Energy Conservation Day**, December 14.

Basis of Award

- Conferred on the basis of the **State Energy Efficiency Index (SEEI)**.
- **SEEI** is a national assessment framework developed by BEE in collaboration with the **Alliance for an Energy Efficient Economy (AEEE)**.
- It evaluates States/UTs across key sectors: Buildings, Industry, Transport, Municipal services

JEEVAN RAKSHA PADAK AWARDS

Context: The President has approved the conferment of the Jeevan Raksha Padak Series of Awards–2025 on 30 individuals.

- The awards are given to **individuals for acts of bravery and meritorious service in saving the life of another person**.
- The awards are conferred in three categories: **Sarvottam Jeevan Raksha Padak, Uttam Jeevan Raksha Padak, and Jeevan Raksha Padak**.
- Persons from all walks of life are eligible, and the awards may also be conferred posthumously.
- Each award includes a medal, a **certificate signed by the Union Home Minister**, and a lump-sum monetary allowance.

FRANZ EDELMAN AWARD

Context: The Department of Food and Public Distribution (DFPD) is among the six finalists for the prestigious 2026 Franz Edelman Award for its Anna Chakra initiative.

About Anna Chakra Initiative

- Anna Chakra is an operations research–based decision-support solution that strengthens India's Public Distribution System by optimising state-specific logistics.
- It has been developed in partnership with the United Nations World Food Programme (WFP) in India and IIT Delhi.

Franz Edelman Award

- It is considered one of the most prestigious honours in the field of operations research and advanced analytics.
- Often described as the “**Nobel Prize**” of operations research and analytics, it recognises impactful, high-value applications of advanced analytics worldwide.
- It is presented annually by the **Institute for Operations Research and the Management Sciences (INFORMS)**.

INDIRA GANDHI PEACE PRIZE 2025

- **Mozambican** rights activist and humanitarian **Graça Machel** has been selected for the Indira Gandhi Prize for Peace, Disarmament and Development for 2025.
- She has been honoured for her path-breaking work in the areas of education, health and nutrition, economic empowerment, and humanitarian action, particularly for advancing the rights and welfare of women and children.

GLOBAL TEACHER PRIZE 2026

Context: Indian teacher Rouble Nagi has won the Global Teacher Prize 2026, receiving the one-million-dollar award at the World Government Summit in Dubai.

About Rouble Nagi

- Through her **Rouble Nagi Art Foundation**, she has established more than 800 educational centers across India, covering over 100 low-income communities and villages.
- These centres help **out-of-school children** begin structured learning and return to formal education, while also providing remedial support, psychosocial assistance, and creative activities for enrolled students.
- A central feature of her approach is the **concept of 'living walls of learning,'** where abandoned walls are transformed into open classrooms.

World Governments Summit (WGS)

- ✓ WGS is an annual global platform held in **Dubai**, UAE, dedicated to shaping the future of governance, innovation, and sustainable development.
- ✓ Established in 2013, it convenes world leaders, ministers, policymakers, and experts to address pressing global challenges.
- ✓ Theme 2026: "Shaping Future Governments"

About Global Teacher Prize

- Established in **2014**, it is an **annual award presented by GEMS Education**.
- Often referred to as the **"Nobel Prize" for teaching**, it was created by the **Varkey Foundation** in collaboration with **UNESCO** to raise the global status of teachers.
- Selection is based on criteria such as innovation in teaching, impact on students and communities, leadership, and contribution to the teaching profession.

BAFTA AWARDS

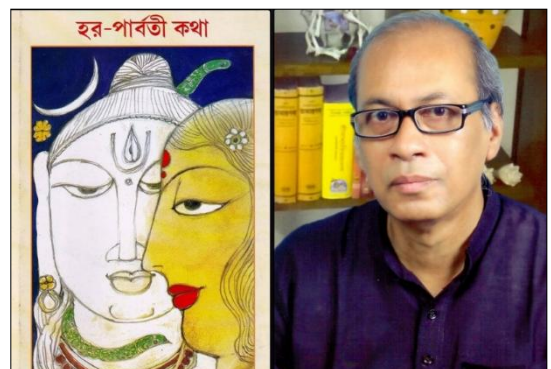
Context: The Manipuri film **Boong** won the prestigious British Academy of Film and Television Arts (BAFTA) Award for Best Children's & Family Film in London.

- The BAFTA Awards are **prestigious annual honours presented by the British Academy of Film and Television Arts (BAFTA)** to recognise excellence in film, television, and related creative arts.
- They are widely regarded as the British equivalent of the Oscars and play an important role in shaping global standards in cinema and television

SARASWATI SAMMAN

Context: The Bengali novel **Hara Parbati Katha** by **Ramkumar Mukhopadhyay** has been selected for the Saraswati Samman, 2025.

- The Saraswati Samman is an **annual award presented for an outstanding literary work written in any Indian language** (included in Eighth Schedule to the Constitution) **by an Indian citizen** and published within the last 10 years.
- It was instituted by K. K. **Birla Foundation in 1991**.
- The awardee receives ₹15 lakh, along with a citation and a plaque.



JNANPITH AWARD

Context: R. Vairamuthu has been selected for the Jnanpith Award 2025.

- He is only the third Tamil litterateur to receive this award, after Akilan (1975) and Jayakanthan (2002).

- He is the first recipient to be honoured for Tamil poetry; the earlier awardees were recognised for their prose works.

About Jnanpith Award

- Instituted in 1961, the Jnanpith Award is the **highest literary honour in India**, presented **annually** by the **Bharatiya Jnanpith**. It has been **awarded since 1965 for outstanding contributions to literature**.
- It is **conferred only on Indian citizens writing in languages listed in the Eighth Schedule of the Constitution**, as well as in **English**, and is **not awarded posthumously**.
- The award carries a cash prize of ₹11 lakh, along with a statue of Vagdevi and a citation.
- It is for outstanding/lifetime contributions to literature rather than a single work (though a major work often forms the basis of the citation).
- The first recipient was G. Sankara Kurup, who received the award in 1965 for his poetry collection Odakkuzhal (The Bamboo Flute).



SAHITYA AKADEMI AWARDS

Context: The Sahitya Akademi has announced its annual Sahitya Akademi Awards for 2025. Among the awardees are Navtej Sarna, honoured in English for his novel Crimson Spring, and Mamta Kalia for her memoir Jeete Jee Allahabad.

About Sahitya Akademi Awards

- Established in **1954**, the award is a **major literary honour in India**, **conferred annually on writers of the most outstanding books of literary merit** published in any of the 24 Indian languages (22 languages listed in Schedule VIII + English and Rajasthani)
- They honor books published in the previous five years across categories like poetry, novels, and essays. They were first given in 1955.
- Considered the second-highest literary honor in India after the Jnanpith Award, it includes a cash prize of ₹1,00,000, a copper plaque, and a shawl



Sahitya Akademi

- The Sahitya Akademi, India's National Academy of Letters, is the central institution for literary dialogue, publication, and promotion in the country.
- Functioning under the Ministry of Culture, it is an autonomous organisation.
- It was inaugurated in 1954 and registered as a society in 1956 under the Societies Registration Act, 1860.

Other Awards by Sahitya Akademi

- **Translation Prize:** Instituted in 1989, it recognises outstanding translations into 24 languages; carries ₹50,000 and promotes cross-linguistic literary exchange.
- **Bhasha Samman:** Launched in 1996, it honours contributions to non-recognised or lesser-promoted languages; awarded to 3–4 recipients with ₹1,00,000 and a plaque.
- **Bal Sahitya Puraskar:** Started in 2010, it recognises children's literature in 24 languages; carries ₹50,000 and a copper plaque to encourage quality writing for young readers.
- **Yuva Puraskar:** Introduced in 2011, it honours writers below 35 for original works; carries ₹50,000 and a plaque to support emerging talent.

MAPS: PLACES IN NEWS

INTERNATIONAL PLACES IN NEWS



1	Popocatepetl	• Active stratovolcano in Central Mexico near the México–Puebla border. Name means “<i>Smoking Mountain</i>.” • Scientists recently obtained the first 3D images from inside. • Eruptions recorded since 1519; dangerous because many people live nearby.
2	Rafah Border Crossing	• Main crossing between Gaza and Egypt and the key humanitarian route from Sinai. • About to reopen after roughly two years closed. • Egypt controls its side; control on the Gaza side has varied. • Other Gaza crossings: Erez (passengers, north) and Kerem Shalom (goods, south).
3	Mount Elbrus	• Highest peak in Russia and Europe (5,642 m). • A dormant, double-summit stratovolcano in the Caucasus. • An artificially triggered avalanche was filmed here recently. • It is part of Prielbrusye National Park and one of the Seven Summits. • Glaciers/Rivers: Bolshoi Azau and Irik glaciers; source of the Baksan, Malka, and Kuban rivers.
4	Socotra Island	• Yemeni island in the north-western Indian Ocean, south of the Arabian Peninsula and east of the Horn of Africa with rugged highlands (Hajhir Mountains). • Famous for very high endemic biodiversity (many plant and reptile species found nowhere else), called the “Galápagos of the Indian Ocean.” It is a UNESCO World Heritage Site (2008). • Recently, tourists were stranded after mainland clashes grounded flights.

5	Mount Bur Ni Telong	- Indonesian authorities recently raised the alert for Mount Bur Ni Telong volcano due to increased activity, including numerous earthquakes. Active stratovolcano, located in Aceh Province, northern Sumatra (Indonesia). Geology: Conical volcano on the southern flank of the Bur Ni Geureudong volcanic complex. Activity: Last confirmed eruption in 1937; under monitoring.
6	Pratas Islands (Dongsha Islands)	- A Chinese reconnaissance drone briefly overflowed Taiwan-controlled Pratas Islands in the northern South China Sea, a move condemned by Taiwan's defence ministry. Location: Northern South China Sea; southwest of Kaohsiung (Taiwan) and southeast of Hong Kong. Type: Circular coral atoll; Dongsha Island is the only emergent land. Strategic importance: Located on key Pacific–Indian Ocean sea routes. Control & Claim: Controlled by Taiwan; claimed by China (PRC). No civilians on island; Taiwanese marines stationed.
7	Mayon Volcano	- Effusive eruptions have been witnessed from Mayon volcano for 23 consecutive days, and authorities have warned residents to stay away. Location: Albay province on Luzon Island, Philippines. Type: Active stratovolcano; part of the Pacific Ring of Fire. Status: Most active volcano in the Philippines. Eruptions: Recorded since 1616.
8	Muna Island	- A painted human hand outline in a cave on this Island is the world's oldest known rock art, dating to at least 67,800 years ago. Location: Southeast Sulawesi, Indonesia; west of Buton Island. People: Muna (Wuna) tribe. Economy: Agriculture, fishing, local crafts. Key sites: Liangkobori Cave (prehistoric paintings); Napabale Lake (sea tunnel).
9	Chatham Islands	- A massive phytoplankton bloom, visible via satellites, recently surrounded the Chatham Islands during the austral summer. Location: Island group in the South Pacific Ocean — New Zealand's easternmost territory. Composition: 10 islands; mainly volcanic. Inhabited: Only Chatham Island and Pitt Island are inhabited. It is the first inhabited place to see sunrise.
10	North Island	- A magnitude 5.5 earthquake recently struck the North Island region of New Zealand. Location: Smaller of the two main islands of New Zealand in the South Pacific Ocean; separated from South Island by Cook Strait. - Features a central mountain range and Mount Ruapehu (2,797 m). Protected area: Tongariro National Park (UNESCO WHS, 1990). Major cities: Wellington and Auckland.



1	Hudson River	- The Hudson River in the United States has been in the news after New York and New Jersey sued the Trump administration for freezing \$16 billion meant for a new rail tunnel under the river. - The river flows through New York State and forms part of the boundary between New York and New Jersey. - It originates in the Adirondack Mountains near Mount Marcy, with its headstream at Lake Tear of the Clouds. - The lower stretch is a tidal estuary formed by glacial activity and sea-level rise.
2	El Chichón Volcano	- The volcano in southern Mexico has shown unusual changes within its crater, raising concerns among volcanologists. - It is located in north-central Chiapas and is classified as a stratovolcano (built from layers of lava, ash, and volcanic debris). - The volcano contains lava domes and a surrounding ash ring called a tuff ring. - It lies within the Chiapanecan volcanic arc, positioned between the Trans-Mexican Volcanic Belt and the Central American Volcanic Arc.
3	Mount Aconcagua	- India's Defence Minister Rajnath Singh flagged off a joint mountaineering expedition to Mount Aconcagua, Argentina. - Located near the Chilean border, it is part of the Andes mountain system. - Aconcagua is the highest mountain in South America and one of the famous "Seven Summits." - It formed due to the subduction of the Nazca Plate beneath the South American Plate. Though volcanic in origin, it is not currently an active volcano.
4	Thwaites Glacier	- Thwaites Glacier in West Antarctica is melting rapidly due to climate change driven by human activities. - Often called the "Doomsday Glacier," it is one of the most important glaciers affecting global sea levels.

		- Scientists estimate that it alone contributes around 4 percent of the annual rise in global sea level. - If the glacier collapses completely, it could destabilise the wider West Antarctic Ice Sheet, potentially causing a significant and long-term increase in sea levels worldwide.
5	Phoenicia	Phoenicia was an ancient civilisation located along the eastern Mediterranean coast, largely corresponding to modern-day Lebanon. It returned to the news after archaeologists discovered an Iron Age scarab amulet from Phoenicia on the island of Sardinia. The Phoenicians were famous seafarers and traders whose commercial network extended across the Mediterranean, reaching as far as Spain and possibly the British Isles. They also developed a 22-letter alphabet that later influenced the Greek and Latin writing systems.
6	Lake Urmia	- Lake Urmia in north-western Iran has recently drawn attention after the government attempted cloud seeding in its basin following communal prayers for rain in Tehran. - It is one of the largest inland salt lakes in the world and is an endorheic lake, meaning it has no outlet to the sea. - Its waters are highly saline, roughly one-quarter as salty as the Dead Sea. The lake is recognised as a Ramsar Wetland and a UNESCO Man and Biosphere Reserve.
7	Charax Spasinou	- Charax Spasinou, an ancient city buried in the deserts of Iraq, has recently been rediscovered by archaeologists. - The city was located near the confluence of the Tigris and Choaspes (Karun) rivers close to the modern Iraq–Iran border, near the head of the Persian Gulf. - It was likely founded around 324 BCE by Alexander the Great and later rebuilt by the ruler Hyspaosines. - The city served as the capital of the Characene kingdom and an important trade port linking Mesopotamia with India.
8	Taftan Volcano	- Taftan Volcano in southeastern Iran has shown signs of ground uplift, rising about 3.5 inches in ten months. It lies near the Iran–Pakistan border and is the tallest peak in southeastern Iran. - Taftan is a stratovolcano with two main summits known as Narkuh and Matherkuh. It forms part of the Makran volcanic arc, created by the subduction of the Arabian Plate beneath the Eurasian Plate. - It is the only active volcano in this arc, though no historical eruptions are recorded.
9	Kordofan Region	- The Kordofan region is located in central-southern Sudan between the Darfur region in the west and the White Nile valley in the east. - It is divided into three administrative units: North Kordofan, South Kordofan, and West Kordofan. - The northern part has desert landscapes with sandy soils and acacia vegetation, while the south contains clay plains and the Nuba Mountains. - The region has strategic importance due to oil resources and its proximity to South Sudan, making it prone to conflict.
10	Takeshima	Also known as Dokdo in South Korea and the Liancourt Rocks internationally, is a group of disputed islands in the Sea of Japan (East Sea).

- The issue resurfaced after South Korea protested a Japanese government-backed “Takeshima Day” event.
- The islands lie roughly midway between Japan and the Korean Peninsula.
- South Korea currently administers the islands and maintains a police presence, but Japan continues to claim sovereignty, making it a long-standing territorial dispute between the two countries.



1	Devon Island	• It is located in the Canadian High Arctic, is the world’s largest uninhabited island. NASA uses it to simulate Mars due to its barren, cold polar desert conditions, with temperatures dropping to -50°C. • The island features the Haughton Crater, formed by a meteor impact, making it ideal for testing space exploration technologies.
2	Litani River	• Lebanon’s longest river, originates near Baalbek and flows through the fertile Bekaa Valley before entering the Mediterranean Sea. It supports irrigation, hydropower, and water supply. • Recently, Israeli airstrikes destroyed the Qasmiyeh Bridge over the river.
3	Golestan Palace	• Located in Tehran, Iran, is a UNESCO World Heritage Site representing the Qajar dynasty (1789–1925). • It blends traditional Persian architecture with Western influences and features halls like the Mirror Hall and Marble Throne. • Built around landscaped gardens, it houses the Muraqqa-e Gulshan.
4	South Pars Gas Field	• It is a Gas Field in the Persian Gulf is the world’s largest natural gas reserve, shared between Iran (South Pars) and Qatar (North Field). • Covering about 9,700 sq km, it holds vast reserves and supplies most of Iran’s domestic energy needs.
5	Qeshm Island	• Located in the Persian Gulf near the Strait of Hormuz, is the largest island in the region, covering about 1,491 sq km.

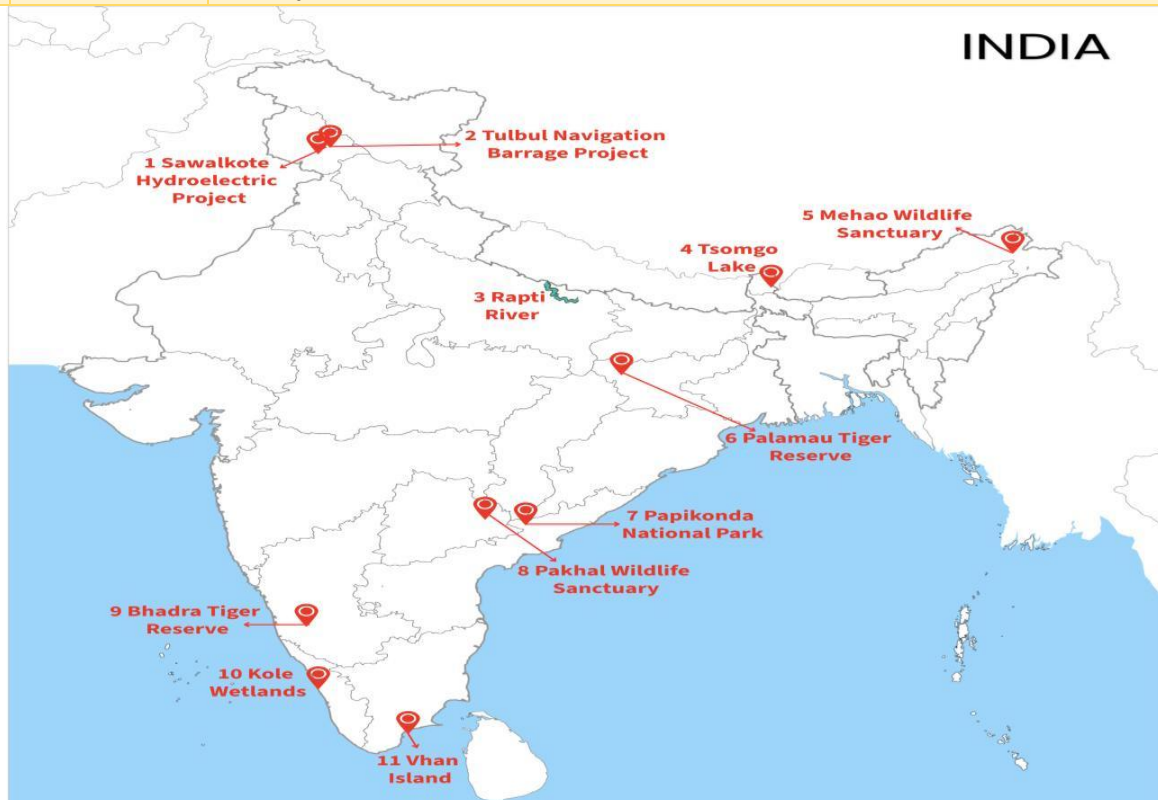
		- It lies parallel to Iran's coast, separated by the Clarence Strait. - Recently, it gained attention after allegations of attacks on a desalination plant.
6	Ras Laffan	- It is Industrial City in northeast Qatar is the world's largest liquefied natural gas (LNG) export hub, contributing about 20% of global LNG supply. - Linked to the North Field gas reserve, it hosts LNG plants, refineries, and storage facilities.
7	Fujairah	- Located on the Gulf of Oman in the UAE, is a major global oil storage and bunkering hub outside the Strait of Hormuz. - It is the world's fourth-largest ship-refuelling port and handles about 1.7 million barrels of oil daily. - Its connectivity via the Abu Dhabi Crude Oil Pipeline enhances its role in global energy security.
8	Diego Garcia	- Located in the Chagos Archipelago in the central Indian Ocean, is a key military base jointly operated by the US and UK. - It serves as a strategic bomber base in the Indo-Pacific. - Though sovereignty was transferred to Mauritius in 2025, it remains leased for military use.
9	Tonga	- It is a Polynesian island nation in the South Pacific Ocean, consisting of around 169 islands grouped into Tongatapu, Ha'apai, and Vava'u. - Its capital is Nuku'alofa. Recently, a 7.6 magnitude earthquake struck near the region, highlighting its vulnerability to seismic activity due to its location along tectonic plate boundaries.
10	South Shetland Islands	- It was discovered in 1819, is a volcanic archipelago near Antarctica with about 80% ice cover. They host seasonal research stations but no permanent population. - Deception Island, a flooded caldera, is a key feature. A recent 6.7 magnitude earthquake in the region highlights its tectonic and volcanic activity.

NATIONAL PLACES IN NEWS



1	Shaksgam Valley	- High-altitude and sparsely populated region in the Trans-Karakoram Tract. India recently objected to China's infrastructure projects here, asserting it as Indian territory. Bordered by Xinjiang (north), Pakistan-occupied Gilgit-Baltistan (south and west), and the Siachen area (east).
2	Chatergala Pass	- The mountain pass at about 10,500 ft on the Bhaderwah–Bani axis in the Jammu region. - Connectivity was restored by BRO under Project Sampark after heavy snowfall. - Located in the Pir Panjal Range with alpine meadows and conifer forests.
3	Kaziranga National Park	- PM Modi performed the Bhoomi Pujan of the Kaziranga Elevated Corridor Project worth over ₹6,950 crore in Kaliabor, Assam. - Located between the Brahmaputra River and Karbi Hills. UNESCO World Heritage Site (1985). - It has the largest undisturbed Brahmaputra floodplain ecosystem. Habitat includes alluvial plains, tall elephant grass, marshes, and beels. Rivers: Diphlu (flows through) and Moradifalu (south), both tributaries of the Brahmaputra. Fauna: the world's largest population of one-horned rhinoceros, along with tiger, elephant, wild buffalo, and swamp deer.
4	Kumbhalgarh Wildlife Sanctuary	- The MoEFCC declared it an Eco-Sensitive Zone in the Aravalli range. - Spread over 610.5 sq km across Rajsamand, Udaipur, and Pali districts of Rajasthan. Covers four ranges of the Aravallis: Kumbhalgarh, Sadri, Desuri, and Bokhada. Grey junglefowl is common here.
5	Ratapani Tiger Reserve	- The reserve will be renamed after Dr Vishnu Shridhar Wakankar, a Padma Shri awardee and noted archaeologist. - Located in Raisen and Sehore districts of Madhya Pradesh across the Vindhya hills; north of the Narmada River with the Kolar River forming the western boundary. Forest type is dry and moist deciduous with teak dominant (about 55%). Bhimbetka Rock Shelters (UNESCO World Heritage Site) lie within the sanctuary.
6	Sagar Island	- The West Bengal CM laid the foundation stone of a 5-km bridge over the Muriganga River to connect the island to the mainland. Located in the Ganga delta about 100 km south of Kolkata. - Also called Gangasagar or Sagardwip. Situated at the Hooghly–Bay of Bengal confluence and separated from the mainland by the Hooghly arm. - Hosts the Ganga Sagar Fair in mid-January, the second largest fair after Kumbh Mela. Kapil Muni Temple is an important religious site.
7	Vadhavan Port	- Around 20,000 residents protested against the proposed port citing environmental concerns. Located at Dahanu in Palghar district, Maharashtra, is planned as an all-weather greenfield deep-draft major port. - Developed by Vadhavan Port Project Limited (a special purpose vehicle of Jawaharlal Nehru Port Authority with 74% share and Maharashtra Maritime Board with 26%).

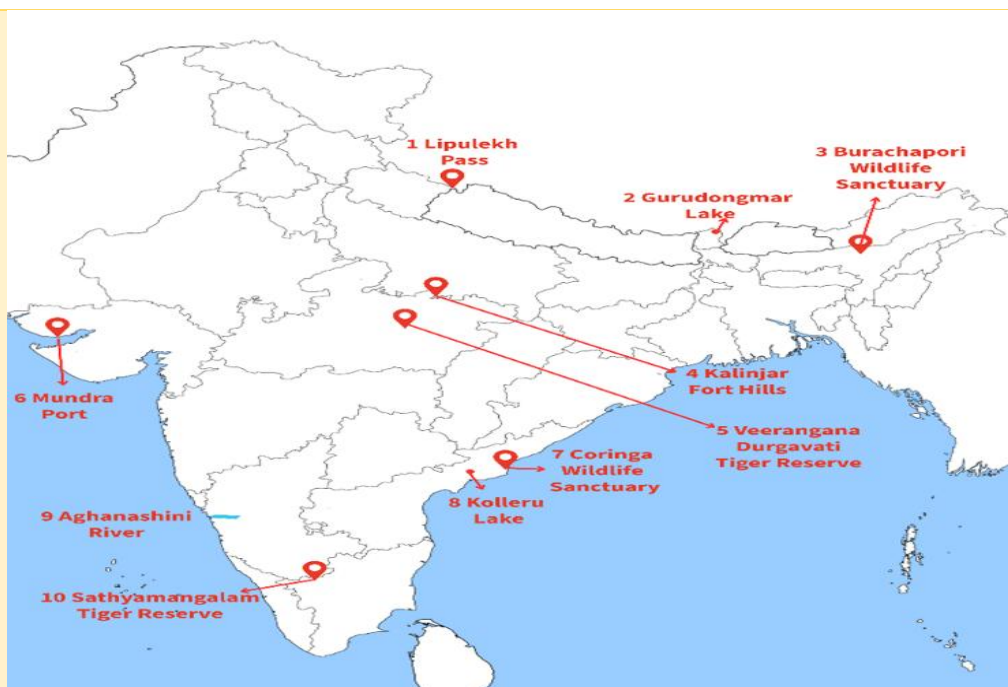
		Completion is planned in phases with full completion by 2034.
8	Tadoba Andhari Tiger Reserve	- The reserve undertook sterilisation and vaccination of stray dogs. Located in Chandrapur district, Maharashtra. - Known for one of India's highest tiger densities (about 90+ tigers). - Vegetation is dry deciduous forest with teak, bamboo, mahua, palash, and grasslands.
9	Buddhist Diamond Triangle	- UNESCO has added the Diamond Triangle of Ratnagiri, Udayagiri, and Lalitgiri to India's tentative list for World Heritage status. These sites lie in the Assia hill range of Odisha between the Brahmani and Birupa rivers. - Lalitgiri (red hill) is one of the earliest Buddhist centres in eastern India, starting as a Theravada site and later including Mahayana and Vajrayana traditions. - Udayagiri (hill of the rising sun) was a major Mahayana and later Vajrayana monastic hub with large monasteries, chaityagriha architecture, stupas, and sculptures. - Ratnagiri (hill of precious gems) flourished under the Bhaumakara dynasty as a leading Vajrayana centre.
10	Shettihalli Wildlife Sanctuary	- Amid controversy over a proposed reduction of its boundaries, the State Forest Minister visited the sanctuary. - Located in the Western Ghats in Shivamogga district, Karnataka. - Rivers include Tunga and Bhadra, with the Tunga Anicut Dam inside. - Vegetation includes tropical evergreen and semi-evergreen forests, and dry and moist deciduous forests in the east and central parts.



1	Sawalkote Hydro-	The Project in Jammu and Kashmir has gained attention as India has begun work on it after the suspension of the Indus Waters Treaty.
---	-------------------------	---

	electric Project	• Located on the Chenab River in Ramban district. Designed as a run-of-the-river hydropower project, meaning it generates electricity using the natural flow of the river without large storage reservoirs. • With an installed capacity of about 1,856 MW, it is expected to be the largest hydroelectric project in Jammu and Kashmir.
2	Tulbul Navigation Barrage Project	• Also known as the Wular Barrage Project, is being reconsidered by the Jammu and Kashmir government. • Work originally began in 1984 but was stopped after Pakistan raised objections under the Indus Waters Treaty. • The project proposes a lock-and-control structure on the Jhelum River where it meets Wular Lake. It aims to regulate water flow by storing around 30,000 acre-feet of water during high discharge periods to maintain navigable water levels throughout the year.
3	Rapti River	• It has been in the news after the National Green Tribunal directed the Uttar Pradesh government to restore the status of its tributary, Suav, from “drain” to “river” in official records. • The Rapti is a major left-bank tributary of the Ghaghara River and was historically known as Iravati. • It originates near Rukumkot in Nepal’s Mahabharat range of the Lesser Himalayas and flows through Nepal before entering eastern Uttar Pradesh. Important tributaries include Burhi Rapti and Rohini.
4	Tsomo Lake	• Tsomgo Lake in East Sikkim recently came into the news after 2,700 tourists were rescued following heavy snowfall near the lake. • It is a high-altitude glacial lake formed from melting snow and ice. The surrounding area supports alpine vegetation such as rhododendron, primula, and poppy flowers. • The lake holds religious significance for local communities, and Buddhist monks traditionally observe seasonal colour changes in the water, which they interpret as signs for predicting future events.
5	Mehao Wildlife Sanctuary	• Located in the Lower Dibang Valley district (Arunachal Pradesh), the sanctuary is named after the nearby Mehao Lake, which forms part of its core zone. • The area contains dense forests ranging from tropical evergreen to temperate conifer types. Several streams such as Ashupani, Deopani, Enjopan, Diphu, and Jowe flow through the sanctuary.
6	Palamau Tiger Reserve	• The Reserve in Jharkhand launched the “Vanjeevi Didi” initiative to train educated women from nearby villages to act as conservation ambassadors. • The reserve lies on the Chhotanagpur Plateau and includes the famous Betla National Park. It was among the first ten reserves selected under Project Tiger in 1973. • Historically, one of the earliest tiger population counts using the pugmark method was conducted here in 1932 by forest officer J.W. Nicholson.
7	Papikonda National Park	• A tiger named “Explorer” was reintroduced into the wild as part of Operation Stripes in Papikonda NP. • The park is located along the Godavari River across the East and West Godavari districts (Andhra Pradesh). • It includes prominent peaks such as Devara Konda and Verala Konda.

		Recognised as an Important Bird and Biodiversity Area by BirdLife International, the park is also home to the indigenous dwarf goat breed known as “Kanchu mekha.”
8	Pakhal Wildlife Sanctuary	- The sanctuary recently drew attention after researchers discovered a new species of flowering plant named <i>Dicliptera pakhalica</i>. - It is located in Warangal district of Telangana and surrounds the historic Pakhal Lake, a man-made lake built in 1213 CE by Kakatiya ruler Ganapati Deva.
9	Bhadra Tiger Reserve	- Bhadra Tiger Reserve in Karnataka lies in the Western Ghats across Chikkamagaluru and Shivamogga districts. - It became the 25th reserve under Project Tiger in 1998 and is also designated as an Elephant Reserve. - The landscape is saucer-shaped and drained by the Bhadra River, which supports the region’s rich forest ecosystems.
10	Kole Wetlands	- The Kole Wetlands of Kerala were recently studied by scientists who recorded twelve species of pygmy grasshoppers in this ecosystem. - Located in the districts of Thrissur and Malappuram, the wetlands are low-lying floodplains that remain submerged during the monsoon. - Water is later drained through bunds to cultivate paddy, a practice followed for nearly 300 years. The wetlands are recognised as a Ramsar Site and an Important Bird Area.
11	Vaan Island	- Vaan Island is one of the islands in the Gulf of Mannar Marine Biosphere Reserve near Tuticorin in Tamil Nadu. - The island had severely shrunk due to coral mining, reef degradation, and sea-level rise. - A restoration project using artificial reef modules since 2015 has helped increase its area and improved marine biodiversity and livelihoods.

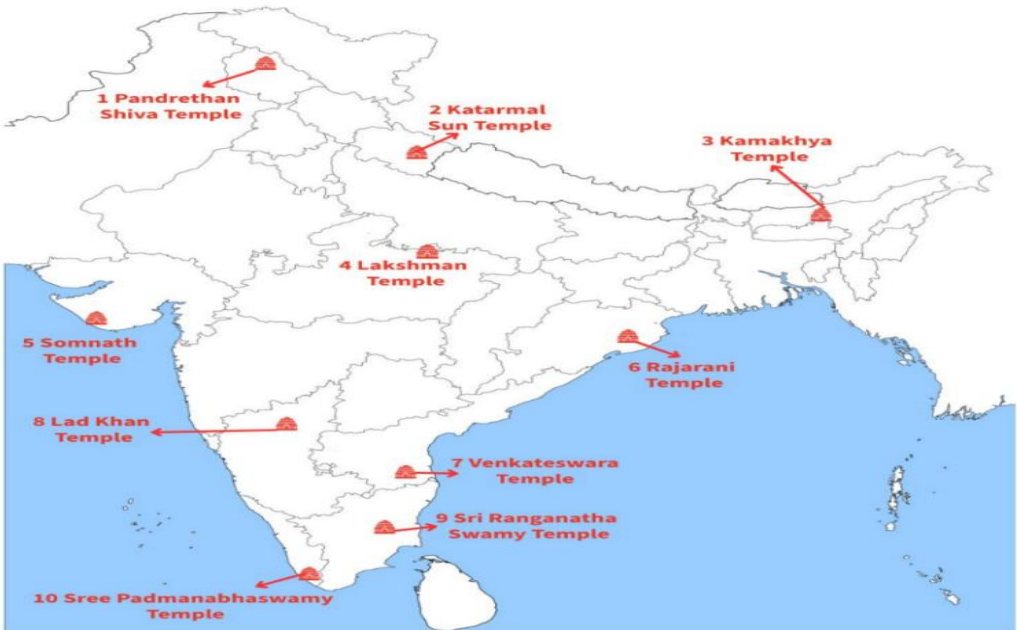


1	Lipulekh Pass	Located in Uttarakhand's Pithoragarh district near the India–Nepal–China trijunction, is a high-altitude mountain pass at about 5,334 m.
---	----------------------	--

		- It connects India with Tibet (China) and serves as an important trade route since 1992. Cross-border trade is set to resume in June 2026. - It is also a key route for the Kailash Mansarovar Yatra pilgrimage.
2	Gurudongmar Lake	- Situated in North Sikkim near the Tibet border at around 5,430 m, is among the world's highest lakes. - Tourism is reviving after disruption caused by the South Lhonak Lake glacial lake outburst flood. The glacier-fed lake is part of the Teesta basin and holds religious significance for Buddhists, Sikhs, and Hindus. - Notably, parts of the lake remain unfrozen even in winter.
3	Burachapori Wildlife Sanctuary	- Located on the southern bank of the Brahmaputra in Assam's Sonitpur, it is part of the Laokhowa–Burachapori ecosystem. - The Assam government plans to create a new Reserved Forest nearby to strengthen conservation. - The sanctuary features alluvial grasslands, wetlands, and forests under a sub-tropical monsoon climate, supporting diverse wildlife and ecological balance.
4	Kalinjar Fort Hills	- The hill region around Kalinjar Fort in Uttar Pradesh's Banda district has been declared a National Geo-Heritage Site by the Geological Survey of India. - Dating back to the Gupta period (4th–6th century CE), the site features a historic hill fort with temples, stepwells, and the famous Neelkanth Temple.
5	Veerangana Durgavati Tiger Reserve (Madhya Pradesh)	- It is the state's largest tiger reserve, spans Sagar, Damoh, and Narsinghpur districts. - Formed by combining Nauradehi and Durgavati Wildlife Sanctuaries, it lies across the Narmada and Ganga basins. - Named after Gond queen Rani Durgavati, it features dry deciduous forests and is set to become India's third site for cheetah reintroduction.
6	Mundra Port	- It is located on the Gulf of Kutch in Gujarat, is India's largest private and container port operated by Adani Ports. - It is an all-weather port with Special Economic Zone (SEZ) status and strong rail connectivity. - Recently, it received the Indian-flagged tanker 'Jag Laadki' carrying crude oil amid West Asia tensions.
7	Coringa Wildlife Sanctuary	- It is located in Andhra Pradesh near the Godavari estuary, and is known for its rich mangrove ecosystem. - Recently, authorities conserved around 20,000 Olive Ridley turtle eggs on Hope Island. - The sanctuary plays a crucial role in coastal biodiversity conservation, supporting marine life, bird species, and serving as an important nesting ground for endangered turtles.
8	Kolleru Lake (Andhra Pradesh)	- It is located between the Krishna and Godavari deltas, is a shallow freshwater lake that acts as a natural flood buffer. - It receives inflows from rivers like Budameru and Tammileru and drains into the Bay of Bengal. It is a wildlife sanctuary and a Ramsar wetland of international importance.

9	Aghanashini River (Karnataka)	- It originates in the Western Ghats near Sirsi and flows westward into the Arabian Sea at Tadri. Known for its pristine condition, it has not been heavily dammed. - The river supports waterfalls like Unchalli Falls and hosts a biodiverse estuary designated as a Ramsar site.
10	Sathyamangalam Tiger Reserve (Tamil Nadu)	- It lies at the junction of the Eastern and Western Ghats and forms part of the Nilgiri Biosphere Reserve. It connects with major reserves like Bandipur and Mudumalai, creating an important wildlife corridor. - The reserve supports rivers such as Bhavani and Moyar and is home to indigenous tribes like the Irula and Kurumba.

IMPORTANT TEMPLES OF INDIA

		
1	Pandrethan Shiva Temple	- Located near Srinagar, Jammu & Kashmir. Built around the 8th–10th century CE by Meru, a minister of King Partha during the Utpala dynasty period. Designed in Kashmiri Nagara style. - It is a square stone temple built over a natural spring with a high plinth and pyramidal roof, showing adaptation to cold climate and seismic conditions.
2	Katarmal Sun Temple	- Located near Almora, Uttarakhand. Built in the 9th century CE by the Katyuri dynasty. Designed in Nagara style. - One of the few surviving Sun temples in India, with a main shrine and several subsidiary shrines reflecting early Himalayan temple traditions.
3	Kamakhya Temple	- Located on Nilachal Hill in Guwahati, Assam. Rebuilt in the 16th century by Koch king Naranarayan. Dedicated to Goddess Shakti (Kamakhya). - Built in Nilachal style, a regional Assamese form. There is no idol; worship is centred on a yoni-shaped stone. It is a major centre of Tantrism and the Ambubachi Mela.

4	Lakshman Temple	- Located in Khajuraho, Madhya Pradesh. Built in 954 CE by Chandela ruler Yashovarman. - Dedicated to Vaikuntha Vishnu (three-headed form). Designed in Nagara style of the Khajuraho school. - It is the earliest and finest surviving temple at Khajuraho, built on a Panchayatana plan with richly carved sculptures showing both secular and divine themes, marking the maturity of North Indian temple architecture.
5	Somnath Temple	- Located at Prabhas Patan, Gujarat. Has early historic origins; present structure rebuilt in 1951 after Independence. Dedicated to Shiva (Jyotirlinga). - Built in Chalukyan (Maru-Gurjara) style. Considered the first of the 12 Jyotirlingas and a symbol of resilience as it was destroyed and rebuilt multiple times during medieval invasions.
6	Rajarani Temple	- Located in Bhubaneswar, Odisha. Built in the 11th century CE during the Somavamsi period. - Has no presiding deity. Designed in mature Nagara (Kalinga) style. Named after its red-gold sandstone and known for ornate sculptures and Panchayatana plan.
7	Venkateswara Temple	- Located on Tirumala Hills, Andhra Pradesh. Developed mainly under Pallava, Chola, and Vijayanagara rulers. Dedicated to Vishnu (Venkateswara). - Built in Dravidian style. Known for gopurams, pillared mandapas, and extensive endowments; it is one of the richest and most visited temples in the world.
8	Lad Khan Temple	- Located at Aihole, Karnataka. Built during the 5th–6th century CE by the Early Chalukyas. Dedicated to Shiva. - Designed in early Chalukyan (proto-Dravidian) style. Features a flat roof and pillared hall and resembles wooden architectural forms.
9	Sri Ranganatha Swamy Temple	- Located on Srirangam Island, Tamil Nadu. Has early Chola origins and was expanded by Cholas, Pandyas, Hoysalas, and Vijayanagara rulers. - Dedicated to Vishnu (Ranganatha). Built in Dravidian style. It is the largest functioning temple complex with concentric enclosures, massive gopurams, and is an important Vaishnava Bhakti centre.
10	Sree Padmanabhaswamy Temple	- Located in Thiruvananthapuram, Kerala. Present structure dates to the 18th century under Travancore rulers. - Dedicated to Vishnu in Anantha Sayana form. - Built in Dravidian style with Kerala elements. Known for its subterranean vaults and for the tradition where the ruler is considered 'Padmanabha Dasa' (servant of Vishnu).

INDUS VALLEY CIVILIZATION (IVC) SITES



1	Harappa	- Harappa, located on the Ravi River in present-day Pakistan, was excavated by Daya Ram Sahni in 1921. - It gave the Indus Valley Civilization its name. Important findings include rows of granaries, working floors, coffin burials, the H-Cemetery of the post-Harappan phase, copper scales, and terracotta crucibles used for metal smelting.
2	Kalibangan	- Kalibangan, located on the Ghaggar River in Rajasthan, was excavated by B. B. Lal and B. K. Thapar. - It revealed the earliest known ploughed agricultural field from the pre-Harappan phase. - Archaeologists also found fire altars suggesting ritual practices, camel bones, wooden drainage structures, and evidence of skull surgery known as trepanation.
3	Banawali	- Banawali, located in Fatehabad district of Haryana, was excavated by R. S. Bisht in 1974. - Unlike most major Harappan cities, it lacked a well-planned drainage system. - The settlement followed a radial pattern of town planning rather than the usual grid pattern, showing regional variations in urban design within the Indus Civilization.
4	Rakhigarhi	- Rakhigarhi in Haryana, situated in the Ghaggar-Hakra basin, is currently recognised as the largest known site of the Indus Valley Civilization. - The settlement covers more than 350 hectares. Excavations reveal well-planned streets, drainage systems, seals, terracotta wheels, and evidence of a large and highly organised urban settlement.
5	Mohenjo-daro	- Mohenjo-daro, located on the Indus River in Sindh (Pakistan), was excavated by R. D. Banerji in 1922. - It is famous for its Great Bath, granary, assembly hall, and advanced drainage system. - Important artefacts include the bronze Dancing Girl, the Priest-King statue, the Pashupati seal, and some of the earliest evidence of cotton textiles.

6	Chanhudaro	- Chanhudaro in Sindh, south of Mohenjo-daro, was excavated by N. G. Majumdar and later by Ernest Mackay. - It is notable as the only Indus city without a citadel. The site functioned mainly as an industrial centre specialising in bead-making, shell-cutting, and seal production, with discoveries such as an inkpot and unique brick impressions.
7	Sutkagen Dor	- Sutkagen Dor, located near the Makran coast close to the Iran border, represents the westernmost site of the Indus Civilization. - Surveyed by Aurel Stein and later excavated by George Dales, it functioned as a fortified coastal port. The settlement likely served as an important trade link connecting the Indus region with Mesopotamia.
8	Dholavira	- Dholavira, situated on Khadir Bet island in the Rann of Kutch, Gujarat, was excavated by R. S. Bisht. The city was uniquely divided into three sections: citadel, middle town, and lower town. - It is known for its advanced water-harvesting system with reservoirs and a large Indus script signboard. It became a UNESCO World Heritage Site in 2021.
9	Surkotada	- Surkotada, located in the Kutch region of Gujarat and excavated by J. P. Joshi, is significant for providing actual skeletal remains of horses, which are rare in Indus sites. - The settlement had strong stone fortifications and also yielded evidence of pot burials, indicating a distinctive burial practice within the civilization.
10	Lothal (Manchester of IVC)	- Lothal, located near the Sabarmati and Bhogava rivers in Gujarat, was excavated by S. R. Rao. It is famous for having one of the world's earliest known brick dockyards, showing its importance in maritime trade. - Other discoveries include bead-making workshops, rice husk remains, Persian Gulf seals, and evidence of board games.

MAJOR INTERNATIONAL STRAITS



1	Strait of Gibraltar	• Location: Between Spain (north) and Morocco (south); separates Europe and Africa • Connects: Atlantic Ocean ↔ Mediterranean Sea • Key Fact: Narrow (~14 km) • Importance: Strategic naval chokepoint with heavy commercial traffic
2	Dardanelles Strait	• Location: Turkey • Connects: Aegean Sea ↔ Sea of Marmara • System: Part of Turkish Straits (with Bosphorus) • Importance: Governed by Montreux Convention (1936); key route to Black Sea
3	Bosphorus Strait	• Location: Istanbul, Turkey • Connects: Black Sea ↔ Sea of Marmara • Key Feature: Divides Europe and Asia • Importance: One of the busiest waterways; vital for Russia–Ukraine trade
4	Kerch Strait	• Location: Between Russia and Crimea • Connects: Black Sea ↔ Sea of Azov • Key Feature: Kerch Bridge • Importance: Strategically important in the Russia–Ukraine conflict
5	Strait of Hormuz	• Location: Between Iran (north) and Oman/UAE (south) • Connects: Persian Gulf ↔ Gulf of Oman • Key Fact: ~20% of global oil trade passes through • Importance: World's most critical oil chokepoint
6	Bab al-Mandab Strait	• Location: Between Yemen and Djibouti/Eritrea • Connects: Red Sea ↔ Gulf of Aden • Route Link: Gateway to Suez Canal • Importance: Key trade route; prone to piracy and conflict
7	Palk Strait	• Location: Between India and Sri Lanka • Connects: Bay of Bengal ↔ Gulf of Mannar • Key Feature: Adam's Bridge (Ram Setu) • Importance: Shallow waters restrict large ships
8	Malacca Strait	• Location: Between Malaysia and Indonesia • Connects: Indian Ocean ↔ South China Sea • Key Fact: One of the busiest shipping lanes • Importance: Crucial for Asia's energy trade; piracy-prone
9	Sunda Strait	• Location: Between Java and Sumatra (Indonesia) • Connects: Java Sea ↔ Indian Ocean • Importance: Alternative route to Malacca Strait
10	Taiwan Strait	• Location: Between China and Taiwan • Connects: South China Sea ↔ East China Sea • Key Feature: ~130–180 km wide • Importance: Major geopolitical hotspot and trade route

REPORTS/INDICES IN NEWS

Reports	Publisher	Details
Employment and Social Trends 2026	International Labour Organization (ILO)	- Global unemployment is projected to remain unchanged at 4.9% equivalent to 186 million people in 2026. - The global jobs gap is projected to reach 408 million in 2026, indicating large unmet demand for work. - About 300 million workers live in extreme poverty, and over 2 billion remain in informal employment without basic protections.
World Economic Situation and Prospects 2026	United Nations Department of Economic and Social Affairs (UN DESA)	- Global growth is expected at 2.7% in 2026 and 2.9% in 2027, below the 3.2% pre-pandemic average, with uneven recovery across regions. - India's growth likely to slow from 7.4% (2025) to 6.6% (2026).
Global Economic Prospects	World Bank	- Published twice a year (January and June) to assess global growth outlook. - India's growth forecast revised to 7.2% for FY 2025–26 (from 6.3% projected earlier). - Global trade growth expected to slow from 3.4% in 2025 to 2.2% in 2026
Employment and Social Trends 2026	International Labour Organization	- Limited progress in job quality, with extreme working poverty declined only 3.1% between 2015–2025. - Around 2.1 billion workers globally are expected to be in informal employment by 2026.
Global Investment Trends Monitor	UNCTAD	- Global FDI rose 14% in 2025 to \$1.6 trillion, driven largely by developed economies. - FDI inflows to India rose 73% to \$47 billion in 2025.
Arctic Report Card (ARC) 2025	National Oceanic and Atmospheric Administration	- Scientists are observing "Atlantification," the inflow of warmer waters and marine species from lower latitudes into the Arctic Ocean, which weakens ocean stratification, accelerates sea-ice melt, and may disrupt ocean circulation. - At the same time, the "greening of the Arctic," reflects increasing tundra vegetation, altering ecosystems, biodiversity, permafrost conditions, and the livelihoods of Arctic communities.
UN Global Water Bankruptcy Report	United Nations University Institute for Water, Environment and Health (UNU-INWEH)	- Title: "Global Water Bankruptcy: Living Beyond Our Hydrological Means in the Post-Crisis Era." 75% of the global population lives in water-insecure or critically water-insecure countries. 70% of major global aquifers show long-term declining trends.
A Breath of Change Report	World Bank	- Title: 'A Breath of Change: Solutions for Cleaner Air in the Indo-Gangetic Plains and Himalayan Foothills' (IGP-HF) - The IGP-HF region records the highest levels of air pollution globally, with PM2.5 levels 8 to 20 times the

Index	Publisher	Key Details
Network Readiness Index	Portulans Institute	- The index evaluates how effectively countries use information and communication technologies (ICT) to drive economic and social development. - The US retained the 1st position for the fourth year, followed by Finland, and Singapore. - India has improved its position by four places, ranks 45th.
Corruption Perceptions Index (CPI)	Transparency International	- Released annually by ranking countries on public sector corruption (0 = highly corrupt, 100 = very clean) - Top rank: Denmark (89), 8th consecutive year - India: Improved to 91st rank (score 39) in 2025 from 96th earlier
Asia Power Index	Lowy Institute	- Annually assesses the ability of nations, in the Asian continent, to influence their external environment. - India has secured third ranking, while the U.S. and China occupy the first and second ranking.
Power Gap Index	Economic Survey 2025-26	- derived from the Asia Power Index, measures a country's ability to convert raw resources (wealth/military) into actual regional influence (diplomacy/networks). - India's score of -4.0 indicates it is not fully leveraging its strategic potential
Innovators Business Environment Index 2026	Startup- Blink	- A global benchmark assessing how easily innovators can start and run businesses. - Covers 125 countries using 30+ indicators on accessibility, reliability, and readiness of business environments. Top Rankings: United States, Singapore, United Kingdom - India ranks 54th, ahead of China (85th).
Fiscal Health Index 2026	NITI Aayog	2nd edition of a comprehensive assessment of the fiscal performance of Indian states. - It ranks states based on five sub-indices: quality of expenditure, revenue mobilisation, fiscal prudence, debt index, and debt sustainability - Expanding beyond the 1st edition (which covered 18 major states), 2nd edition includes 10 North-Eastern and Himalayan states and classifies states into achiever, front runner, performer, and aspirational categories. - Odisha, Goa, and Jharkhand are categorised as achievers. - Among the North-Eastern and Himalayan states, Arunachal Pradesh leads, followed by Uttarakhand, Tripura, Meghalaya, Assam, and Mizoram.
Food Security Index	International Institute for Environment & Development	- Examines how people worldwide struggle to access sufficient and quality food due to repeated climate-related shocks. - It assesses food security in 162 countries based on four

	(IIED)	pillars: Availability of adequate food; Accessibility and affordability for households; Nutritional value and the body's ability to absorb nutrients; Sustainability and resilience of food systems • India's position is among the most concerning, with a score of 5.31, below the global average of 6.74.
--	--------	---